

Journal of the Society of Arts.

FRIDAY, SEPTEMBER 5, 1856.

EXEMPTION OF INSTITUTIONS FROM RATING.

The following Bill [as amended in Committee] to "amend the Act 6 and 7 Vict., c. 36, to exempt from county, borough, parochial, and other local rates, land and buildings occupied by Scientific or Literary Societies," is now printed, with a view to elicit the opinions and views of the Institutions thereon, in order that the Council may take steps for getting the Bill introduced into Parliament in the next Session in as complete a form as may be.

Whereas by an Act passed in the sixth and seventh years of the reign of her present Majesty it was enacted, from and after the first day of October, one thousand eight hundred and forty-three, no person or persons should be assessed or rated or liable to be assessed or rated or liable to pay to any county, borough, parochial, or other local rates or cesses, in respect of any lands, houses, or buildings, or parts of houses or buildings, belonging to any Society instituted for purposes of science, literature, or the fine arts exclusively, either as tenant or as owner, and occupied by it for the transaction of its business and for carrying into effect its purposes; provided that such Society should be supported wholly or in part by annual voluntary contributions, and should not, and by its laws might not, make any dividend, gift, division, or bonus in money unto or between any of its members; and provided also, that such Society should obtain the certificate of the barrister-at-law or Lord Advocate as therein-after mentioned. And whereas it is expedient to amend the said statute. Be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

I. From and after the first day of January, one thousand eight hundred and fifty-seven, so much of the said Act as is herein-before recited, as also the whole of section six of the said Act, shall be repealed.

II. From and after the first day of January, one thousand eight hundred and fifty-seven, no person or persons shall be assessed or rated or liable to pay to any county, borough, parochial, or other local rates or cesses, in respect of any lands, houses, or buildings, or parts of houses or buildings, belonging to any Society instituted for purposes of science, literature, education, or the fine arts, either as tenant or as owner, and occupied by it* for the transaction of its business and for carrying into effect its purposes; provided that such Society shall be supported wholly or in part by annual voluntary contribu-

tions, and shall not, and by its laws may not, make any dividend, gift, donation, or bonus in money unto or between any of its members; and provided also, that such Society shall obtain the certificate of the barrister-at-law as provided by the recited Act, or the certificate of the registrar of Friendly Societies in Scotland as herein-after provided.

III.* The certificate directed by the recited Act to be obtained from the Lord Advocate, or any depute appointed by him to certify the rules of Friendly Societies in Scotland, shall, from and after the first day of January, one thousand eight hundred and fifty seven, be applied for to and issued by the registrar of Friendly Societies in Scotland; and all the powers, duties, and provisions by the recited Act made applicable to the Lord Advocate or such depute shall be transferred to and be applicable to such registrar; and all the powers, duties, and provisions by the recited Act granted, imposed upon, or made applicable to the clerk of the peace for the borough or county shall, in Scotland, be applicable to the sheriff clerk of the county where the lands, houses, or buildings of the Society are situate; and all the powers, duties, and provisions by the recited Act granted, imposed upon, or made applicable to the recorder or justices for the borough or county shall, in Scotland, be applicable to the sheriff of the county where such lands, houses, or buildings are situate, in the same manner and to the same effect as the same are by the recited Act made applicable to such clerk of the peace, recorder, or justices respectively.

IV. Whenever any such Society shall have obtained the certificate of the barrister-at-law or such registrar, and the laws, rules, and regulations of the Society shall have been allowed and confirmed by the recorder of any borough sessions, or the justices at any general quarter sessions, or the sheriff, or if such certificate of the barrister-at-law or registrar shall be refused, but such recorder or justices or sheriff, on such laws, rules, and regulations being submitted to them respectively, shall order the same to be filed, notwithstanding such refusal, then it shall not be lawful thereafter to assess or rate any person or persons, nor shall any person or persons be liable to be assessed or rated or liable to pay to any county borough, parochial, or other local rates or cesses, in respect of any land, houses, or buildings, or parts of houses or buildings, belonging to any such Society, and any such assessment or rate, if made, shall be wholly void, and no person or persons assessed to any rate from which any Society shall be exempted by this Act shall have any appeal or right to appeal against such certificate, or against such allowance or confirmation or filing of the laws, rules, and regulations as aforesaid; provided nevertheless, that if at any time the laws, rules, and regulations of any such Society shall be altered or varied, or if any such Society shall be conducted for purposes different from those set forth in the laws, rules, and regulations, after the same shall have been allowed and confirmed or filed, the exemption from rates and cesses herein contained shall cease; but nothing herein contained shall prevent any such Society from applying for a fresh certificate, or from applying to have its laws, rules, and regulations again allowed and confirmed or filed, as often as need be.†

The Council will be glad to receive observations and suggestions on the foregoing, for discussion in the *Journal* or otherwise.

* Had time permitted the carrying this Bill through the House last Session, it would have been proposed to insert here, between "it" and "for," the word "exclusively," objection having been made that the mere occupancy of the buildings by a Literary Society ought not to exempt those buildings when used for other purposes.

* This whole clause was introduced in Committee, and words were inserted into the other clauses of the Bill in order to adapt it to existing circumstances in Scotland.

† The Bill was originally prepared by Charles Wordsworth, Esq., Barrister, of the Inner Temple.

PARIS IMPROVEMENTS.

It will be recollected that some time since a Committee of the Society was appointed to take up this subject, with a view specially to obtaining information as to the manner in which the improvements in the streets of Paris were effected. The following information relative to the mode in which the legal proceedings connected with the compulsory taking possession of private property for such purposes has been obtained, and but for pressure of other matter would have been published earlier.

The law of France is based on the following general considerations.

Undertakings for the public good involve private interests in a certain amount of sacrifice, though they share in the general profit and advantage arising from them, and regulations to meet this view are accordingly adopted. Some of these regulations relate to the mode in which such parties should share in the expenses and profits; others refer to compulsory taking of land; and, again, some others refer to injuries affecting the property and rights of individuals, and to the compensation they may be entitled to. In certain cases, public works may be undertaken for the benefit of private property. They may likewise be useful and beneficial to a limited number of proprietors. The duty of the public administration* is, in both cases, to superintend the execution of such works, and to procure, or, at any rate, to enforce regularity in the working by all parties interested therein. The outlay is equitably divided among those who are to profit by such works, and in proportion to the benefit accruing to them therefrom.

1.—PUBLIC WORKS, IN WHICH BOTH THE STATE AND INDIVIDUALS ARE CONCERNED.

General Rules.—Whenever it becomes necessary to undertake works for the protection of private property against the invasion of the sea, the overflowing of rivers, torrents, &c., the government has the right to impose upon the *communes* and proprietors of the adjacent country a certain amount of the expenses, in proportion to their interest in the matter. In some cases, however, the government grants, when needed, a portion of the public monies for the furtherance of the above object. Under the constitutional, as well as under the present government, such taxes or impositions on the part of the departments, communes, and towns, are drawn up into a bill, and voted by the Lower Chamber. The same principle is adopted and followed in regard to canals, parish roads, &c.

If, in consequence of any new public works, such as the opening of roads, streets, squares, the building of quays in cities, property situated upon such thoroughfares is highly increased in value (*plus value*), the owners may be obliged to pay either to the commune, department, or State, a sum of money, the amount of which must never exceed half the sum representing the pecuniary profit thus accruing to the parties interested.

In such cases, an estimate is made in a regular form,

and the matter is legally decided by a committee named for that special purpose.

The amount is paid by the individual at his own option, either in ready money or in 4 per cent. annuities, or by giving up a portion of his property, if such an arrangement is capable of being carried out.

The owner may also give up all his lands or buildings which have thus acquired an increased value; but in such cases the estimate is grounded upon the previous value of the property, before the execution of the public works to which their increased value is due.

The monies paid as above by proprietors do not become due till a decree is issued by the government, upon the application of the minister of the home department, and after all the parties concerned have been heard, such decree (*règlement d'administration publique**) reciting that the articles of the law as above-mentioned are applicable.

From the above rules, it is evident that the government is supreme judge and arbiter in such matters.

2.—COMPULSORY TAKING OF LANDS.

It is a principle of the French law, that private interest must yield to that of the public; hence, private individuals may be compelled to part with their property when required for the public good, but in such cases respect for the rights of property demands that the owner be indemnified.

The government is the sole authority invested with the power of declaring in what cases such "public good" really exists, but the local authorities are empowered to apply the law and settle the interests of private property.

According to the French law, the Courts of Justice decide upon the manner in which compulsory possession is to take place. A special jury gives its verdict as to the amount of compensation to which a proprietor is entitled.

The form of legal proceedings in these cases may be summed up as follows:—

A. *General Regulations.*—The Courts of Justice alone have a right to decide in reference to cases of compulsory taking of property when required for the benefit of the public.

They can, however, never pronounce sentence for a compulsory sale until the question of "public good" has been previously determined and published by the competent authorities, viz.,

1. The law, or decree, authorising the execution of the works which render the compulsory sales necessary.
2. An act or *arrête* of the local prefect, pointing out the place or district in which the works are to be constructed, whenever it is not specified in the law or decree itself.
3. A subsequent decree of the prefect, showing the private properties liable to compulsory sale.

No lands or property can be taken under this last decree until all parties have had the opportunity of laying before the Court the circumstances of their case.

The engineers or other officers entrusted with the execution of the works must, in each parish or commune, prepare a detailed plan or survey of such lands, estates, and buildings, as they deem necessary to be purchased.

The surveys of such properties, together with the names of each owner, as they stand on the public register, are to be deposited for the space of eight days at the town-hall or *mairie* of the commune where the above properties are situate, in order that every person may have opportunity of becoming acquainted therewith.

All parties are required by notice, within one week, to take cognisance of the plan deposited at the town-hall.

Such notice is affixed to the door of the parish-church and of the *mairie*, is published by the crier, and is inserted in one of the local journals.

* "*Administration Publique*" applies to public authorities of all kinds, whether municipal or governmental.

* These decrees or *règlements* are always discussed or framed by the Council of State.

The mayor, by his signature and seal, authenticates the notice, and subsequently certifies in a report, which is also signed by the parties, the claims made by them, and he draws up a copy of such others as may have been transmitted to him in writing.

At the expiration of the above week, a committee assembles at the *chef lieu de préfecture*.

This committee, under the presidency of the prefect, is formed of four members belonging to the council-general of the department,* or to the council of the *arrondissement* named by the prefect; of the mayor of the commune in which the properties in question are situated; and of one of the engineers who is to undertake the works.

No proprietor whose property is liable to be taken can be a member of the Committee.

The Committee is bound to give a hearing to any statement made by the proprietors, during the space of one week. Proprietors may be called before the Committee, whenever it is deemed proper, and the members are at liberty to give their individual or collective opinion.

The sitting of the Committee must be closed at the end of ten days; after which the report of its proceedings is addressed by the sub-prefect to the prefect.

In case of the business not having been brought to a close in the course of the above ten days, the sub-prefect must transmit in the ensuing three days a report to the prefect, together with the minutes of the proceedings.

Should the Committee propose any alteration in the plan presented by the engineers, it is the duty of the sub-prefect to give notice thereof to such proprietors as may be affected by the alteration. During the whole week following the day on which that notice is given, the report and minutes are to remain at the offices of the *sous-préfecture*, where the parties so concerned may procure copies without expense. They have the opportunity of depositing any statements they please.

At the end of three days after the sittings of the Committee are closed, the sub-prefect hands over the documents to the prefect, who determines what properties are to be sold, and the time at which possession of them must be taken. However, if the Committee be of opinion that an alteration is necessary in the proposed works, the prefect suspends the operations, and reports the case for decision to the government.

According to circumstances, the government is at liberty, either to determine immediately on the case, or to issue an order that the whole or part of the above proceedings shall be gone through anew.

From the preceding details, it is easy to see that the final decision of any litigated case is within the hands of government. In questions of real importance, the result of the system is beneficial, as it tends to get rid of local jealousies, the delays of lawyers and extortionate demands. But in matters of smaller importance, the system is found to work oppressively, as in consequence of the extreme centralisation, works of real practical utility

* In every department there exists a council-general, which holds annual sessions lasting a fortnight. Those sessions usually take place in September. Every canton or district of a department has a right to elect a member of the council, in an assembly formed of citizens enjoying their civil and political franchise. The number of councillors can never be more than thirty. They are elected for nine years, but one-third of the council is subjected to re-election every three years. The public functionaries of the department are not eligible for the council-general. The duties of this body may be summed up in a few words: the council deliberate, and votes upon all local matters not falling within the limits of the "public service." It likewise votes the sums necessary for the administration and expenditure of the department. There is likewise in each *arrondissement* or *sous-préfecture* an inferior but equally elective council, whose organisation and duties are much about the same as the council-general, but the sphere of its action is limited to the *arrondissement*. The members are elected for a period of six years; but the council is liable to re-election every three years. The annual session lasts five days.

have been delayed for a length of time. One of the objects of the Legislative Assembly under the late republic was to do away with these defects of the system, by giving more power and freedom of action to local administrations.

The Council of State is the real arbiter of such cases which fall within its jurisdiction.

COMPENSATIONS.

1.—*Preliminary Measures*.—In the week following upon the above-mentioned notices, the "proprietor" is bound to call together and to make known to the Administration, the farmers, tenants, lodgers, beneficial occupants, or any others who may lay claim to interests arising out of the legal rights, or under deeds to which he has become a party. In case of non-fulfilment of this obligation on the part of the proprietor, he is liable to them for the payment of such compensation as the above persons may be entitled to.

Other parties interested in the property are considered as having received due notice through the publicity given to the intended measures. They are, therefore, obliged to send in their claims to the administration in the same above-mentioned week, on pain of forfeiting their rights and privileges to a compensation.

During the same week, the local administration gives notice to the respective parties of the sum allotted to them as a compensation. These offers or allotments are posted and published in the usual way.

A fortnight is given to the parties to make known their acceptance or refusal of such offers, as well as to communicate the amount of their own valuation of their own claims.

In some special cases the above term is extended to a whole month.

Should the pecuniary compensation offered by the local administration not be accepted during the prescribed time, the administration summons the parties to appear before a special jury empanelled for the occasion, to assess the amount. The summons must contain the precise terms which have been offered.

2.—*Special Jury*.—During the course of its yearly meeting, the council-general of each department draws up a list, in every *arrondissement*, of electors, amounting to not less than thirty-six, and not more than seventy-two persons, who have their legal abode in the department. From this list are chosen the members of the special jury which is to decide upon questions of compensation in cases of compulsory sales.

The number of jurors thus designated for the department of the Seine* amounts to six hundred.

Whenever it becomes necessary to call a special jury of the above kind, the first chamber of the Court of Appeal in the departments where that court holds its sittings, and, in the other departments, the first chamber of the *Tribunal de Première Instance*, selects out of the aforesaid list, sixteen persons who are to form the special jury in question.† Should the judges refuse to select the jury, the duty falls upon the Court of Appeal.

* The department of the Seine is exceptional.

† The French courts of law are organised as follows:—A.—*Cour de Première Instance*.—The lowest court of jurisdiction, dividing itself into chambers or courts of civil law—criminal law and police offences—commercial law. In Paris, the police has a separate organisation. B.—*Cour d'Appel*, superior to the former, from which appeals are made to the latter. A somewhat similar division takes place. C.—*Supreme Court of Cassation*, which is empowered to confirm or annul the sentences of inferior jurisdictions, for some deficiency in point of legal forms; but cannot pronounce judgment upon the merits of the case in criminal prosecutions. On such occasions, the case is remitted to another jury, and frequently in another department. D.—The Council of State enjoys a certain jurisdiction over cases litigated between the Government and private individuals; but appeal may be made from its decisions to the common Courts of Justice.

None of the interested parties, such as proprietors, farmers, creditors, &c., can become members of the jury.

This list of sixteen jurors, to which are added four supplementary jurors, is transmitted by the prefect to the sub-prefect, who, after consulting with the judge who is to preside over the jury, calls them together and summons the parties to attend, giving them at least a week's previous notice, stating the place and day of sitting. In the summons the names of the jurors must be communicated to the parties.

Every juror who, without any lawful reason, does not attend the sittings, or refuses to take his share in the sittings, is liable to a fine of 300f. at most, and 100f. at least.

The fine is adjudged by the president of the jury, who likewise decides without appeal upon any excuses made by the condemned juror; he likewise decides upon cases of competency of the jurors, arising from circumstances unknown previously to the impanelling of the jury.

Such jurors as are struck out of the list in consequence of such impediments, are immediately replaced by the supplementary jurors, who are called into court by the president, according to the date of their inscription on the list.

In case of an insufficient number, the judge selects from the general list the persons necessary to make up a quorum.

The public administration, as well as the parties themselves, have a right twice to put in a peremptory challenge against the jury.

In case of several parties being concerned in the same case, they must come to a mutual understanding in regard to exerting their right of challenge, otherwise it must be decided by lot which of them shall exercise that right.

If the right of challenge be not exercised, the president of the jury proceeds to reduce the number from sixteen to twelve, beginning with the last names on the panel.

The special jury is not considered formed until the twelve jurors are in attendance.

The presence of nine persons is sufficient to make a quorum.

When the jury is completed, each juror takes an oath to fulfil his duty with impartiality.

The president places before the jury, 1st, a tabular notice of the offers and claims duly made according to law; 2ndly, the several plans, titles, and documents brought forward by the parties in support of their claims.

The parties or their attorneys are at liberty to offer their observations.

The jury is empowered to call in any persons they may think proper, by way of procuring useful information.

They may likewise repair to the spot, or delegate one of the jurors for the same purpose.

The sittings are public, and may be continued from one sitting to another.

The close of the inquiries and discussion is declared by the president.

The jury immediately retire from the box, in order to consider without delay on their verdict, under the direction of one of their members, acting as a foreman, and elected by them on the spot.

In case of equality of votes on a division, the foreman's vote gives the majority.

The jury awards separate and distinct compensation to such parties as may put in claims grounded on different titles, such as owners, farmers, tenants, &c.

Should any difficulty occur as to the validity of those titles, the jury still awards the compensations; but the parties are passed over to the competent courts to decide on the disputed rights.

In no case can the pecuniary compensation awarded by the jury be less than that offered by the administration, nor greater than that claimed by the parties themselves.

If the compensation awarded does not exceed the sum offered by the administration, the parties refusing have to pay the costs.

If the compensation be the same as the claims of parties, the administration is liable to the costs.

If the compensation awarded turns out to be larger than the offers made by the administration, and smaller than the amount asked, the costs are divided in the proportion which the offers and claims bear to the amount assessed by the jury.

The verdict of the jury, signed by the jurors, is delivered by their foreman into the hands of the president, who decrees it to be put into execution, awards the costs, and issues orders for putting the administration in possession of the property.

The verdict and president's decree cannot be appealed from, unless before the Supreme Court of Cassation, in which case the proceedings may, when the decision is annulled, be remitted to another special jury of a neighbouring *arrondissement*. A fortnight's delay is allowed for such appeals.

The jury is obliged to decide upon every case submitted to it, and without any interruption, before its members are allowed to depart.

The same jurors who have served for the term of one year, cannot again be placed upon the panel by the council-general for the ensuing year.

(To be continued.)

RECENTLY DISCOVERED LITHOGRAPHIC STONE IN JAMAICA.*

BEING A PAPER READ BEFORE THE ROYAL SOCIETY OF ARTS OF JAMAICA. BY E. C. LEWIS.

In obedience to the request of your honourable Chairman, at a meeting held on the 30th March, on my exhibiting specimens of the grey lithographic stone, I readily respond to the call, and cheerfully lay before the Society a few particulars relating to my recent discovery, in the parish of Saint George, in this island, of several extensive quarries of a valuable stone, or compact carbonate of lime of calco-argillaceous nature, of a bluish grey tint, and a cream colour, displaying a conchoidal fracture, and suitable for lithographic, monumental, and statuary purposes, tablets, fonts, fountains, vases, hones, and an excellent cement, &c. The inferior portion being to a very considerable extent adapted to ornamental architecture, is worthy the attention of the geologist and man of science, as it is of the man of capital, who may feel disposed to unravel and develop a portion of the vast resources of this important island, and who would thus not only enrich himself, but insure a splendid monument for himself and family, by exerting every endeavour to avail himself of the liberality of the proprietor, and proceeding forthwith in the most energetic manner possible.

A more extended surface of the most valuable blocks of stone and slabs can scarcely be conceived in any inhabited country, laid bare by the hand of nature and the elements, exposed to view for ages past in large ravines (or gullies), and in such profusion that the roads are paved with it, walls built of it, the steps and foundation of even the rustic cottage based upon it, and yet, its valuable qualities have remained so long overlooked and unappreciated within three or four miles of the shipping port of Buff Bay, and on the banks of the White River, which winds for miles through these valuable properties, which until very recently have been allowed to return to their primitive condition, amidst the wreck of surrounding coffee plantations.

The geologist may there find a fertile field for explo-

* Specimens of this stone are promised, and are expected shortly at the Society's House, John-street, Adelphi.—Ed. S. A. J.

rations, amidst the tertiary and the lias series, of which the basis of some of the mountains of Belvidere and an adjoining property appears to be formed, and the intended museum of this Society may, in all probability, be the receptacle for many valuable specimens of the antediluvian age, or relics of antiquity, in the form of organic fossil remains.

With the desire to be useful in any future exploration, I shall willingly submit such things as may present themselves worthy of your notice, and with a tender of my best services in any way they can be rendered available in carrying out the important objects of your invaluable institution.

Emboldened by the favourable reception of my previous communication on the subject of the Jamaica lithographic stone, and impressed with the importance of the subject to many in this island, I now offer further particulars of its locality and formation, with the view to awaken attention to the subject, and induce some of your scientific body to visit the quarries, promising the geologist ample gratification, and those who may take an interest in it a wide field for future operations, with every prospect of reward. In the interim this may elicit further information on a highly-interesting subject.

I need scarcely remind you of the increasing importance of the finer varieties of this stone for artistic purposes—it is, indeed, fast superseding steel for the engraver, and is a material by no means widely distributed. Munich, in Germany, where its use was first discovered, affords a very considerable supply. I am not without hope that this, our island, may prove a powerful competitor with any country, the quality of some of the specimens having been pronounced by a competent lithographer, "equal to any in the world."

The valley of the White River, in St. George, on the north side of the island, appears, so far as I have been able to trace its geological formation, to range from the tertiary to the lias series (or generally so), but there are specimens of the greyish blue lias, in blocks of some tons weight, of an amorphous structure, and the exterior is so disintegrated or cracked in all directions (the result probably of atmospheric influence), as to be rendered at once suitable to the kiln, it being admirably adapted to the preparation of a cement, which readily sets under water.

On Belvidere estate alone, I have already been able to trace four ravines, exhibiting these stones in profusion, loosely aggregated, and in mass. The public road passes across what may be considered the centre of the whole, and the largest, or "Collin's Gully" (fortunately the nearest to the Barquidier), is apparently the most valuable, from the quality and variety of the stone. It presents a particularly interesting view, not only from its extent, but as exhibiting one of the finest galleries of the tertiary, or nearly horizontal strata, from a few feet to a few inches in thickness, separated only by thin layers of sand and clay. These slabs could easily be detached, of any size, as the gallery is perfectly accessible; but this variety of the stone is of a coarser grain than many blocks and slabs of a cream colour already quarried, many tons of which are only waiting for the roads to be rendered passable, and a vessel to receive them. Altogether, the appearances presented by this quarry are exceedingly interesting; some of the ravines are much torn open by the occasional violent rush of water, and many valuable stones have thus been conveyed to the bed of the stream, which doubtless takes its name from the variety of white stones over which it passes.

Appearances seem to warrant the belief that the whole of the mountain, at least on one side of the river, is a mass of this stone, and blocks of every dimension meet the eye, in looking either up or down the ravines, generally of a superior character, adapted for the artist, or the architect, and mostly of a quality to compete with that used in the construction of palaces and public buildings in Paris, Constantinople, and elsewhere.

Near the bed of the river is another road, which might be extended through the property, and a tram laid down for conveying the stone to a carriage road about two miles from Buff Bay, and possibly to the bay or wharf.

Lairy, the property adjoining Belvidere, and on the road towards the Bay, belonging to the same proprietor, exhibits the same geological formation, having a ravine of similar indications, and possessing the advantage of being still nearer to the shipping port. Much of the stone on this property is of a quality particularly adapted to monumental and exterior purposes, acquiring, on exposure, a peculiar crystallised glistening appearance.

The cultivation of estates in the quarter having almost entirely ceased, with little chance of resuscitation, the present appears a favourable opportunity to obtain labour at a reasonable rate, and those willing to work would have every facility in obtaining a livelihood—the exuberance of the soil in that quarter affording ample advantages for thousands to locate there.

ART TREASURES EXHIBITION.

The length of the building is now clearly shown, the terminal walls, front and back, being some 25 feet above ground. The length is, as has been before stated, 704 feet; this is just about the same length as the *Great Eastern* steamship, which is 700 feet long. She could therefore be barely docked in this immense building, fore and aft. The breadth of the great hall, to the columns which divide it from the aisles, will be 54 feet; the beam of the *Great Eastern* is 60 feet; so that by making an allowance of one yard outside the two rows of hall columns, for breadth, and taking the end walls as boundaries for length, an exact idea of that monster ship may be realised. The entire breadth of the Exhibition building will be 200 feet.

There is an immense quantity of building material spread upon the site, at the points where it will be wanted, consisting of iron, wood, and bricks. Nearly one million of bricks have already been placed. The steers of timber, chiefly in boards, are all but incredible, and, with the bricks, are supplied by Messrs. Bennet, of Ardwick. As giving some idea of the quantity of wood required, the following items may be mentioned; 8,400 joists, 12 feet long; 2,000 ditto, eight feet long; 140,800 boards, 12 feet long, 1½ in. thick; 265,600 ditto, 12 feet long, ¾ in. thick; 25,000 scantlings, 12 feet long, 4 in. by 3 in.; and 10,000 ditto, 3 in. by 3 in. This gives a total of 451,200 pieces; yet, notwithstanding this, the only woodwork visible will be the floors.

The Earl of Ellesmere has promised twelve pictures from his gallery, most of them of the first class in their respective schools, and contributions are promised among others by the Duke of Manchester, Sir Philip Malpas de Grey-Egerton, M.P., of Oulton-park, Cheshire, William Tite, Esq., M.P., George Cornwall Legh, Esq., M.P. (North Cheshire), the Earl of Clarendon, the Bishop of Ripon, William Ewart, Esq., M.P., Lord Wharfedale, Lord Willoughby d'Eresby, M. Rohde Hawkins, Esq., of Stanhope-street, Hyde-park-gardens, I. K. Brunel, Esq., the Hon. Ashley Pousonby, &c.

The varied nature of these offers of works of art (especially of two or three pictures only) may serve to encourage others who, because they have not large collections, may hitherto have been unwilling to come forward with an offer of one or two paintings, however rare or valuable. Of course all offers are subject to the selection and approval of the executive committee, who continue to receive numerous letters, expressive of the strongest feelings of approval of the object, and of a desire on the part of the respective writers to promote that object by every means within their power.

METALLIC PONTOON WAGGONS.*

In pursuance of directions received from the Secretary of State for the War Department, Mr. Francis's floating metallic pontoon-waggon, which was tested in sundry ways a short time back in the outer basin of Woolwich Dockyard, was, on Wednesday last, submitted to some additional trials on the canal in the Royal Arsenal. These experiments were watched on the part of Government by Colonel Bainbrigge, R.E., Inspector of Fortifications; Captain Caffin, C.B., Director-General of Naval Artillery; Captain Boxer, R.A., Superintendent of the Laboratory in Woolwich Arsenal; Captain T. A. Campbell, Assistant-Secretary to the Select Committee; Captain Clark, R.A., acting military superintendent of the carriage factory; and Mr. Abel, superintendent of the chemical department of the Laboratory. Mr. Francis, the patentee, was present to direct the experiments. The first experiment consisted in thrusting the waggon, with the whole of its appurtenances, feeding trough and gear attached, into the water. Seven men then entered the waggon, and rolled and rocked about, and endeavoured to capsize it, but they could not succeed in bringing the gunwale to the water's edge. Boxes of iron, weighing 12 cwt., were then added, making the aggregate weight amount to 21½ cwt. The waggon was then rowed across the water to prove its floating capabilities, and also to show the advantage which an army would possess in crossing unfordable rivers, if supplied with these pontoon-waggons, which are driven through the stream without the necessity of detaching the horses. Some very powerful efforts were again made to upset it, but without success. It was then hoisted out of the water by means of a crane, without removing any of the load, and cleared out, the body being taken off and again thrown into the water. Seven men were ordered into the boat, and the boxes of iron were increased to 22 cwt. It was then rowed about, rolled and rocked as before, and struck with a sledge-hammer some 20 or 30 blows on one spot, without any visible effect on the rivets or joints. After being carefully examined, it was mounted on its carriage, and dragged up to the practising butt. An artilleryman, standing at a range of 100 yards, then fired a couple of Minié rifle balls through the sides. In each case the ball traversed, without splintering, clean through the body, carrying with it a portion of the metal. The success of this experiment was considered of great importance, as considerable injury results in many cases from the scattered splinters of the carriages in present use. Mr. Francis then got into the waggon, and closed the perforations with a few blows of a hammer, leaving only the spots which had been carried away by the balls. This, he explained, could be repaired in the most simple manner by anyone, "with any bit of metal and two or three old nails." A couple of the feeding-troughs serve as a canoe to convey one man with a paddle across a stream, and four of the bodies form an excellent raft, capable of supporting any heavy ordnance of the service. By keeping the running gear attached, they can be run in and out of the water with great facility; and, by making some alterations in the construction, it could be packed up in a small compass, for the convenience of transport.

MINING.

A report has just been published by Mr. Hugh Seymour Tremenheere on the mining districts, for 1856. After reporting the extension of associations for giving prizes in schools to South Wales and elsewhere, Mr. Tremenheere urges the necessity of a measure to compel all boys between 10 and 14 years of age, who work below ground, to attend some school for 100 hours every six months—a measure which, in the general opinion of all

concerned, would be of great service, both to the labouring mining population and their employers. There is a general concurrence in the principle of the proposed measure, and a few objections of detail are satisfactorily disposed of by Mr. Tremenheere. The efforts at improvement made in the great mining districts of Monmouthshire and Glamorganshire are next noticed. The Chartist outbreak of 1839 having alarmed the proprietors, impelled them to action, and in successive years the great majority have taken some steps to provide for their people better means of moral, religious, and general instruction, and to facilitate the physical comforts and decencies of life among these large and rapidly collected populations. Gratifying instances of this care and forethought are given in the report. The unfeminine employment of women upon the "pit-banks and cinder-tips" has long been indicated as degrading to the female character, and as fraught with many and most obvious evils. A woman of this class, so brought up, and from an early age, marries at or soon after 20; and how, it is asked, is she qualified for the discharge of the conjugal duties? She does not know how to keep a house clean and tidy; she cannot cook; she is ignorant of the first principles of economy; and she knows nothing of the management of children. In connexion with this branch of the report, the neglect of some special instruction and training in nearly all female schools for the labouring classes is very properly pointed out as an evil that might easily be remedied, and various suggestions are made with this view, which, if carried out, could hardly fail to be most beneficial. The strike in the principal coal and iron districts in Scotland occupies the remainder of the report. The loss of wages between March and June (when the strike terminated) is estimated at a *minimum* of £500,000, but this very imperfectly represents the total loss inflicted upon the community. These strikes are likely to take place from time to time in Scotland, and the employers are urged to adopt, without delay, such measures as may tend to abridge their duration. Mr. Tremenheere thinks that it is possible, were the effort fairly made, to establish so much confidence between workmen and masters as should satisfy the former, when a demand for an increase of wages was resisted by the latter, that they really could not afford to comply with the request. And so, with relation to a lowering of wages, the facts upon which the master founds his plea for reduction should be patent to the men. Mr. Tremenheere deploras the fact that, whenever any difference arises between masters and workmen, the question is immediately seized upon by delegates, "whose direct interest it is to aggravate every existing cause of dispute, and bring forward as many others as can be made available," and who, by generalising the question of wages for the whole district, do a great deal of harm; for one master, by his facility of communication, easy working of his minerals, &c., might be able to afford much better wages than another in the same locality. But these matters are entirely unestimated by paid delegates. The results of strikes are particularly noticeable in their moral and physical effects upon those engaged in them:—1. The diminution of crime. 2. The increase of disease. The low living produces low fevers, and if wet or cold weather comes on soon after a strike and before the stock of clothes, which has usually been much reduced by being sold or pawned, can be replaced or recovered, an increased rate of mortality is the consequence. 3. Demoralised habits. The same observers, having experience of strikes for upwards of 30 years, notice with regret the injury done to the habits of a workman and his family by a strike. The loss of their usual resource of wages drives them to resort to means of saving themselves from starvation which an honest and well-behaved workman would not previously have thought himself capable of. Some get into debt to an amount which tempts them to become dishonest; others perambulate the country begging, or

* A description of these waggons is given in Major Vincent Eyre's paper, published in the *Journal*, No. 196, p. 664.

rather often extorting money or food; others send their wives or children, or both, on the same errand; in all cases their self-respect is impaired or destroyed, and when that is gone the descent is easy to crime and degradation.

RAILWAY SLEEPERS.

Dr. Boucherie, of Paris, states, in reference to this subject, that:—

“The *Times* of the 19th of August gives an account of an experiment, according to my processes for preserving timber, made by the engineers of the Permanent Way Company. This article has called forth from Mr. Bethell, of London, a reply, inserted in the *Times* of the 22nd ultimo. I cannot better repel the accusation of plagiarism which Mr. Bethell therein brings against me than by sending to England two official patents which may be seen at the office of the Permanent Way Company, and which have been given me by the French Government, in compliance with two applications for the same which I addressed to it. The first, the 11th of December, 1837, is for the process which I have pointed out, by means of which divers preservative substances are made to penetrate the tissues of wood, employing for that purpose that natural upward force by which the sap is rapidly transferred from the root to the top of the largest trees. Thus a tree of any size was, after being cut down, plunged at its lower end into a tub containing the liquid with which it was to be penetrated. Having found sundry inconveniences in this method of injection, my labours led me to discover a new mode, which I have described on the 30th of May, 1838, applying at the same time for an additional patent. This system consisted in placing one of the ends of the tree in a bag of waterproof cloth, firmly attached to its circumference, which bag communicated with a reservoir containing the liquid. Since then I have considerably modified my plans of operation, and these have been the subject of several subsequent patents. On the 10th of July, 1838 (that is to say seven months after my first patent, and 42 days after the second), Mr. J. Bethell took out a patent in England for the preservation of wood. In his specification three plans are described. 1. The making the preserving liquid penetrate by capillary attraction,—the natural method described in my patent of the 11th of December, 1837. 2. Penetration by capping with an india-rubber bag communicating with a reservoir,—the mode pointed out in my additional patent of the 30th of May, 1838. 3. Penetration by mechanical vacuum and pressure,—a system the priority of which can be easily claimed by M. Bréant. I leave others to judge to whom belongs the title of inventor. It is true that in 1840 my processes were patented in England in the name of a London merchant, but I do not think that anyone is authorised to assume the title of inventor by the single fact that he may have been more in haste than the inventor was to patent in a foreign land the object of his invention, especially when his birthplace is only separated by an interval which a few hours suffice to pass over. It does not belong to me to eulogise my discovery; I shall confine myself to saying that it has gained for me at all the French Expositions the first gold medals; at the London Exhibition the same reward as was given to Mr. Bethell; and at the Universal Exhibition at Paris one of the four great medals of honour; further, by a special law, unprecedented in France, an extension has been granted to my patent. All my labours and numerous experiments have proved to me that, in proportion as the preservation of the timber takes place before the drying up of the sap in the fibres, it is the more complete if the sap is expelled, to make way for preservative substances.

“It is, then, important to subject timber, within two or three months after felling, to that preparation which gives it durability, the limits of which have not yet been found.

“The difficulty of using my process in England is not so great as Mr. Bethell is pleased to represent. Nothing is easier than to have the timber prepared in the midst of the forests which supply the markets of Britain; it is a problem most easy to solve, if but the appeal be made to the fertile intelligence of English industrialists.”

INVENTION OF PHOTOGRAPHY.

In a French work, lately published,* in which a review is given of the results of photography, as shown in the Paris Exhibition of 1855, after awarding great praise to the works of Mons. Bayard there displayed, the author proceeds as follows:—

“Mons. Bayard is one of the inventors of photography on paper. When this discovery existed only in the limbo of science, that is, before the publications of Fox Talbot, he, by himself, had already discovered, in his own secluded retreat, the method of fixing on paper the images of the camera obscura. The fact, at the present time, is almost unknown. For this reason, if the reader will permit me to digress, I will relate how Mons. Bayard came to discover the art of photography on paper, and how his discovery has remained a secret from all. The tale, besides, is not long; in fact, as we should say, it is only the history of a peach. Mons. Bayard is the son of a respectable local judge, who exercised his duties in a small provincial town. He occupied his leisure hours in cultivating his garden. In this garden was an orchard, whose splendid peaches ripened under the autumn sun. Mons. Bayard, the father, was in the habit every year of sending to his friends baskets of this fine fruit, and with the natural pride of a proprietor, he took pains, when he sent them out, to mark by some unmistakeable sign that the fruits were the produce of his garden. He conceived a singular mode of effecting his object, which, unknown to the inventor, was a real photographic process. He picked out a peach on the tree in the process of ripening; it was, as you may imagine, one of the best—one of those “*pêches à trente sous*,” which, in after times, thanks to Mons. Alexandre Dumas the younger, have played so conspicuous a part in the world—or rather, the dramatic world. In order to preserve it from the action of the sun's rays, our judge took care to cover his peach with leaves. When the peach thus defended from the sun's rays had acquired the desired size, he pulled off the leafy covering, and left the fruit freely exposed to the influence of the light, save that he gummed on the surface of it the two initial letters of his name, neatly cut in paper characters. At the end of a few days, when the protecting papers were removed, the two initials were found distinctly marked in white on the red ground of the fruit, which thus became impressed with an unquestionable stamp at no greater cost than the sun's rays. This occurrence, which young Bayard each year was in the habit of witnessing, naturally made an impression on his mind. As a child, he amused himself by repeating this effect of the sun on pieces of pink paper braided into the form of a cross. The parts of the paper concealed from the light by the overlying bands preserved their colour, while the other parts were quickly bleached. Afterwards, having tried, like many others, to fix the images of the camera-obscura, Mons. Bayard conceived the idea of using for the purpose the rose-coloured paper which had served to divert his infancy. But, placed in the camera, the paper was not sufficiently sensitive to the light. Mons. Bayard then resorted to the use of chloride of silver in lieu of this inactive paper—the very photographic agent in use at the

* “*Les Applications Nouvelles de la Science à l'Industrie et aux Arts en 1855.*” Par Louis Figuier, Docteur ès Sciences Docteur en Médecine, agrégé de Chimie à l'École de Pharmacie de Paris, &c. Paris: Victor Masson, Place de la École de Médecine, 17; Langlois et Leclercq, Rue des Mathurins St. Jacques, 10. 1856.

present time. He thus succeeded in obtaining actual photographic impressions on paper, with this remarkable circumstance that the images were direct, that is, without the necessity for the use of a previous negative. In the picture obtained, the lights corresponded to the lights of the object, the blacks to the shadows. His process consisted in exposing paper impregnated with chloride of silver to the action of the light, but only up to a certain point which experience had taught him. When he wished to use it for obtaining a photographic image, he soaked this paper in a solution of iodide of potassium, and exposed it to the action of the light in the camera-obscura. The rays of light had the effect of blanching, or rather of giving a very light yellow tint to the silver salt in those parts on which the light shone. There remained only to fix the images by means of hyposulphite of soda. Such is the process of photography on paper which Mons. Bayard invented, and which he, for the sake of his reputation, was to blame in desiring to keep secret. It was then that those beautiful impressions were obtained which Mons. Depretz shewed us, fifteen years ago, at his lectures on Physics, at the Sorbonne, and which we passed from hand to hand without being able to guess by what magic such marvels had been produced. How could it be guessed that such splendid effects had their origin simply from observing the action of the sun's rays on a peach, and that the delicious gift of the Persian of old had exercised so great an influence on the progress of modern physical science. These very pictures, which so charmed us at the Sorbonne, I think I had the pleasure of recognising in the case sent by Mons. Bayard to the Exhibition. Of course, it is understood that Mons. Bayard no longer obtains his pictures by his old method. He now practises, like almost everybody else, photography on glass, but he has carried it to great perfection."

A RAILROAD HOTEL CAR.

A car lately put on the Illinois Central Railroad contains six state rooms, each room having two seats with cushioned backs, large enough for a person to lie on. The backs of the seats are hung with hinges at the upper edge, so that they may be turned up at pleasure, thus forming two single berths, one over the other, where persons may sleep with comfort. In one end of the car is a small wash room. On the opposite side of the car from the state rooms is a row of seats, with revolving backs, similar to barbers' chairs, so arranged that the occupant may sit straight, or recline in an easy attitude, at pleasure. There are other cars on the same road which have each two or three similar state-rooms.

It is suggested that to this car there should be added the means of supplying meals at moderate prices, at all hours, and that this would make railroad travelling positively perfect. It would be a good plan on all railroads more than a hundred miles long, to have a special car where refreshments could be obtained at reasonable prices. The houses of refreshment at railroad stations, where passengers are compelled to run "when the bell rings" to the great danger of their limbs, and the loss of many sixpences, ought to be swept away to make room for some better system, whatever that may be.

Home Correspondence.

EXAMINATIONS.

STR.—The more the advantages likely to result from the Society's system of examinations are appreciated, the more anxiety will naturally be felt that those benefits should be extended as widely as possible. A correspondent, in your last number, suggests that commercial and trade schools should be allowed to send up candi-

dates; and though this may well be a matter for consideration, the serious difficulty that now presents itself is—how are the members of those Institutions who have not friends to pay the travelling expenses of their candidates to obtain the advantages offered? Various suggestions as to the best means of thus placing all upon an equality were made at the last annual conference, but I see that the Council have announced their intention of holding only two examinations, one in London, and another in the north of England; and, although there is but little doubt that the populous districts round Liverpool and Manchester will find this second examination a great boon, and that many more candidates from among the well-informed artisans of that part of England will appear than would have been the case had the journey to London been necessary, how many in the western and other distant counties will still be prevented from coming by want of funds. This is a difficulty which I will not attempt to solve, but surely some of your correspondents might suggest some means of overcoming it. There is much time for consideration, as the next examinations will not take place for many months, and I cannot but hope that, in the interval, some plan may be hit upon for rendering still more general and effective this noble effort of the Society of Arts to develop the latent talent and industry of the working-man.

I am, &c.,

CANTAB.

THE PURIFYING OF WATER.

STR.—During a late visit in a country parish, I ascertained that the only water which the inhabitants of a considerable village could procure for drinking purposes was that collected in one or more ponds. This water was much discoloured by earthy substances, and such is stated to be the usual condition there of this prime necessary of life.

Such a circumstance is sufficient to induce irregular habits; and I confess that, while I was enjoying many comforts close by, I could not but feel some remorse on reflecting that so many fellow-beings were unable to procure even a cup of pure water.

Surely, at a moderate outlay for a pump and filter, or some such means, this water-supply could be purified. I crave your assistance to obtain some *practical* information, whereby to realise my anticipation of relieving many deserving people from an evil at once unwholesome and of a degrading tendency.

LEONARD ROWE VALPY.

The Addison-road, Kensington.

AMPHIBIOUS CARRIAGES.

STR.—Amphibious vehicles were invented by Sir Samuel Bentham, in 1781. The first was constructed at Nighue Taghil, a fabric of Prince Demidoff's, and was used by Bentham at the opening of the Government of Perme.

Having the command of two battalions, stationed the one at Kiachta, on the frontiers of China, the other along the banks of the Irtysh, above 1,200 miles from each other, he constructed two carriages, of a more simple form than the first, to travel to and fro. In these, while posting, he crossed several rivers without any stoppage at the banks, the horses continuing their course across the river, swimming whenever they got out of their depth. And on his return from Siberia to Prince Potemkin's head quarters, at Jassy, his Highness ordered a corps of Chasseurs to be furnished with these amphibious carriages.

On the General's return to England, in 1794, he constructed a military baggage-waggon for the Duke of York, which his Royal Highness approved of, and exhibited on the Thames.

In 1805 the Emperor of Russia had a baggage-waggon constructed on the same principle at St. Petersburg, a model of which is mentioned in Dr. Granville's work, as deposited at the Admiralty there.

In 1830 Sir Samuel proposed to the Duke of Wellington that all military waggons should be amphibious. In most of these various amphibious vehicles several of his inventions were exhibited, such as the placing the plank diagonally, and forming the hull entirely of metal. Those made for the Duke of York were of tinned copper.*

Mr. Francis has the sole merit of corrugating the iron and of constructing an efficient apparatus for stamping it.

I am, &c.,

M. S. BENTHAM.

Proceedings of Institutions.

CARLISLE.—The annual general meeting of the members of the Church of England Religious and General Literary Association was held in the committee-room at the Athenæum, on Monday evening, the 18th ult., at eight o'clock. Among those present were—Hubert Rawson, Esq., of the Villa, Stanwix; Rev. W. Cockett (Upperby), Rev. James Tasker, Rev. J. McCartie (Scotby), R. Perring, Esq., Joseph Ferguson, Esq. (Lowther-street), Rev. Precentor Livingston, T. H. Redin, Esq., Wm. Carrick, Esq., Rev. W. Bell and Rev. J. Godding (High School), Rev. Minor-Canon Tireman, Rev. J. S. J. Watson (Stanwix), Mr. Fairlie, Mr. Heppell, Mr. Charters, Mr. Blamire, Mr. Geo. Harrington, Mr. F. Dickenson, Mr. E. G. Lloyd, Mr. J. B. Mullen, Mr. Malcolmson, Mr. Barnes (teacher), Mr. R. Wales, and Mr. Barnes, the secretary.—The CHAIRMAN (H. Rawson, Esq.), in opening the proceedings, said he felt sorry that the duties of chairman had not fallen into abler hands; that they had not done so was not for the want of application, but, unfortunately, those who had been applied to were prevented from attending. Application was first made to the Bishop of the diocese, who, in a note, stated he regretted that owing to an engagement at home on the evening of the 18th he could not have the pleasure of accepting the invitation. The Dean had also been applied to, and he (the chairman) felt sure they all knew that the Dean took a deep interest in this Society; and nothing but the severe domestic affliction under which he was labouring, and other engagements pressing upon him, as well as considerable indisposition, prevented him from attending. The duties, however, would be light, and he (the chairman) should make a very few remarks prior to calling upon the Secretary to read the report. He felt great interest in this Society. He had taken an active part in its establishment, and very well recollected its first meeting at the Fawcett Schools. Ever since then he had looked upon the Society with great interest, and considered it an extremely important one. He regretted that it had not hitherto made such rapid progress as he hoped to see it make; still, it had made great progress, and he thought that when they heard the report read they would unite with him in that opinion. He considered it highly important that the Church of England should have a society of this description connected with it, and that its principles should be fairly and fully adhered to; and that whilst they rejoiced to see any other and every other effort made to advance the progress of society, and to improve the morals of the young men rising amongst us, they ought to feel great interest in the Society which was connected with their own Church. Therefore he hoped that the

members present would communicate with others in making known its advantages, and so keep it up; that they would endeavour to augment its numbers; and, as far as possible, assist in working the Society and in carrying out its intentions. He believed the rules to be admirable. There were few wider spheres of usefulness than they had; they need not go abroad to do good, as they had the means within themselves, and if they did not bring out the results, it would be because they had themselves to blame. Looking at the Society since its commencement, they had great cause for thankfulness, and ought to rejoice that it was in the position it at present held. They would hear the various topics set forth in the report, and the remarks of the gentlemen who would move the resolutions. There was, however, one very gratifying feature in the Institution, and that was the increasing state of the library; and he might add that Mr. Head had promised another donation of books—a really valuable one; and, as part of it, they had the "Encyclopædia Britannica," in 27 volumes, in an adjoining room. Before he sat down he would say a word with regard to the financial report, which the Secretary would also read. There appeared a larger balance against the Society than last year, but they must not be discouraged on that account, as it arose from special causes. It had been thought desirable to increase the interest taken in the lectures, and, in order to do this, gentlemen had been brought from a distance, and the expenses had been very great. He felt sorry to say that the encouragement given was not sufficient to defray those expenses, a deficiency of between £20 and £30 being the result. Otherwise, he believed the ordinary expenses of the Society did not exceed the receipts, and that was a very gratifying feature in the report.—The SECRETARY then read the following report:—

"On this fifth anniversary of the Carlisle Church of England Religious and General Literary Association, the Council have the satisfaction of informing its members, as upon former anniversaries, that the progress of the Institution has been steady and certain, though perhaps not so rapid as might have been wished. The number of honorary members will be found to have slightly decreased; nevertheless there has been an increase in the gross number of subscribers.

"The course of lectures delivered during the past season have, by their high character, fully realised the promises of the Council to make additional efforts in this department of the Institution. Many gentlemen from a distance have given instructive and interesting lectures on various subjects in history, literature, and science; and the clergy and gentlemen of Carlisle have most readily lent their assistance in the amusement and instruction, not only of the members of the Society, but also of those strangers who kindly favoured the Society with their attendance.

"Notwithstanding the additional attraction offered, the Council have to regret the want of general support given to the lectures, by which they have been embarrassed with a debt of upwards of £30, in consequence of which the Council feel unable to enter into any expense on behalf of the lectures for the ensuing season; they will therefore be confined to those for which no expense is incurred. Under these circumstances, the Council propose to restore rule eight to its original form, giving subscribers the privilege of introducing friends to all lectures.

"It is also with great regret that the Council have to report that the state of the evening classes is anything but encouraging. The music class is the only one that seems to have real life, and the progress of this is not what it should be, owing to the difficulty of obtaining a teacher.

The Council would impress upon the younger members the desirableness of having classes in connection with the Society, especially as such great inducements are now being afforded by the Society of Arts (with which this association is in union) to members of Institutions to pass examinations in different branches of education.

"The Council propose, if a sufficient number of members will attend, to commence several classes during the ensuing winter season.

"The library has been much augmented, 127 volumes having been purchased during the past year.

"A public soirée was held in the month of November for the benefit of the library, by which, after paying all expenses, up-

* For a printed account of amphibious carriages, see *United Service Journal* for the year 1829, page 579, and various other publications.

wards of £16 was added to the funds of the Society. Thanks are due to the ladies who so kindly undertook the providing of trays, as well as to the Cathedral choir and military band, who were an important element in the amusement of the evening.

"The reading room continues well frequented. The following newspapers are taken in:—*The Times*, *Morning Herald*, *Daily News* and *Globe* daily; *The Press*, *Examiner*, *Illustrated London News* and *Carlisle Patriot* and *Journal* weekly. The Reviews and Magazines are—*The Edinburgh* and *Quarterly Reviews*, *Blackwood* and *The Churchman's Magazine*; and the following weekly and monthly publications—*Journal of the Society of Arts*, *Punch*, and *Athenæum* weekly; and *The Leisure Hour* and *Household Words* and *Narrative* monthly. Any donations, either to the library or reading-room would be most thankfully received.

"The Council beg to acknowledge with thanks the following donations:—John Nanson, Esq., *Church Missionary Intelligencer*, and *Christian Observer* monthly; Geo. Head Head, Esq., V.P., *The Warder* newspaper weekly; Wm. Brown, Esq., *The Bulwark* monthly; Mr. Sargent, *The Sentinel* weekly; Mr. Perring, *The Oxford University Herald* weekly; and to Mr. Head for an exceedingly valuable donation of books.

"The Council feel that it would be superfluous to make more than a passing allusion to the loss which this Institution shares with the whole diocese, that of its beloved and respected patron. It is with great satisfaction that the Council announce that his successor, the Hon. and Right Rev. the Lord Bishop of Carlisle, has kindly consented to occupy the same place of patron to the Institution.

"In conclusion the Council beg to represent that the only means by which this Society can be brought to occupy the full sphere of usefulness for which it was planned, is by the united and individual exertions of all its well-wishers: especially at the present time, there is a great need of a united effort for its support. As a Society of this description is a valuable ally to the Church, by supplying to its younger members sound religious instruction, as well as secular information and recreation, the Council earnestly hope that all the members, both clerical and lay, will exert themselves in disseminating the true principles and objects of this Society, and in obtaining additional subscribers, especially among young men."

By the account subjoined to the report, it appeared that the receipts had been £34 less than the expenditure. The Vice-chairman and the Council for the ensuing year were then elected. A lengthened discussion took place with reference to the propriety of altering some of the rules of the Society, and motions for that purpose were proposed but none of them were passed.

LEWES.—The following lectures have been delivered at the Mechanics' Institution during the spring session of 1856:—Jan. 10, "The Waldenses," by the Rev. T. Fisher; Jan. 17, "Female Character, as Delineated by English Poets," by Mrs. Balfour; Jan. 24, "Oxygen and Hydrogen" by Mr. John Banks; Feb. 7, "Moore's Melodies and Shakspeare's Songs," by Mr. Geo. Barker; Feb. 21, "Franklinic Electricity," by Mr. C. A. Wells; Feb. 28, "Longfellow's Excelsior," musical entertainment by Mr. Geo. Barker; Mar. 6, "An Evening with Thomas Hood," by Mr. W. Parsons; Mar. 20, "What is Chemistry," by H. W. Witte, M.C.S.; April 21, "The Trans-Caucasian Campaign," by Laurence Oliphant, Esq.; May 13, "Siege of Kars," by Dr. Sandwith; June 3, "The Eastern Question" by Viscount Pevensey. At the quarterly meeting, held May 21, the report of the committee was read, showing the affairs of the Institution to be in a very satisfactory state, the number of members on the 1st of May being 308, the highest number ever on the books. The financial statement was also satisfactory. After paying all the arrears for the extensive repairs done at the end of last year, and all the current expenses, there was a balance, which will be appropriated to the purchase of books.

MANCHESTER.—The inauguration of the Mechanics' Institution will take place on Tuesday, the 9th September. The doors will be open to the holders of season-tickets at two p.m., the visitors assembling in the great lecture hall; and at half-past two an organ voluntary will give note of preparation, for one or two sacred choruses will be sung, followed by the National Anthem. An open-

ing address will then be delivered by Oliver Heywood, Esq., president of the Institution; after which the president and the directors will accompany the invited guests through the various rooms, explaining their probable destination and uses. For the evening meeting the Theatre Royal will open its doors at half-past seven, and at eight o'clock the proceedings will commence; Oliver Heywood, Esq., presiding, and various distinguished friends of education and of the Institution addressing the meeting. To the other attractions of the exhibition, which now nearly fills the new building, will be added forthwith a very magnificent contribution of the Emperor of the French, consisting of some of the choicest productions of the far-famed imperial manufactories of Sèvres (porcelain), the Gobelins (tapestry and carpets), and Beauvais (embroidered fabrics), to the aggregate value of 109,097 francs, or about £4,400.

ROYSTON.—At the Institute, on Tuesday, 29th of July, the Rev. I. H. Gurney, rector of St. Mary's, Marylebone, delivered an interesting lecture on "Missionary Heroes." On Tuesday, 26th ult., Dr. Trevethan Spicer delivered a lecture on "Æsthetics." He treated the subject comprehensively, exposed the results of our defective methods of education, and held up to admiration the system of Æsthetic culture pursued by ancient Greece. On Wednesday, 27th ult., Dr. Spicer also delivered a lecture on "Architecture, from the Earliest to the Present Times." He spoke of the origin of the various styles, and in doing so showed the close connexion which exists between nature and art. The above lectures afforded much gratification to the members and friends of the Institute.

ADDERLEY-PARK (near Birmingham).—On Saturday the land recently appropriated by Mr. Adderley, M.P., in the neighbourhood of Saltley, as a "people's park," was, for the first time, thrown open for that purpose, when the occasion was celebrated by a dinner and other becoming festivities. At one o'clock the provisional committee of management assembled at the Market-hall, in Belmont-row, and, accompanied by some thousands of artisans, and headed by a band of music, proceeded to inaugurate the park. In the procession were Lord Lyttelton, Mr. Adderley, M.P., Mr. C. H. Bracebridge, Mr. Hodgson, the Mayor of Birmingham, Mr. J. Walsh, numerous members of the corporation of the borough, the Coleshill troop of Yeomanry, of which Mr. Adderley is the captain, and a number of gentlemen residing in the neighbourhood. The park, which is pleasantly situated contiguous to the Saltley Training College, and about two miles from the centre of Birmingham, was fitted up with capacious tents for dining, concert, dancing, &c. At the dinner Mr. Adderley, M.P., presided. Mr. Adderley explained that his sole object in giving the park was to bestow on the working-classes a healthy locality in which they and their families might enjoy the benefits of fresh air and exercise. The affairs of the park, he observed, were now managed by a committee of operatives, but so soon as a sufficient number of subscribers was obtained to defray the small amount of annual expenses which would be necessarily incurred, a committee from among the subscribers would be appointed, and he would then convey over the land in perpetuity upon a mere nominal rental. After dinner, the cricket-ground, the dancing-tent, and the concert afforded ample amusement for the people, who enjoyed a very agreeable afternoon, the greatest decorum having prevailed throughout.

Miscellanea.

THE LIVERPOOL FREE LENDING LIBRARIES.—The success which has attended the formation of the free lending libraries in Liverpool is quite unprecedented, and their increasing usefulness is becoming daily more and more apparent. At present

the issues average upwards of 4,500 volumes per week. The care which is taken of the books and the punctuality with which they are returned are remarkable; and although there have been upwards of 350,000 volumes lent since the commencement, only three or four books of trifling value have been really lost to the libraries. In the selection of books all tastes, as far as practicable, have been consulted; and the readers have now between 13,000 and 14,000 volumes to select from. The high class of reading which the statistics exhibit is most cheering, and the happiest results must necessarily flow from the establishment of such institutions.—*Liverpool Mercury*.

THE MARYLEBONE FREE LIBRARY.—The trustees of this Institution having reported, at a general meeting convened for the purpose, that although the society was able to meet its liabilities up to the end of the present year, it could not be carried on beyond that time for the want of sufficient annual subscriptions, and must therefore be closed;—some gentlemen hitherto unconnected with its management, and deeply regretting such a state of things, have formed themselves into a special committee, for the purpose, if possible, of averting that result, and continuing to the working classes and their children the intellectual advantages which they now possess. The reading rooms, which now contain 5,000 volumes, and are available to the public every day (Sunday excepted), from ten in the morning to ten at night, were opened on January 9, 1854; and from that date to July 31, 1856, 73,312 readers have attended, and 79,477 books have been issued. In addition to the reading room, a lending library, containing 1,000 volumes, established and conducted by working men themselves, is in full operation; 5,732 volumes have been taken out, none of which have been lost, nor has any case of wilful damage occurred. About £200 in addition to the present annual subscription, will be sufficient to prevent the closing of the Institution.

ELECTRO-CHEMICAL ENGRAVING.—M. Derincenzi, a French inventor, has spent some years in the development of an ingenious plan of producing relief printing plates by an electro-chemical process. The metal he employs is zinc, in thin sheets, which are grained with sifted sand, and the design is made upon them with lithographic ink and pen. When the design is finished, it is prepared as if for the lithographic press. For this purpose, the plate is plunged into a decoction of nut galls for a minute. It is washed in pure water, and gummed with a weak solution of gum-arabic. The plate is moistened with a sponge, the design touched with essence of turpentine, and a lithographic cylinder coated with a varnish rolled over the surface. This varnish covers exactly all the lines made by the designer. The varnish should have the following qualities:—1st, of not altering the design; 2nd, of adhering strongly to the plate; 3rd, of not being attacked by the chemical agents used to engrave it. The varnish known in England as *Brunswick Black*, mixed with oil of lavender, is preferable to all others. It is composed of asphaltic varnish, linseed oil boiled with litharge and turpentine. When the varnish is dry, the zinc plate is put in connection with a plate of copper, at a distance of one-fifth of an inch, and plunged into a solution of sulphate of zinc, marking fifteen degrees; thus a voltaic couple is formed, and the sulphuric acid dissolves all the uncovered parts of the zinc. More or less depth is given to the engraving, according to the nature of the design. Pencil drawings are generally engraved in four or five minutes, pen drawings in from seven to ten minutes. The sulphate of copper produces no alteration in the most delicate lines, and does not attack the varnish. This mode of engraving may be applied to any other process by which a design is reproduced. The drawing may be made upon paper, and transferred upon the plates. Impressions from lithographic stones, from copper, or steel, may be transferred. Graving tools may also be used as well upon the zinc as upon lithographic stones, for the purpose of producing a flat shade. This process is equally applicable to printing type. It is sufficient to have a page of a book transposed upon a plate of zinc to make a stereotype. The inventor asserts that his process will supplant the common one of stereotyping. By it, a page of a book may be transposed during printing, upon thin sheets of zinc, and from these, upon stouter sheets, for engraving, whenever a reprint of a published work is demanded.

THE EXPORT TRADE IN JOINERY.—The official statistics of the export trade in these articles show the following facts connected therewith. These goods are entered at value only, and do not include iron and zinc houses and stores, &c., and window glass. They comprise wooden house frames, fittings, joiners' work, &c., and in 1854, amounted in value to £87,562,

distributed to the following countries:—£1,240 to Turkey; £2,225 to the Western Coast of Africa (British and foreign); £248 to Buenos Ayres; £83,032 to Australia; £396 to the West India Islands and British Guiana; and £421 to other countries. The amount was not so large as in the previous year, when it reached £112,512. There was also shipped in 1854, wooden wares of various kinds, amounting in value to £101,279. If to this be added some 22,000,000 or 25,000,000 bricks shipped, of the value of £65,000, or thereabouts; £63,211 for cement; £60,000 for window glass; £366,488 for painters' colours; £66,000 for paper hangings; £31,000 for carts and waggons; and £178,000 for other carriages,—a total value is shown of upwards of a million sterling, of articles in which the building trade are concerned.

CULTIVATION OF COTTON IN ALGERIA.—The growth of cotton in Algeria forms the subject of a rather interesting report from Marshal Vaillant to the Emperor, which appeared in Friday's *Moniteur*. In this document the minister of war recognises the good effect of the decrees of the 16th of October, 1853, by which an annual prize of 20,000*fr.* was allotted, for five years, to the best cotton grower in the Franco-African colony; and for three years, commencing with 1854, the whole cotton produce of Algeria was ordered to be purchased by the state at a price fixed beforehand, and advantageous to the producer. In consequence of this encouragement, the growth of cotton has increased, and it has been proved not only that the plant flourishes in many districts of the colony, but that its quality is comparable to that of the finest produce of the United States. A prolongation of the advantages assured to the producer is suggested, and it has accordingly been decreed that the government will continue to purchase the whole of the Algerine cotton until the crop of 1858 inclusively. It may not be uninteresting to our manufacturers to watch the progress of this fresh field, which, judiciously nurtured by the French government, may, perhaps, ere very many years have passed, compete for their custom with the vast cotton grounds of the States. It is yet too soon to risk a prediction as to what Algeria may do in this way; but present appearances are favourable, and doubtless France will neglect no means of converting into a profitable colony a territory which has hitherto served but as an expensive training ground for her soldiers.

HOW MUCH IS A BUSHEL OF WHEAT?—The inconvenience attending the want of some uniform measure in the provincial corn markets of England may be illustrated in a single sentence. When our rural friend Giles disposes of his stuff in Newcastle-on-Tyne he knows that a bushel of wheat means 63*lb.*; but should business ever lead him to Gloucester, he finds that the bushel of wheat there means only 60*lb.* At Birmingham he would observe that the variation amounts to no more than a single pound, the Birmingham bushel being 62*lb.*; but, on the other hand, at Liverpool he will find to his cost that his bushel must contain 7*lb.* more than the bushel he has been accustomed to use in Newcastle—the Liverpool bushel of wheat is 70*lb.* Then, though there is only a single pound of difference between the Birmingham bushel of wheat and the Newcastle bushel, there is actually 7*lb.* of difference in the bushel of barley. At Newcastle this measure is 56*lb.*, whereas at Birmingham it is only 49*lb.*

CONTRIVANCE FOR MILKING COWS.—A machine is said to have been invented in America, by Mr. H. A. Reeves of New York State, for milking cows. The milking is done by means of a crank attached to a shaft, on which there are four elastic arms of steel, the ends of which are furnished with rollers. On one side of the ring within which the rollers move, there is an elastic pocket, into which the animal's teat is placed. The back of this pocket is stiff, so that when the rollers revolve they will come in contact with the front part of the pocket and press it with the teat against the back part. The teat thus pressed is relieved of its milk, which flows down through the pocket, and through the hollow case of the instrument into a tube, and thence into the milk pail. Its size is convenient, and its cost not great. The inventor thinks that cows may be milked much quicker by this contrivance than by hand. Neither the hand of the operator nor the teats of the cow are liable to be made sore, as they are when the pressure of the hand is continually applied. If desirable, the instrument may be made with two pockets, so as to milk two teats at a time.

GAS IN OMNIBUSES.—The *Independence Belge* states that the omnibuses and diligences in the neighbourhood of Lyons have adopted the use of portable gas, which is carried in a cylinder under the feet of the coachman, and communicated by means of a pipe with a lamp inside the vehicle.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette August 29th, 1856.]

- Dated 3rd May, 1856.*
 1052. Evan Thomas, Holywell-street, Millbank—Improvements in the construction of counting apparatus, for ascertaining and indicating the number of rotations made by shafts or spindles in various descriptions of machinery.
- Dated 5th June, 1856.*
 1344. Duncan Campbell Dallas, Islington—Improvements in chemical preparations applicable to the photographic and photogalvanographic processes.
- Dated 23rd July, 1856.*
 1748. Henry Doubleday, Coggeshall, Essex—An improvement in the manufacture of starch.
- Dated 30th July, 1856.*
 1802. Richard Archibald Brooman, 166, Fleet-street—Improvements in ladies' skirts or petticoats, and dress-improvers or bustles. (A communication.)
- Dated 2nd August, 1856.*
 1828. Richard Archibald Brooman, 166, Fleet-street—Improvements in the manufacture of artificial fuel. (A communication.)
1830. Josiah Rhodes, Holborn Brass Foundry, Nottingham—Improvements in machinery or apparatus for reducing turnips and other vegetable substances to a pulpy state.
- Dated 4th August, 1856.*
 1832. Josiah Harris, Dolgelly, Merioneth, N.W.—An apparatus for collecting and condensing smoke and gases generated in furnaces.
- Dated 7th August, 1856.*
 1861. Alexandre Théodore Nicolas Goll, 57, Rue de Brétagne, Paris—An improved button.
1863. Samuel King, Brighton—Improvements in spirit lamps.
1865. Charles Wright, 20 and 21, Green-street, Southwark—Improvements in the preparation of lubricating materials.
- Dated 8th August, 1856.*
 1867. Joseph Leese, junr., Manchester—Certain improvements in machinery used for printing calico and other fabrics.
1869. Thomas Austen, Waltham Abbey, Essex—A machine for ascertaining the propelling force of gunpowder.
1871. William Edward Newton, 66, Chancery-lane—Improvements in machinery for composing and distributing types. (A communication.)
1873. Diederich Fehrman, Liverpool—Improvements in lamps adapted for burning resin oil. (A communication.)
- Dated 9th August, 1856.*
 1875. William Webster, 22, Bunhill-row—An improved valve-cock. (A communication.)
1877. Emile Kopp, Paris—Improvements in the manufacture of gas.
1879. Eugene Ernest Amyot, Paris—Improvements in the preparation of pulp for paper, pasteboard, and other uses for which pulp is required.
1881. Archibald Lockhart Reid, Glasgow—Improvements in producing ornamental figures or devices on textile fabrics and other surfaces.
1883. George Anderson, 22, Queen's-road, Dalston—Improvements in the construction of taps or valves for regulating the passage of gas.
- Dated 11th August, 1856.*
 1885. John Cartland, Birmingham—A new or improved door spring.
1887. Richard Archibald Brooman, 166, Fleet-street—An improved fermenting agent. (A communication.)
- Dated 12th August, 1856.*
 1889. Armand Rieupayroux Janet, Perigueux, France—A certain apparatus for taking measure of coats.
1891. Josias Weaver Downing, Birmingham—Improvements in the manufacture of metallic and other wheels and pullies.
1893. John Hardaker, Leeds—Improvements in machinery or apparatus for stopping railway trains, which are also applicable for alarm signals generally.
- Dated 13th August, 1856.*
 1895. Richard Dugdale Kay, Accrington, Lancaster—Improvements in machinery or apparatus for washing, scouring, cleaning, preparing, dyeing, or finishing woven fabrics, yarns, or threads. (A communication.)
1897. Jean Baptiste Clara, 39, Rue de l'Echiquier, Paris—Certain improvements in producing and employing steam and the gaseous products of combustion for obtaining motive-power.
- Dated 14th August, 1856.*
 1899. Edward Hallen, Cornwall-road, Lambeth, and William Holland Kingston, Bandon, Ireland—Improved means for making signals on railways.
1901. John Knowles, Holcombe Brook, Lancashire, and William Clarke, Manchester—Certain improvements in looms for weaving.
1903. William Morgan, 48, Gloucester-terrace, Hyde-park—Improvements in the manufacture of guns and mortars.

1905. Peter Augustin Godefroy, 3, King's Mead-cottages, New North Road, Islington—An improved treatment of the matrix of rock quartz and all like substances, for the extraction of auriferous, argentiferous, and other metals contained therein.
- Dated 15th August, 1856.*
 1908. Henry Columbus Hurry, Wolverhampton—Improvements in railway crossings.
1910. Col. Stephen Szabo de Kis-Geresd, Widnes, Lancashire—Improvements in obtaining motive-power.
1912. Henry Dubs, Vulcan Foundry, Warrington, and Josiah Evans, Haydock—Improvements in effecting the consumption of smoke.
- Dated 16th August, 1856.*
 1914. William Hargreaves, Bradford—Improvements in Colliers combing machine, in combing wool, hair, cotton, silk, flax, and other fibrous substances.
1916. David Chalmers, Manchester—Improvements in looms for weaving.
1918. Alfred Hodgkinson, Springfield Bleach Works, Belfast—Improvements in bleaching, scouring, and cleansing plain and embroidered fabrics.
1920. Philippe Pierre Hoffmann, Strasbourg—An improved compound to be used for waterproofing fabrics, paper, leather, or other materials.
- Dated 18th August, 1856.*
 1922. Thomas C. Richardson, 101, Drury-lane—The process for the procuring and manufacturing the sulpho-saccharate of simarubine.
1924. William Tytherleigh, Birmingham—A new or improved manufacture of rollers or cylinders for printing fabrics.
1926. William Colborne Cambridge, Bristol—Improvements in the construction of portable railways.
1928. John Stopperton, Isle of Man—Improvements in propelling vessels.
1930. Andrew Peddie How, Mark-lane—Improvements in pumps.
- Dated 19th August, 1856.*
 1932. James Leach, William Turner, and John Tempest, Rochdale—Improvements in rollers, applicable to condensing and all other kinds of engines, for carding wool, cotton, and other fibrous materials.
1934. Pierre Noyer, 38, Gerrard-street, Soho—Winding up fusee watches and pocket chronometers, and setting the hands without key.
1936. Henry Burden, Troy, New York, U.S.—Improvements in machinery or apparatus for manufacturing shoes for horses, mules, and other animals.
1938. Henry Bessemer, Queen-street-place, New Cannon-street—Improvements in the manufacture of iron and steel.
1940. James Apperly, Dudbridge, Gloucestershire—Improved machinery for carding wool or other similar fibrous substances.
1942. Anthony Charles Vetter de Doggenfeld, Trinity-square, Brixton—Improved glass ornaments for ornamenting gardens, summer houses, dinner and other tables, and for other ornamental or decorative purposes.
- Dated 25th August, 1856.*
 1944. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in roller fulling mills. (A communication.)

WEEKLY LIST OF PATENTS SEALED.

- Sealed August 29th, 1856.*
 528. John Reading.
 531. Paul Rapsey Hodge.
 534. Ferdinand Kaselowsky.
 550. Charles Thomas Rosenberg.
 551. Martin Samuelson.
 555. Richard Dugdale Kay.
 591. Henri Pettipierre.
 594. George Spencer.
 612. Thomas Porter.
 661. Charles Frederick Parsons.
 662. Richard Archibald Brooman.
664. Peter Armand le Comte de Fontainemoreau.
 669. John Trueman.
 728. William Edward Newton.
 1201. Alexandre Henri Dufresne.
 1337. Alexandre Louis Gibon and André Frollich.
 1492. Alexander Keiller.
- Sealed September 2nd, 1856.*
 539. Adolphus Oppenheimer.
 554. Samuel Clegg and John Kay.
 556. William Billinton.

PATENTS ON WHICH THE THIRD YEAR'S STAMP DUTY HAS BEEN PAID.

- August 25th.*
 2001. Edward Patrick Gribbon.
- August 26th.*
 2000. Joseph Cundy.
 2002. Peter Armand le Comte de Fontainemoreau.
2029. John Tayler, James Griffiths, and Thomas Lees.
 2100. John Ward and Edward Cawley.
- August 27th.*
 2102. William Edward Newton.
- August 28th.*
 2004. John Henry Johnson.
 2060. Weston Grimshaw and Ellis Rowland.
- August 29th.*
 2008. Charles Goodyear.
 2009. Charles Goodyear.
 2010. Joseph Cundy.
- August 30th.*
 2013. William Edward Newton.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3871	Sept. 1.	Nail and Corn Trimmer	John Broad	Wolverhampton.