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## ILLUSTRATIONS.

Warwick Castle, from the West

A Terra-cotta Church: Platt Church, near Manchester.—Mr. Edmund Sharpe, Architect

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### Decorative and Art.

THE French Academy and the Institute are well known all over the world, but the National Library, as a seat of professorships, and an arena of lectures, is not. Nevertheless, it was within those vast and stately walls that, the other day, a controversy of high public interest took place, on the relations between the fine and the decorative arts, and the possibility of their union. This has always been a favourite object of French inquiry. Fifteen years ago, M. Beulé directed attention to it, and put himself upon the proof, historically, of his assertions. Van Eyck, he said, somewhat hyperbolically, was the discoverer of artistic ornament; Raffaele derived inspiration from the arabesques among the ruined baths of Titus; Poussin reproduced the Aldobandini marriage-symbols; and painters from every country have copied, with a frenzy of enthusiasm, the frescoes of Pompeii, and Ingres himself had drawn classic groups upon a vase destined only for the decoration of a servants' hall. We have seen how this principle, or sentiment and principle combined, has been acted upon, since exhibitions began in Europe. Often in barbarisms and grotesques,—as of Ethiopian slaves holding forth bronze lamps, piles of Cupids surrounding fountains of immodesty, and the various trash, in the same sense, of nineteenth-century competitions. So far, M. Beulé. The new French Department, representing his views, has just declared itself more broadly upon the point; it says,—we all admire the Greeks, yet we imitate, and do not study them. We copy their types, their costumes, their furniture, even their domestic utensils; and, after all, what is the result? The skin of the lion on the body of the ass! This is a French judgment, with the justice of which we have nothing to do. For the question, as propounded before the professors and students of the National Library, in the Quartier Latin, in Paris, is, whether Apelles and Zeuxis were not decorative painters, after all. There is more seriousness in the problem thus suggested, than, at a first glance, might appear. We will, at any rate, reflect the latest French idea,—of a master of the art and of its critics,—upon the subject. He said, in effect, "You are losing yourself upon

vast spaces of canvas, more wintry than winter; or upon athletic figures with well-arranged tunics, clinging to them; you are setting little notions in frames which you think worthy of Pompeii; you are playing with toys, and painting for children; and yet you think that decoration is not one of the arts! Now, through all this controversy, which the French Report revives, runs a principle, according to the doctrine of the "Library," to the effect that the art insisted upon shall be either "Mural" or "Monumental." "It is in the combination of these terms," writes a Parisian Commissioner, that the "Decorative" manifests itself. Here is the grand point, so to speak, of disunion. The Fine, historically, it is said, according to modern prejudices, have refused to associate themselves with the Decorative Arts. Well, it may not be easy to judge of results in these matters; but we have some land-marks, at any rate, by which to guide ourselves. The Greeks were masters of art and architecture, yet they dedicated their genius to decoration in a high degree. Their temples and porticoes blazed with colour; they did not study proportions only, but effects, artistically,—perhaps not so artistically,—also, and they enslaved a mathematical knowledge of beauty into their service. We recognise, in the teaching of M. Beulé, something like a principle. It abandons the idea of huge antique, colossal, and monotonous masses; of dreadful contrasts between terrifying light and overwhelming shade; between deep glooms and enamelled open spaces; but all this became familiar, after the Loggia of Raffaele and the Pompeian Chambers had been illustrated by learning and by art. The new discoveries were made by those who, in Sicily and Greece, preserved the purest classic traditions. It is not in the new sense propounded, for on that point the latest theories of "The Librarians" will not be accepted without a few "grains of salt." For example, a few years ago, the cry was raised that walls, capable of being painted, were wanted in France. Forthwith, an entire school of wall-painters presented themselves, and a reaction took place, favouring the painting of roofs. Now, all who have sojourned or travelled in France, Belgium, Holland, or Germany, will admit that, in the matter of artistic decoration for public buildings we are very far behind, if not in taste, at all events in enthusiasm, the general European idea. There is not a town-hall or a court of justice, a police office or public baths, in continental Europe but what has its allegory and its heroic, in crimson and gold. But this is only by the way. In antique times, the plafonds, or hollow roofs of edifices—such as we see now reproduced, in a manner, at Brussels and Amsterdam, were painted, not by artists, but by workmen. Some architectural ornaments ran about the cornices and enlivened the coffers; but an eternal blue tint prevailed, relieved only by golden stars, such as those which, since 1868, have disfigured the vaulted heights of Notre Dame, at Paris. To a later, though scarcely to a less barbarous, period, belong the decorative

masters, attempting to carry out the Sicyonian idea of substituting, for simple arabesque, on a blue ground and golden flowers, little figure groups, star clusters, discoveries which melted and lost themselves, as it were, in the spirit of the architecture; and a thousand thoughts of decorative genius, from floor to cupola, which provoked, perhaps, an equal number of controversies. The "Library" is of many opinions on this point. It says,—"A cupola should have no light"; it says, again,—"A cupola should have no shadow." And the masters of the Venetian school reply by asking,—"What has this to do with decoration relatively to the fine arts?" It is impossible to admit any of these prejudices,—we cannot call them theories,—in full. Otherwise, a deep injustice would be done to both the Byzantine and the earlier Italian artists who both wrought upon the idea, prettily expressed by the American poet when he said, "The beautiful should be the bride of the useful." Yet this is not exactly the purpose just now to be kept in view. The greatest of all artists have asked the question,—What is art, if not decorative? What did Julio Romano do except paint a roof at Mantua,—that is, as his masterpiece? In a limited sense, the same might be implied of Michelangelo and Raffaele. They had to illustrate the signs of the Zodiac, and, in that sense, what were they except decorative painters? The argument is ingenious, if not insulting; but it belongs to the artistic cynicism of the day,—a feeling, by the bye, which may be turned to good or to bad account, as we may please. And here a powerful protest interrupts us. M. Beulé says,—"Nearly all artists, when commissioned to paint a plafond,—the work, of all others, which the unfortunate Haydon most desired,—"is satisfied to do his work at home; to paint tranquilly in his studio; to imagine what his groups ought to be. He covers his canvas; he sees it nailed up; it may be the Apotheosis of Homer, copied from the Luxembourg; it may be magnificent enough; but it is not the work of a man who has stood upon stool or scaffold, beneath the vaults of Saint Jean de Lateran, old Fontainebleau, or the Palace of Justice at Rennes." Of course, when art is thus associated with decoration, the embarrassment of riches is obvious. The ancients, who had little, except their history and their mythology to fall back upon, did not encounter the same difficulties. Nor should we, who have, in addition, eight centuries of modern history, with all the legends of Judaism and Christianity, to work upon, or from. Socrates, they tell us, only wanted a workman, with a tunic and a suit of sandals, to make any amount of architecture out of. Still, the relation between decoration and art must be sought for, and found, between narrower limits than these. We may even be compelled to omit from our perspective, architecture and poetical painting. It is, indeed, the object of the inquiry, stimulated by so many exhibitions, to invite from down their supreme pinnacles the grandest ideals of art, and ask them to mingle and blend with the tastes and habits of ordinary

life. If it will be believed, there was, at one time, a desperate struggle against the bare notion of association of art with decoration. Shall it be said, exclaimed the Professor of Dresden, that this art, producing a new-born Christ of Corregio, so sublime, that by none can it be seen except by those who stand within the rays of the cradle, must be degraded to the uses of the furniture-maker and the Casino gilder? M. Beulé gave a sensible reply to this somewhat absurd question. He inquired whether there was any value in the decoration of churches and palaces? and whether this principle, of taste and beauty, might not descend through every pose and propriety of life? It is in snatches that we get the history of art, in a solitary column; in a lonely vase; just as a rich curtain indicates a luxurious interior, a single tree a forest, a spring a river. No doubt, if we seek for our ideas of art connected with decoration so far, they may be brought home to us. "Colour," insist these last authorities, "is essential to decoration; and nothing is more saddening than works which possess the deadness of sculpture, without its solidity." It may be questioned whether this comprehends the entire question. In the face of the South Kensington colourists are submitted the ochre of Attica and the red of Sinope. There were the two tints of an austere art practised, in its several ways, by Giotto and Masaccio, Michelangelo and Raffaele; yet they were painters, not decorators, in whose favour M. Beulé pleads. Less than in these can it be imagined that Veronese, Rubens, Romano, Guido, or Poussin sustains the same idea. It is only in decoration, from the French, that we snatch a thought across the borders of art, that we embroider an idea upon a suggestion. Such is the secret of the charm possessed by us in ancient tapestries, in chinaware and enamels of the Renaissance; in crystals and glass-work of the Middle Ages; in Byzantine mosaics; in the cashmeres of North-Western India; Chinese vases; Persian and Turkish carpets; and Greek and Albanian embroideries. It is half art and half decoration. It means, the Orientals say, an improvisation of use and art combined. The spirit of modern art adds, however, that the two principles are not merely reconcilable, but inseparable.

#### "ILLUSTRATED PAPERS ON CHURCH ARCHITECTURE."

THE second number of Mr. Sharpe's serial work under the above title\* continues the subject of Cistercian architecture, still in illustration of the general plan of its churches and conventual buildings, which is farther exemplified by a sheet of plans, on a small scale, of twenty-one Cistercian abbots or churches in France, England, Germany, and Spain. A special point which these plans (reduced from those which accompanied the author's lecture on the subject at the Institute of Architects in 1871) illustrate is the development of the eastern chapels upon a square east end, a simple form of which arrangement is exemplified in the plan of Abbey Dore, and a more complicated and extended development of it in those of Riddagshausen and Ebrach, in Germany. The arrangement of eastern chapels in what has been called the *chevet* form, about an apical east end, is, of course, both much more frequent, and, from the recent attention paid to French architecture in England, much more familiarised to most of us. The employment of chapels in connexion with a square east end gives to the exterior design at this point a peculiar aspect, illustrated by the views of the eastern terminations of the three abbots just referred to. In Abbey Dore the chancel chapels, which occur at the east side only of the chancel, and are marked off from the eastern aisle only by an arcade, are under the same roof-slope as the aisle; but in the two German buildings we have first the lean-to roof of the line of chapels surrounding the chancel on east, south, and north; above and within that the aisle walls, with their lean-to roof; and within that again the main centre compartment of the chancel rising above, with a gable in the usual form. The result is a kind of pyramidal composition, which is very marked and characteristic in its effect, more especially at Riddagshausen, the appearance of which, with its pyramidal grouping and plain pointed win-

dows, presents a kind of mingling of the picturesque and the practical, which is both unusual and impressive. The walls of the north and south chapels extend nearly as far from the centre line of the building as the transepts, against the east walls of which their roofs stop. The interior also, of which an admirable drawing from the author's own hand is lithographed, is of a noble completeness and simplicity of design, and the illustration thus afforded of this not much-known building is in itself enough to make this Number worth the attention of architectural students. The author refers to it as a phase of Cistercian architecture that has been little noticed, and which, in comparison with "the simpler plans of the earlier churches of Fontenay, Montbron, Fontaines, and Kirkstall, or with the description of the earlier church at Clervaux, built by St. Bernard himself, affords an idea of the rapid progress which Ritualism of this kind had made, even in the Cistercian order itself, during the last half of the twelfth century."

A point just touched upon by the author is the significance of the names of some of the principal Cistercian abbots, as indicating the motives for choosing the site, and other little suggestions in regard to their history. Thus, in relation to the Abbey of Brombach, we are told that the site was fixed upon on account of the abundance and excellence of the springs (*Brunnen*), of which "Brom," therefore, would seem to be an abbreviation, and "Brombach" to be literally, in English, "Spring-brook." Mr. Sharpe goes on to say, "that we have in this German example a complete parallel as regards the cause of the choice of its site, the derivation of its name, and the preservation of its buildings, to the corresponding examples of nearly contemporaneous date in France and England (*Fontenay and Fontaines*), is a fact of unusual interest, the importance of which will be more apparent when we come, hereafter, to compare the designs of their buildings and the details of their works." The contrast, one may add, between the carefulness about water-supply, and about sanitary conditions generally for prolonging life, and the placing of the buildings and the framing of the rules of the order, so as to cut off rigorously, as one would suppose, all that could make existence worth having, is very significant of the temper and spirit of a movement which it seems almost impossible to realize, in its actual facts, at the present day.

Mr. Sharpe, it seems, has, however, had an unexpected opportunity of realising it in the course of his archaeological explorations; and his account of this is so curious and unusual, and helps so much towards enabling us to fancy what life in these Cistercian buildings actually was, that we must extract the passage. It was when staying at Narbonne, in 1865, that the author, on consulting his Cistercian records, found a note of a monastery founded in 1145, under the name of "Pons frigidus" (again, it will be observed, a name referring to the nature of the water-supply), and having discovered in the Ordnance map the name of "Fontfroide" in the direction indicated, and learning that there were some ruins at that place, set off to pay it a visit.

Following the high road from Narbonne to La Grasse, which diverging from the Carasonne road, soon enters a barren valley between two low ranges of rocky hills. Arrived, after a drive of an hour and a half, at a point where a by-road to the left enters a pleasant green valley, watered by a small meandering stream, with sloping banks, growing steeper and higher as we advanced; the whole presenting the usual features of a true Cistercian valley. At the distance of about a mile and a half the valley makes a sharp turn, and in the narrow basin thus formed we suddenly came upon a group of grey buildings, of the original destination of which I could entertain no doubt. Whether they were occupied or not seemed to be doubtful, for the heavy double doors of the old gateway were closed, and not a sound came from the buildings themselves; a pretty loud summons on the closed doors, however, was shortly followed by the sound of approaching footsteps; the bars were withdrawn, and there stood before me a Cistercian monk, clad in the identical garments described in p. 12 of part II. of this work. On recovering from the startling effect produced upon me by this apparition, I inquired of the ghost-like figure whether I was right in supposing that this was the Abbey of Fontfroide, and whether, in that case, I might be allowed to see the buildings; the Cistercian—for it was a real monk that I saw before me—silently motioned

me to enter, and conducted me to the cloister, where he consigned me to the charge of another monk, who proved to be the *Hôtelier* (*Hospitalis, Hospitalarius*), the only monk, beside the Abbot, to whom the privilege of speech was allowed. It appears that a French land-owner, some years ago, purchased the ruins of this ancient convent, and refounded it for the use of such inmates of the Bernardine monasteries of the high Alps as were unable any longer, from failing health or increasing years, to sustain the rigours of the climate of those elevated regions.

"At the time of my visit there were eighteen or twenty monks in the convent; they had repaired the church and some of the conventual buildings, and contrived to raise on the land attached to the abbey sufficient to support life. They were evidently in the greatest state of poverty, and living in the complete realisation of that life of self-denial and severity contemplated by the founders of the order, and practised in the twelfth century. I enjoyed their simple hospitality for two days, and was permitted to visit and to draw the different buildings and the church when and as I pleased. It was a singular existence. Not a footfall was heard in the buildings, for the monks wore sandals; and it was somewhat startling, when in the cloisters or the chapter-house, you fancied yourself alone to find, on turning round, one of these voiceless Mediaeval, white-robed figures at your elbow. The only sound that disturbed the deep stillness of the place was that of the voices of the monks as they chanted, five times during the day, their orisons in the church."

Few real experiences could have seemed more like a dream, we should imagine. Fontfroide monastery possessed some peculiarities of plan, in the existence of an apse to one of the eastern chapels of each transept, as well as the principal apse of the chancel; and in having (which is very unusual) the conventual buildings on the north side of the church instead of on the south.

The subject of the process of construction, or of the thinking out of the construction, of Mediaeval buildings, receives some special illustration in the present number of Mr. Sharpe's work; he endeavours to give more emphasis to the idea which has been a good deal mooted lately (and which we rather believe he was the first to suggest), that the Mediaeval vaulted buildings were designed rather from above than from below, the arrangement of the vaulting and the plan of the upper portion immediately connected with it, being determined upon, and the substructure planned and designed with this end in view. The idea that the plan of the Mediaeval transeptal churches was really designed with a symbolical meaning, and did not arise merely from constructive influences (a theory which has been sometimes questioned) receives at least very strong confirmation from the sentence which the author quotes from a "Ritulum Cisterciense," published at Paris in 1721:—"Omnes ecclesie ordinis nostri in honorem beate Mariæ dedicatæ sunt, et fere in modum crucis constructæ, instar ecclesie Cisterciensis omnium matris"; and although we are not told positively the date to which this injunction is to be traced back, it certainly infers a tradition to the effect suggested. The manner in which this injunction is carried out in Cistercian churches affords, in the author's opinion, a convincing proof of this theory, that the whole building was designed with reference to the upper portion. If we examine the ground-plans of Cistercian churches, we find the cross form often very much broken up, and sometimes rendered little recognisable amid the greater or less complication of the ground-plan. But take the plan above the triforium and in reference to the upper walls only, and the symmetrical form of the Latin cross is apparent in almost every one of them. The block plans of fifteen out of the twenty-one churches illustrated, above the aisle-roofs, are given on Plate III., and all show a complete and symmetrical Latin cross, of not very differing proportions; a few only of the plans having the arms of the cross decidedly longer in comparison to the stem than the others. This way of contemplating the plan is at least rather new, and may suggest something as to the principles which governed the planning of the buildings. In its bearing upon the conclusion derived from it, however, it must not be pushed too far. We doubt whether it is possible really to arrive with certainty at a clear idea of the method in design of the Mediaeval architect, or the manner in which his problem suggested itself to his mind. But every suggestion on the subject is interest-

\* Illustrated Papers on Church Architecture. By Edmund Sharpe, M.A., F.R.I.B.A. No. 11, Cistercian Architecture. Part I. General Plan (continued). London and New York: E. & F. N. Spon.

ing. The present number of Mr. Sharpe's publication is, in short, a very good one, with much of what is of special interest in it. We regret again, however, to see drawings (the exterior views of Abbey Dore, and of the two German abbeys before referred to), which in execution and style are very inferior to what used always to be connected with Mr. Sharpe's name. The two interior views of Abbey Dore and Ridgahausen, which bear the author's own signature, afford a marked contrast to the exterior views.

#### HEALTHY HABITATIONS.\*

We are told upon the best authority that there occurs annually in this country upwards of 4 millions of cases of preventible sickness, and that 125,000 persons are prematurely cut off every year from a neglect of sanitary precautions. We are accustomed to consider that the house is to blame for this desperate state of things, and the case is certainly a strong one. We dress in the morning, and unsuspectingly don linen washed, dried, and ironed in the home of a laundress, the inmates of whose non-disinfected household have been stricken down with fever. Or the contagious matter may have been imported in the woollen interstices of a coat shapen and sewn by an out-working tailor whose seat-board was within the length of a rose-tree from some one whom fever is fast hailing to the silent land. We then breakfast, and if we escape enteric poison in the milk-jug it is entirely owing to the cleanly surroundings of the farm or dairy. The meal over, the post may bring us some infection in a newspaper, not one newly radiant from the press, but fresh from a friend whose house is under a fever-cloud, as was the case the other day, when the virus of scarlatina was conveyed from far Inverness to Exmouth. The Nemesis of uncleanness follows the innocent traveller, too, for "mino hostes of the inn" has perhaps permitted him to sleep in a bed last occupied by one who had just sickened or who had insufficiently recovered from some ailment. Even if the bed be with a approach, his slumber may not have given him corresponding relaxation, and draughts from the window or chimney may have induced a violent cold just when the greatest radiation from his skin prevailed, and he was powerless to avert it. Or the faint night breeze may be loaded with the invisible horrors of sewer-gas, which we all know very well is not an imaginary case.

Alas for the very poor, whom we shall have always with us, how do they suffer from domiliary uncleanness! They risk the eating of heap, unfit food, and the drinking of putrid water, we know; but they may also sleep upon beds made up of shredded rags which the dealers have collected from the marine stores and town dust-yards, innocent of cleansing or disinfection. Their wearing material is sometimes also just the shoddy made up of woollen rag flocks, from no one knows where, or they may have been purchased in the clothes-exchange of some rag-fair, and stored with germs only lacking an opportunity for mischief. A late outbreak of scarlatina in Hereford was traced to an old-clothes shop of this description. The furniture, also, of the poor classes is as likely as not purchased at auction, the sale of which, fresh from an infected house, was not arrested by the health officer, as was a late sale at Sydenham. Nor do the poor suffer alone; they perform community to those around them. During the present year at Chippenham, the pew-cleaner bore infection into a family pew. The saddest case I now of occurred also this year at Leeds, where typhus was carried with some infected articles to a pawnbroker's house, and with fatal results. Sanitarians must aim at improving the dwellings of the poor first of all, and the hands of the health inspectors ought to be strengthened, so that they may not only seek out, but promptly remove the engendering evils. As fast as a rocodile's egg is discovered an ichneumon should be let loose upon it. The medical officer of health and his inspectors are here the masters of the situation, or rather should be, not the magistrate and his Admirables of the Blue. Perhaps, however, some day the police will get tired of so much hunting up of cases for the Board school, and will supplement a fair share of that by furnishing a list of sanitary delinquencies to the proper authorities.

The first chief consideration when about to

erect a house is that of procuring a suitable site. In cities we have little choice except that of avoiding the neighbourhood of rank nuisances, such as slaughter-houses or gas-works. But it would, perhaps, be better to have built there the town residence rather than upon the more aristocratic site, since the foundations would have, it may be, to be built in trenches dug out of soft core. The labouring man suffers exactly in the same way, with this enhancement of evil, that in his case the house may be built up for the most part of old materials sold with the site, bricks sodden with the impurities of a century, and put together with mortar manufactured out of filth-saturated plaster. If the history of the 129,000 houses which have been erected during the last ten years in London were accurately known, some desperate revelations might be expected, and a great deal of metropolitan sickness accounted for. We ought, as has been said, to have a due knowledge of the amount of population in each street of every city within the land, and thus be able to detect unhealthy areas by separating the cases of zymotic diseases from other seizures. By this means the causes of filth diseases might be rooted out. The late Dr. Ross pointed out a street in St. Giles's district, London, in which there was in the course of each year a death in every house. In the neighbourhood of a square in the same district the mortality was only one in forty-one houses. Not density, and not overcrowding, however, caused the fatality in the street named, but defects of construction and arrangement in the houses, and, above all, dirt inconceivable.

I have heard it repeatedly remarked that the mansions of the good old times were invariably built upon exceptionally good spots, and with which no fault could be found. This may be true of most abbeys and priories, the sites of which were chosen by conclaves of wise men, but is not true if predicted of many old mansions; since I have frequently seen these, though commanding the finest views, abandoned to the owl, and new residences built at some distance, because of the healthiness of the fresh site. If our forefathers erred, however, occasionally, we err very frequently indeed. I could point out houses, dwelt in by patricians of our own land, the subsoil of which is continually—in flood-time or dry harvest—charged with the water of adjacent streams or lakes, the water having actually to be pumped out of the cellars at stated times. Many modern mansions have I met, too, which had been erected as if in the bottom of a saucer of water-bearing rocks, and which are never dry.

When houses are built upon alluvial soil and the subsoil water lies close to the surface, the advent of malarious diseases may be regarded as a certainty. Paroxysmal fevers have also been traced to the digging up of the wide gravel walks in the gardens of houses unprovided with a subsoil drainage. A great deal has lately been said of the fevers due to the disturbance of the soil in Rome, and many experiments upon the ground-air have been made at home and upon the Continent. It is necessary that such experiments be made, for a medical man has lately related how, in Carlisle, he suffered for nine weeks from a fever due to the disturbance of the soil in the neighbourhood for the purpose of levelling a building site and constructing a new road on the estate. The prevailing winds must also be taken into account, for where the house has been erected regardless of proximate fens or marshes, and there are many even in crowded England, the malarial factors are many and intense. And, apart from all this, houses are sometimes rendered unbearable through standing open-mouthed in the way of winds blown from dry sewage outfalls and supersaturated lands. I know a nobleman's house one wing of which is made most uncomfortable during certain winds by chemical works fully three miles distant. To a very serious degree, indeed, do dwellers in manufacturing cities and towns suffer when the noisome works are crowded in amongst the dwellings. These manufacturing vapours, during northerly and easterly winds especially, increase the local death-rates enormously. In Glasgow, when such vapours are condensed in fogs, the poorer districts, well open to their influence, have suffered a mortality of over 65 per 1,000, as against 19 to 35 per 1,000 in the better parts of the city at the same time. If there stands a sufficient reason for the weeding out of too closely congregated public-houses on the score of morality, a much greater necessity obtains for the better isolation of these unhealthy factories. And just as intramural burying-grounds have been banished to the suburbs, so should these

atmosphere-poisoning laboratories be gradually moved on to the outlying districts, even should a workmen's railway follow each of them.

It is customary with us to condemn the erection of a residence upon clayey soils, and to praise gravelly ones, but the choice is not always a happy one. True, drift gravels may be free from sinister imputations, and so may deep permeable gravels and deep sandy soils, such as our Bagshots; for there the chance is that the many escaping wastes from our dwellings may filter harmlessly away. But shallow gravels, and gravels of mere river origin, if these rest upon non-absorbent rocks, are to be suspected, inasmuch as the wastes which sink through them would anon reach the surface again. There is no natural surface-drainage possible in such cases, and the adjective well-poisoning is also here well applied. Now, upon a clay soil—and cholera flies a clay soil—it has been remarked, all this evil can be avoided; the foundations can be built upon concrete, and even the whole basement, whilst the wastes can be drawn without fear of soakages. As a rule, all house sites should be drained just as fields are drained, and below even the concreting.

The greatest care should therefore be exercised in making a proper choice of a site. If the district be very damp and marshy, the influence of miasmas cannot, I think, be averted by any amount of gum-tree or sunflower planting, however much moisture these may dispose of, and Dutch experiments on clean-water ditches to the contrary notwithstanding. They cannot be reckoned to counteract the evils of a subsoil continuously fed with impure liquids. It has been said that it is in the power of floriculture to conquer a whole district from deadly malaria by covering it with aromatic vegetation, and the inspired writer may have had this in his mind when he spoke of the desert blossoming as a rose; but powerful as is the peculiarity of certain flowering plants to produce ozone, on exposure to the sun's rays, they could have but little effect upon the surroundings of a house which can only be drained in the subsoil upon which it immediately rests.

A word or two as to the prospect and aspect of a house, and the necessity of this has been carefully elaborated by Professor Kerr. The prospect may be chosen with the view to making the most of the scenery. As regards aspect, the north is best allotted to the dining-room, as the twilight lasts longest there, and the staircases are also best when arranged upon this side of the house, being always cool. For the larder and dairy this aspect is unexceptionably good. The bedrooms will be found most comfortable when facing the north-east, as they get a pleasant morning sun, and are correspondingly cool at night. The east is suitable for the breakfast-room, morning, and library, but not for the drawing-room, because of the east winds and lack of afternoon sunshine. In the south-east may be placed the reception and best rooms, and for a sick room this aspect is not to be surpassed for fitness. The south is unsuited for the dining-room windows, except there be a good verandah; and as for the south-west, it is the worst aspect of all, and unpleasantly hot for bedrooms. Neither is the west to be purposely chosen for bedrooms, or even for a dining-room; it is suitable, however, for the smoking-room and for one side of the conservatory. The north-west is suitable for an evening-room if fitted with good blinds. To conclude, the east aspect is dry, but sometimes subject to bitter winds, which planting may obviate. The south-east is also dry and the winds mild, whilst the south is eminently sultry. The worst aspects are the south-west, with its frequent rains and boisterous winds; the west, with its rain and undue warmth; and the north, with its prevailing coldness.

It may be said that this care as to the aspect is mere sumptuousness, but not so. Even in the case of a labourer's cottage in the country, when there was the whole welkin to choose from, how often do we see a senseless choice made,—just as we see a senseless choice made with villas when aspect has been ruthlessly sacrificed for prospect's sake. The bed-rooms of the farm labourer's family may look out on the north or south-west, the kitchen faces the west, the dairy the south, and the privy, dust-midden, and piggy dung-pit are all clustered together where the sunbeams most do congregate, instead of the north. I have no practical remark to make upon this part of my theme, except to lament that intending investors do not oftener have recourse to models before they transmute their money into bricks and mortar. This precaution

\* By Mr. W. Eassie, C.E., delivered before the National Health Society, London, June 21, 1876; Mr. G. Godwin in the chair.

would cost little more than 1 per cent. on the outlay, and would save much heartburning. It is only what every good engineer does before he builds a bridge or constructs the simplest piece of machinery.

But to approach the house-closer, ceasing, however, the alternate harpings upon rich and poor residences, and choosing a building of moderate pretensions as a representative erection. As we near it we diagnose immediately and safely as to its healthy condition. If a damp one, it carries intemperance upon its face; its walls are dun-coloured in patches, due to dampness in the walls, a dampness which can be traced up outside at times to the first floor. The wet yards speak gushingly of water hidden below the pavement, and which cannot run its allotted course to the nearest brook. Once inside, we notice the damp basement floors which not the coal-wasting kitchen fire can recover to normal dryness; and in the more neglected rooms of the same floor it would seem as if they were intended for the production of newts and frogs. This is no overcharged picture, and is as bad many times when there is no cellar accommodation. The steepness of the house is more-over traceable elsewhere than in the ground-floor, in the cupboards of which, by the way, mouldiness grows upon the boots almost in a night's time; for in the library upstairs a mildew prevails, making limp the rare leather bindings; and the sense of mustiness is ever present, even in the bedrooms. It is as if a premium had been held out to shiverings, rheums, and agues. Only last week I visited an ancestral hall in Lincolnshire, and found out just such a state of things in a new wing which had been built about a year. The painters of a noted West-end firm were busy coating the walls with oil paint, and nearly as fast as the coats were put on the water rose up the walls and bulged out the paint into blisters, resembling those generated by a severe burn, and needing, in similar fashion, only the prick of a knife to liberate the water.

The state of things in this mansion was simply due to building the foundations without concrete underneath, and without any damp-course to intercept the rising wet. Had the site been drained, even, it would have been less of a blunder. Dampness in houses is often traceable to having laid the stone, tile, or brick paving upon the damp earth, one consequence of which may be that the floor will perhaps be lifted up out of its place by underside growths. Under every circumstance a bed of concrete should sublie all paving. Another cause of humidity in the house is due to the banking up of damp earth against the walls, and the non-provision of an area wall. The latter, like virtue, is indispensable, and the contractor who provides it when the designer of the house has omitted to specify it is worthy of the Order of the Pope's Silver Rose, if he has more than the "Golden" one. I would say to the builder—Put it in, even should you never get paid for it; for, depend upon it, if you do not the residence will always be cited against you as a badly built one, and your balance due will be escheated, which may cause you a sweating sickness in the bank parlour. I may also here add, that the moistness due to the nonplacement of a damp-proof course can alone be remedied by cutting out the wall and inserting one above ground-level line. No damp-proof paints can long withstand the enemy behind, which, when it ceases its legitimate march through the wall, only begins to crumble away at the wall material behind. True, it can be hidden from the eye by boarded linings, but the truth is only for a time.\*

#### YORKSHIRE ARCHITECTURAL SOCIETY.

On the 21st of June this society made an excursion to the neighbourhood of Guisbrough. Immediately on reaching Middlesbrough, the party set out for Acklam Church, where a short paper was read on the effigy of a lady, supposed to be Margaret Conyers, the wife of Sir Thomas Boyton, who died in 1402. Thence they proceeded to Marton Church, which was partially restored in 1843, under the superintendence of an amateur architect, Mr. J. B. Radd, of Tollerby Hall, Marton. Leaving this, the members, following the guidance of the Rev. C. Baillie, the rector, went to Marton Hall, the residence of Mr. H. W. F. Bolckow, M.P., who had kindly invited them to view the pictures there. The extensive collection contains masterpieces of

Landseer, Rosa Bonheur, and others. After spending nearly an hour at the Hall, the party was compelled to hurry away and get to Great Ayton as soon as possible. Here are two churches, one just finished from the designs of Mr. Ross, of Darlington, and the other a Norman fabric, which is only used occasionally. This was examined at length by the members. The next stopping-place was the small Norman Church at Newton. The font, of Transitional Norman work, from Ingleby, Arncliffe, memorial cross slabs, gable crosses, the Norman door in the north side, and especially a very old sculptured stone now built into an out-house adjoining the church, successively formed subjects of discussion. Upon reaching Guisbrough the members went into the church to see the remains of the beautiful Bruce tomb, the new font, and the fine old plate belonging to the church. They next went into the grounds of Admiral Chaloner to see the ruins of Guisbrough Priory. A short paper was read upon the salient points of the ruins, and then a rapid investigation took place.

#### CHAMBERS & CO'S ARCHIMEDEAN BRICK MACHINE, PHILADELPHIA.

THIS machine belongs to the class known as "tempered-clay machines," or "clay-tempering brick-making machines," and was invented by the junior member of the firm, Cyrus Chambers, junior.

The machine is constructed almost wholly of iron, and is made very strong and durable. It tempers its own clay with water, taking the clay as it comes from the bank, without any previous handling or preparation, and forms it into bricks, with well-defined corners, and smooth, straight surfaces, at the rate of from fifty to eighty per minute, or from twenty-five to thirty-five thousand per day of ten hours. The clay is taken direct from the bank and dumped at the side of a conical funnel that leads into the tempering case of the machine, and mixed, when necessary, with loam, sand, or coal, the requisite amount of water being added to temper the clay to the proper consistency; the mass is shovelled into the hopper and falls into the machine.

The tempering portion of the machine consists of a strong iron case, in which revolves a horizontal shaft, into which are set spirally, strong tempering knives, or blades of steel, so that, as they pass through the clay, they move it forward. The clay being stiff, and not having much water on it, is not liable to slip before the knives, but is cut through and through, and thoroughly mixed; so that by the time it reaches the small end of the tempering case it is ready to be formed into bricks. On the end of the tempering shaft is secured a conical screw, which revolves in a cast-iron conical case, the inside of which is ribbed, lengthwise, so as to prevent the clay from revolving in it, and is chilled, to prevent wearing. The screw being smooth and very hard, the clay slides on the screws, thus becoming, as it were, a nut; the screw revolving, and not being allowed to move backward, the clay must go forward. This operation further tempers the clay, and delivers it, in a solid, round column, to the forming die, which is of peculiar construction and form, and so designed as to reduce the round column to a rectangular one, whose breadth and thickness is the proper breadth and thickness for a brick, while at the same time it forces the clay into the corners of the square or rectangular, finishing part of the die, so that the angles of the bar of clay are made very solid and sharp, thus insuring perfectly square and well-defined corners to the bricks. This bar, as it issues from the die, is conducted by a plate to the cutting device, which consists of a thin blade of steel, secured to the periphery of a wheel, in the form of a spiral, the distance between the blades of which is that required for the length of a brick. This spiral knife runs perpendicularly, in an endless chain, which supports the bar of clay at one edge and bottom, so that the blade in passing through the clay is supported, thus insuring the angles unbroken, and the cutting smooth and square.

The distance between the spiral blades being uniform, the lengths of the brick are absolutely uniform, thus overcoming the great practical objection hitherto existing in the Chambers machine. The drawing cut of the spiral cuts the end of the bricks perfectly smooth, thus correcting another defect hitherto existing in this class of machines.

The speed of this spiral cutting blade is con-

trolled by the clay itself; hence no matter how irregular the flow of clay, the spiral runs in exact unison therewith; consequently, the absolute uniformity in the length of the bricks. This controlling of the speed of the spiral by the clay is so positive with that of the clay that it will run at any speed from one to one hundred bricks per minute, while the machine runs at full speed. These cutting and regulating features are the new parts, and overcome the old valid objection heretofore urged against this machine as now introduced.

The bricks, thus cut from the continuous bar, are separated and carried by another endless belt through the dusting or sanding machine, which consists of a chamber, into which is thrown, by centrifugal force or a blast of air or steam, a continuous cloud of dust or fine sand, which adheres to the surface of the bricks, rendering them much nicer to handle, preventing them from sticking together on the barrows, or in the hacks on the drying cars, and much improving them in colour when burnt.

All brick clays have more or fewer stones in them, and as it is impracticable to pick them all out, there is a necessity for making some provision for them, and this is done.

#### PROFESSIONAL PRACTICE IN AMERICA.

A CASE of professional practice has just come before the Chicago Chapter of the American Institute, and the *American Architect* gives the following particulars:—

Mr. Cochrane, one of the members of the Chapter, had been employed by the county to design the County Hospital, and after having furnished the necessary drawings and tracings for the work, was requested by two of the contractors in the work to supply them each a set of the general drawings in addition. This he did, charging them each \$200 for the drawings, a price which he thinks brought him no profit. In a report of the grand jury this charge was referred to as matter of reproach against Mr. Cochrane, who then laid the question before the Chapter, and requested their opinion whether the charge was an honourable one, and also whether there should be a limit to the amount of work which could be required from an architect. The questions were referred to a special committee, Messrs. Cleveland, Bauer, and Wight. The committee, reporting on the subject, quote the fourth article of the Constitution of the Institute, which, after saying that the condition of membership shall be the honourable practice of the profession, adds that "no member shall accept direct or indirect compensation for service rendered in the practice of his profession, other than the fees received from his client." They say that in this case Mr. Cochrane's client was the County Board, and that the mechanics to whom he furnished the drawings were only contractors, and they consider Mr. Cochrane's acceptance of money from them an indiscretion.

With regard to professional usage in such a case, the committee call attention to the fact that the former custom of architects in charging contractors for working-drawings furnished them has been out of date for at least fifteen years (we doubt if it has prevailed at the East within a much longer period), and that it is the custom among architects at this day to furnish all the drawings that are needed, and even extra ones, without added compensation; they holding that to receive money from a contractor is likely to create suspicion, and wishing to carefully preserve their independence. The question, whether a limit is to be set to the work required from architects, they defer to the Chapter for future consideration. The committee exonerate the transaction of any dishonourable character, in view of the entirely open and business-like manner in which the thing was done.

**Building Loans in Carlisle.**—The various building societies of the Carlisle district have issued their reports. In the course of the year the Fisher-street Society have advanced no less than 105,245*l.* in loans, being twice as much as they lent in 1874, and nearly three times as much as in 1873. The deposits in the same period were 155,271*l.* The number of members is 445. From the report of the Enterprise Permanent Benefit Building Society, we learn that 49,537*l.* have been advanced on loan during the year. The Carlisle and Cumberland, and other societies, have also done a much larger business than usual.

\* To be continued.

## THE PRINCE OF WALES'S LOAN EXHIBITION.

THE extensive collection of presents brought home by the Prince from India is now open to the inspection of the public in some of the galleries in connexion with the India Museum in Exhibition-road. The collection is a very rich and, considering the mode and time in which it has been got together, a very extensive one, and is sure to prove of much interest to general visitors, though there is nothing new in it for those who are acquainted with Indian ornamental art.

The collection includes a considerable amount of very rich, and some very beautiful, gold and silver work. A centre ornament of silver, of almost flower-like delicacy and fragility, in one of the cases, is an object of general admiration: a silver tea service, in much more massive style, has more of the traces of European feeling and taste, by which its designer has evidently been influenced. On the other hand, there is evidence in the collection that the silversmith's art has been progressive in India in modern times; for some silver articles labelled "seventeenth century" are in a much more commonplace and less fanciful style than the best of the contemporary work. The habit of bringing into use the natural products of the country, either in form or substance, as features of its art, is a good deal exemplified. A couple of egg-stands are made from ostriches' eggs, silver-mounted, cut across, and one portion made to open as a hinged lid. Cocoa-nuts are carved into elaborated open work with minute and delicate surface ornament, and mounted and hinged in the same fashion. Elephants in one form or another abound, in stone, in marble, in brass, in agate, &c.,—some of them tolerably realistic representations, others conventionalised into mere approximate memoranda of elephants. The spirit and force of many of these, which seem in most cases to be mere ornament, is remarkable.

The collection of weapons includes some of the most interesting and richest work in the exhibition; many of the scabbards, especially, being studies of rich and perfectly tasteful decoration. A state elephant howdah does more, perhaps, to realise the idea of the gorgeous effect of an Eastern *fâta* than even the graphic pencils of our newspaper illustrators can convey to us. An ivory palanquin, covered with fret ornament, attracts a good deal of attention; but is more remarkable, in our eyes, for richness and elaboration than for excellence or suitability of ornament in an artistic point of view. It suggests the idea that a palanquin must be a very comfortable and luxurious conveyance, for a person of small proportions. The delicate nature of the Indian physique is indicated in other things in the collection; among the arms, for instance, where we see big swords, some of them of formidable length and weight of blade, with a hilt which most average-sized Englishmen would find too small for their hand to wield with any comfort. Some good and characteristic specimens of ivory carving on a small scale are to be seen; a fair display of jewelry and personal ornaments of various kinds, and some rich gold lace and other stuffs. Hookahs are in great force,—hookahs of a size and magnificence to be marvelled at. Among other miscellaneous objects we came upon a couple of handles of carved ivory about 15 in. long, ending each in a hand (about quarter-size), with the fingers partially extended and bent downwards, and cut nearly to point at the end. These implements of Oriental civilisation are described on the card affixed as "ivory back-scratchers." Possibly that may be considered, at all events, an improvement on the best which the inhabitants of a certain portion of Great Britain used to be supposed to carry about with them, according to the delicate satire of a previous generation.

Though, as we observed, there is nothing particular to be learned in the way of Indian art from the Prince's collection, there are plenty of things that are worth looking at, and which appear to be considered so by a large crowd of visitors.

**Workmen at St. Paul's Cathedral.**—On the 23rd ult., Mr. Joseph Wilkinson (clerk of works), on his leaving St. Paul's Cathedral to undertake work in the country, was presented with a testimonial from the working staff of the fabric, consisting of an ivory rule with silver fittings, four volumes of "Cassell's Technical Educator," and an illuminated address in a carved oak frame.

## LAMBETH FAÏENCE.

THE collection of art pottery from Messrs. Doulton's works at Lambeth, on view at Messrs. Howell & James's, is a very gratifying reminder that there is really good and original work of this kind, both as regards design and execution, carried out among us at the present day. The collection, which is the second annual one that has been made, comprises two classes of work, faïence and stoneware. In the former work we are struck with the rich and harmonious character of the colouring, as well as the grace and originality of a good deal of the design, which occupies in character a mean position, for the most part, between the irregularity of the Japanese types of ornament and the too mechanical and exact symmetry which distinguishes a good deal of modern work of this kind, especially French. A small collection of recent French work occupies part of the same room in which the Lambeth work is collected, and a comparison of the two is not a bad lesson in the qualities which separate artistic effect and character from mere commonplace prettiness in this class of production. In the French work the colouring is far inferior in depth of tone to that of the Lambeth productions; it is hard and raw in comparison; the shape and surface of the vases are finished with a finical neatness which deprives them of richness of texture; gilding is occasionally applied,—a source of effect quite out of keeping with pottery art, and which always results in giving a more or less tawdry effect. In the Lambeth work there is little of attempt at rigid and precise symmetry; some of the designs are studiously devoid of symmetrical arrangement (and this is the character of some of the best among them), but in the main there is freedom without carelessness in the details of the designs, which are largely founded on floral types; and the forms of the various vases, plates, and other articles are in almost all cases good. One special merit, however, which all this ware possesses is, that there is an absence of that endeavor after excessive smoothness and hardness of line and finish which is not the natural character of earthenware, and the attainment of which, in reality, only means the obliterating of the real character of the material and of the design expressed in it. This portion of the collection includes, we may observe, four of those little alto-relievo subjects by Mr. Tinworth, four others of which are in the Royal Academy vestibule, and were noticed by us in some recent comments on the sculpture at the Academy.

It is in the "stoneware" productions that we think the Lambeth pottery is even more original and successful than in the faïence. A style has been adopted in this class of work which gives a great deal of richness and variety of surface, while preserving the true character of earthenware: the design showing, in fact, its process of manufacture almost on the face of it. Part of the work consists of designs etched by incising on the surface of the clay before it has received its final hardening, the incised lines being then filled with a greyish tint; this process gives the opportunity of drawing and designing in a very free style on the surface of a vase, without in any way transgressing the limits imposed by the nature of the material. The purely ornamental portions of the work are in tolerably sharp relief, the employment of serrated and ridged lines to mark out the principal sections of the design being a favourite device, producing a great deal of glitter and richness of surface. The colouring of this class of work is mostly exceedingly good, and, in its own way, quite equal, as an accessory to the decorative effect of a room, to much of the Japanese enamel which is so much sought after, and which, of course, is a more delicate and elaborate kind of production, but is in reality rather work for minute inspection than for decorative effect. The stoneware is chiefly exhibited in the form of vases for flowers, &c., of various sizes. Smaller articles are, however, made in it. We noticed in the collection such things as salt-cellars, and a small stoneware tea-service, not including, however, cups and saucers, for which it is considered the material is not light enough in bulk and appearance; but we can see no reason why it should not be used for such a purpose. There is rather a taste at present for excessive fragility in the furniture of the tea-tray; but an opposite taste may be consulted also.

The picture-work, as we may call it, in the collection, where large dishes are made the ground for paintings of heads, or of figure sub-

jects, is well executed; but we do not so much sympathise with this kind of design in such a material, which is ill-qualified to do justice to it. But the bulk of the collection is excellent work, and shows a spirit both in design and execution such as it is generally the custom to say is not existent in modern ornamental work at all, and which is certainly but rarely found.

## PUBLIC IMPROVEMENTS IN HAVRE.

AN attempt is being made to place the "Haven of Grace" in the position which its natural situation at the mouth of the metropolitan river of France has failed to secure for it,—that of an attractive watering-place. Trouville, Deauville, and other smaller towns along the coast have risen in popularity, and large sums have been lavished in improving them and rendering them attractive to visitors, but Havre has hitherto been left in the cold, and neglected. In a recent report, Consul Bernal states that the new law courts, on the Boulevard de Strasbourg, are approaching completion. "Whatever," he says, "may be the success of their internal arrangements and accommodation, they are, in an architectural point of view, a failure. Heavy in design and wanting in elevation, it is very strange that they should be the outcome of a public competition. The town of Havre is, however, in no way responsible for them, Rouen and its authorities being, under the system of departmental government, the arbiters in such matters."

New houses continue to be built, and, though trade is dull, and "hard times are come again," rents are high. One great improvement which is now projected is the formation of a marine boulevard, a plan of which has been submitted by the Mayor to the Town Council. The project comprises a boulevard along the sea-shore, about 2,100 yards in length and 27 yards wide, extending from the pier to the suburb of Sainte Adresse. The estimated cost is 280,000*l.* There is no doubt that such a work would place the claims of Havre in the front rank as a fashionable watering-place, and would soon repay the outlay in the increased popularity of the town.

An English Episcopal Church, opened last year, is one of the principal ornamental additions to the town, but a debt on the building has prevented its completion, and the spire has not been erected. The exterior of the edifice is as pretty as that of any English church on the Continent; but the internal accommodation is bad, and the best use is not made of the limited space available.

The population of Havre is only about 87,000, but the trade is of considerable importance. Indeed, it claims to be "the second commercial port of France." Among the steamers built and launched here in 1875, are two, built for the London, Brighton, and South Coast Railway. "This apparently singular circumstance," says Mr. Bernal, "is accounted for by the fact of the Western Railway Company of France being co-proprietors of this line of steamers, which ran between Dieppe and Newhaven." This fact only seems to partially account for the circumstance that steamers are built in France for an English company. It is, in our judgment, only another proof of the injury which is being done to English trade by the foreign competition which "strikes" in our own country do so much to foster, and this view is borne out by the following general remarks with which the report closes:—"With labouring classes who are sober (on the whole), thrifty, endowed with taste, accustomed to cheap amusements, of domestic habits, and comparatively free from the two-edged weapon of strikes, the French employers are in many respects better off than their British competitors. Were it possible for France to enjoy for ten years perfect political quiet, as well as the self-government which England possesses, she would attain to a fabulous height of national wealth and greatness."

**Death of a Great Ironmaster.**—Mr. James Baird, of Cambusdoon, the well-known millionaire and ironmaster, who recently gave 500,000*l.* to the Church of Scotland, died at his residence, Cambusdoon, near Ayr, on the 30th ult. It may be said that by the energy and enterprise of his firm the Scotch iron trade was created. Glasgow and the surrounding districts owe much of their prosperity to him and his brothers.

# BYZANTINE ARCHITECTURE AND THE ARCHITECTURE OF LA CHARENTE.

ARCHITECTURAL ASSOCIATION EXCURSION, 1875.

On the 13th ult. Mr. Edmund Sharpe lectured in the large hall of the Co-operative Institute, Castle-street East, Oxford-street, on "The Architecture of La Charente," giving some account of the buildings of the district visited by the Architectural Association during the 1875 excursion. The lecture was illustrated by a very large number of drawings specially prepared from the measured and other sketches of buildings, and their ornamentation, made during the excursion.

Mr. Sharpe said.—In the year of our Lord 540 there was to be seen rising in the eastern metropolis of the Roman Empire a building the like of which had till then never been seen. It was a Christian church, dedicated to Divine Wisdom, as the term literally interpreted signifies. A contemporaneous writer explains that this appellation was so used as expressing the chief attribute of the Godhead; but Rupertus, in his "De Divino Officio," cap. xv., lib. 10, interprets the term *ἡ ἀγία Σοφία* to mean what is understood by "The Word of God,"—i.e., the Son of God. In this sense the dedication would be equivalent to that of a Roman Catholic church in Manchester, which is denominated "The Church of the Holy Name," or to that of numerous English churches that are called St. Saviour's—Christ Church.

The church of St. Sophia, however, which Justinian began to build in Constantinople in the year 532, was not the first church of that name in the city; it was a reconstruction of an earlier church built by Constantine the Great under this title which was burnt, together with others, in the rebellion called *Nika* against Justinian in the early part of that century. But the restored church, like many restorations of the present day, was nothing like its predecessor. Of this we have the most convincing proof in two different accounts of the building written soon after its completion by two persons who were both of them eye-witnesses of its construction, the one being Procopius, the historian and panegyrist of Justinian, who wrote the history of his wars, his acts, and his buildings; and the other being an anonymous author, who, in all probability, had been employed in some capacity in the building itself,—the one in the description of an amateur, the other that of an architect; both, however, coincide in describing the building as unique, and unlike anything that had previously been constructed. The amateur describes the unusual character of this new and wonderful building in terms which, whilst they graphically portray the general effect of its novel and striking features on his senses and imagination, leave no room to doubt that the building which he thus saw and thus described was the actual building which still exists at Constantinople. The other writer, on the other hand, occupies himself with all the detail of the structure; he records the preparation and the arrival of the material, the purchase of the necessary site, and the contrivances and expedients that were resorted to for persuading or compelling unwilling sellers to cede their land and houses,—he even gives their names and callings; he deals with the practical difficulties of the construction,—the composition of the mortar, the working and preparation of the stone, the failure of the work, and the remedies provided, with all the technical knowledge of a professional man. Altogether, these two documents are, I think, without any exception, the most interesting records of the construction and completion of a building, by contemporaneous writers, that it was ever my fortune to examine; and when we reflect that they are the descriptions of one of the most remarkable and original buildings that the world ever produced, our interest in them becomes redoubled.

The question will naturally occur to many, how is it that two such important pieces of documentary evidence have not yet been published, and taken their place amongst the current architectural literature of the day? To this I have to reply, first, that the language in which they are written is that of the low Greek of the later empire, and that one of them, the professional account, is so full of technical terms as to render it almost untranslatable. The only person, I believe, who ever attempted to translate it into a modern language,—and there was no fitter person,—was Professor Willis, and he, I know, abandoned the attempt. At all events, I do not know of the existence of any translation of these works, except the Latin translation

which accompanies the only copy of them that I have ever seen or heard of; and this Latin translation gives all the technical terms, precisely in the words in which it finds them in the original Greek, without attempting to Latinise them.

In the next place I have not been able to find, or to hear of any but one copy of the last-named of these two accounts, although I have inquired and made diligent search for it in most of the public libraries of the Continent and in England. I do not doubt, however, that it must exist in some of the many works printed in the last century, which contain collections of such documents, and could be found, if one knew where to look for it, either in the British Museum or elsewhere. On the only copy to which I have access, I have long been at work, not hitherto with much industry or great success, but I hope, if my life be spared long enough, to complete, with such help as I can get, an English translation of this technical description of the construction of St. Sophia.

I refer to these documents now, however, for the purpose of establishing the fact, or rather a strong presumption of the fact, that St. Sophia's at Constantinople, was the first building, sacred or secular, which exhibited the Medieval dome, as distinguished from all previously-constructed domes, resting as it does, not upon a circular wall, or hollow cylinder, but on the summit of four arches springing from solid square piers. The internal evidence in support of this conclusion, which is afforded by the account of Procopius, to which I have already referred, is so strong that I will venture to read to you that part of my translation which refers to it. He commences with a general eulogium of the building, and says that had any Christian seen the design of the new building whilst the old one stood, he would have wished the latter destroyed in order to see it reconstructed in its present form. He then goes on to say:—

"The Emperor then, no regard being had to cost,\* devoted himself to the building, and collected all kinds of materials and workmen from every part of the world. Anthemius of Tralles, being the most skilful person in the science of mechanics,† not only of those of his own time, but of those who lived in a much earlier age, seconded the Emperor's zeal, designing the works for the artisans, and preparing the models of the future building.‡ With him was associated another mechanician named Isidorus, a Milesian by birth, a man of general intelligence, and one well suited to the purposes of the Emperor Justinian. And herein was the distinctive favour of God towards the Emperor apparent, in having previously provided for him agents who should be most serviceable to him in the execution of the work. Nor is the prudence of the Emperor the less to be admired, namely, in his having selected for matters of the greatest moment the men who, of all others, were the best fitted for their task.

The church accordingly presents (he continues) a spectacle of the greatest beauty; to those who behold it, indeed, wonderful; but to those who hear of it, altogether incredible. For, raising its summit towards heaven, and riding as a ship at anchor above the other buildings, it towers over the whole city; adorning the latter not only as one of her own buildings, but as rising out of her, and presenting an eminence from which the whole city may be seen, as in a mirror, at a single glance. Its breadth and its length are so suitably adjusted that, although very long and exceedingly broad, it will, nevertheless, not be found to be out of proportion. It is, indeed, pre-eminent for its indescribable beauty, for it is alike remarkable in both its majestic size and the harmony of its admeasurement; there is nothing either superfluous or deficient about it. It is wonderfully replete with light and the splendour of the sun; you would say that the place was not lighted from without by the sun, but that the effulgence arose from within, such is the abundance of light that is poured around this temple."

We must remember that the whole of the dome, and, indeed, all the vaults, were covered by Justinian with inlaid gold, and that the light that was admitted through the thirty-six windows that pierced the lower part of the dome, reflected from this golden surface, would no doubt produce that amount of effulgence and the very effect that is here described.

\* ἀπορρίπτων χρημάτων ἀπάντων.

† ἐπὶ σοφίᾳ τῇ καλομένῃ μηχανικῇ λογιώτατος.

‡ τοῖς τεκτονικοῖς τὰ ἔργα ῥυθμίζων, τῶν τε γινουμένων προδιασκευάζων τὰ ἐνδάλματα.

He then goes on to describe more particularly the design, and I must beg you,—bearing in mind that this is the description of an amateur and not of an architect,—to follow this description on the plan which is behind me, and which presents the nearest approach, so far as I am able to form an opinion, of the Church of St. Sophia as it existed when completed by the architects, Anthemius of Tralles, and Isidorus of Miletus; it is taken from one prepared by M. Texier, which is in the library of the Royal Institute of British Architects, and has been compared with those given by Salzenberg and others, all parts having been struck out that appear to belong to a later date; it is drawn, as all the plans that are shown on the walls here to-night are drawn, to the scale of 3 ft. to the inch; the elevations and sections being to the scale of 1 ft. 6 in. to the inch; and it is one of the advantages of a meeting like the present, and of a room such as the one in which we are assembled, that the true relative proportions of different buildings can be exhibited and understood at a glance,—all being drawn to the same scale,—without any fear of exceeding the limits of the space available for the purpose. With such an object and for such an occasion, with an intelligent audience of technical men met together for purposes of mutual study, the necessary inducement is, moreover, offered for the sacrifice of the time and trouble which is necessary in the preparation of diagrams of such large dimensions. This plan of St. Sophia has been kindly prepared for me by Mr. Quilter; and is drawn, like all the others in this room, to the scale of 3 ft. to the inch on twenty-two sheets of imperial cartridge, 2 ft. 6 in. by 1 ft. 10 in.

Procopius, then, thus proceeds to describe this building in language which I have ventured to translate in the following manner. You must imagine yourselves, in following him, to be placed in the inside of the building; he commences with the east end:—

"Now the front of the temple, which faces the east, where the sacred rites to God are performed, is constructed in the following manner: the building rises from the ground, not erected in a straight line, but being by degrees contracted from the sides and receding in the middle\* in the form that those skilled in such matters call a semi-cylinder;† this portion of the work rises to an abrupt height and terminates in the fourth part of a sphere." (It is impossible that a more accurate and concise description of the eastern apse, covered with its concha or semi-dome, as it exists in St. Sophia at the present day, and as shown on this plan, could be given by one ignorant of the proper technical terms in which to describe it.) "And, above, on the parts adjoining this portion of the building, is raised a certain structure of a crescental form,‡ which excites astonishment on account of its exceeding beauty, but fear on account of the apparent insecurity of its construction; for it does not appear to rest upon any solid support, but to be suspended aloft to the peril of those who happen to be there. Nevertheless, it is, on the contrary, based upon a safe foundation." (The larger apse, with its semi-dome of crescental form, abutting against the eastern crossing arch.) "On each side of the above buildings, and on the floor, are columns disposed, not in a straight line, but assembled so as to turn towards one another in the form of a semicircle, and above these again is suspended a crescent-shaped structure."

Having thus described the eastern portion of the church, he turns to the west:—"On the side over against the eastern side rises the wall in which are the entrances, and on each stand columns arranged in a semicircle, and supporting a structure altogether similar to that already described."

He next describes the central portion:—"In the middle of the temple are fixed four masses, made by the hand, which are called piers, two on the north side and two on the south side, opposite and equal to one another, having, moreover, between them four columns on each side. These piers are constructed of very large stones, carefully selected and skilfully fitted together by stonemasons. They rise to a great height, and appear to the beholder to be abrupt rocks."

"Upon these piers rest four arches forming four sides, the summits of which, descending together upon the tops of the piers, are fixed there. Each arch thus adjoins its neighbour, the rest of the building rising to an abrupt height."

\* ἐκ τῶν πλαγίων ὑπεσταλμένη καταβραχὺ, καὶ κατὰ τὰ μέσα ὑποχωροῦσα.

† ἡμικύλινδρον.

‡ μηννοειδές.

Of these arches two are erected in open space those, namely, which are on the east and west sides, the rest have a wall below them and small columns. Upon the arches is raised a building of circular form, on which at daybreak the sun first shines. It surpasses, in my belief, everything in the whole world. It is important, however," he says, "that in describing this part of the building I should be neither verbose nor obscure. The four arches being united upon the four sides of a square, the intermediate spaces consist of four triangles, and the boundary-line of each of these triangles is formed by the approach of the arches to one another, coming down to a sharp angle below, but expanding as it rises upwards, until it finishes above in a circular line, which bounds the triangle on this side, and forms the other angles there."

It is impossible to conceive or to write a simpler or a truer description of the Byzantine pendentive than that which is contained in the few lines I have just read; and had I told you that it was written by Mr. Penrose in description of the numerous examples that we saw last year in La Charente, instead of by Procopius, the historian of Justinian, in the middle of the sixth century, it would have caused no surprise to those friends who took part in that excursion, but would have been accepted by them as a very faithful and scholarlike description of a peculiar feature,—the pendentive,—that was constantly before their eyes in the course of that tour.

"And upon this circular wall rises an immense spherical dome,\* which presents an admirable appearance, for it does not appear to rest upon a firm structure, in consequence of the lightness of the work, but rather to hang by a golden chain from heaven, and thus to cover the place.

I have only a few words to add to my quotation, descriptive of the perplexed state of mind in which this novel kind of building left this astonished observer when he had completed his examination of it.

"Now, all these things, thus adapted to one another in a marvellous manner to this height, some being carried by others; and deriving their support only from those parts which are nearest them, form a harmonious whole of perfectly unique character (?).† Nor do they permit the eye of the beholder to dwell upon any particular object too long; but each in turn attracts and easily fixes attention upon itself; the sight is thus kept in perpetual motion, and the spectator is entirely unable to determine which object of all that he sees pleases him most; but looking about him on all sides, his mind intent, and his eyebrows contracted, he is unable to comprehend the nature of the work, but goes away, wondering at his inability to understand the sight. These things then are so."\*

He then goes on to describe the other parts of the building. But the extract I have read establishes, I think, two points very clearly; first, that the building Procopius describes is that of which this diagram is the ground-plan; and secondly, that this was the first building of its kind that existed when he wrote. The plan of the Church of St. Sophia, at Constantinople, thus became the typical plan of the Greek Church, and remained so throughout the whole of the Mediæval Periods up to the present day; just as the Basilican plan of old St. Peter's at Rome remained and still remains that of the Latin Church, also up to the present day,—the very last example of that Eastern typical plan, of which it is a very becoming and faithful transcript, being a design which is on the walls of the Academy this year, for a Greek Church to be built at Notting-hill by Mr. John Oldrid Scott.

Modern Byzantine churches of a more extravagant and pretentious character, but based on the same typical design, have been constructed also at Paris and at Geneva.

Now, I do not propose on the present occasion to carry this matter further, or to trace the course of Byzantine architecture from the time of Justinian downwards; although I may attempt to do this at some future time, or, in any case, with the help of the *incertus auctor*, to whom I have referred, to give some account of the actual rebuilding of St. Sophia; of the difficulties that were met with in its construction; of the manner in which they were overcome; and of the successful completion and decoration of the whole work. Any one who wishes, however, to enter into this interesting question, and to work out for himself

the history of Byzantine architecture, will find great assistance in his inquiries from the following works that have been published on the subject:—First, the work of Mons. Salzenberg, on "The Early Christian Monuments of Constantinople," which was very ably epitomised and reviewed by Mr. C. C. Nelson, in the *Transactions of the Royal Institute of British Architects*, in 1855. Next, the admirable work of M. Charles Texier on "Byzantine architecture," edited and given to the world by his friend and collaborateur, Mr. Poppellwell Pullan. Thirdly, an interesting volume of M. Couchaud, on "The Churches of Greece." And last, though not least, the marvellously interesting work of Signor Rosati, the architect employed by the late Sultan Medjid in the restoration of St. Sophia, containing perspective views of every part of the building, inside and outside, in coloured lithography.

Before, however, we quit the East in order to observe the first appearance of this Byzantine strain in the churches of the West, let me once more call your attention to the chief characteristic feature in St. Sophia, the one, in fact, which ruled and determined the plan not only of St. Sophia, but of all those Eastern churches of which we have any knowledge,—I mean the large central dome or cupola, balanced on the top of four circular arches, which rested again on four enormous square piers. This vast hemisphere, 107 ft. in diameter, is the predominant idea of the design, to which all the other parts of the plan are subordinate. It rises out of and above them; it is round this great central dome-covered space that the other parts of the building are grouped so as to form in plan pretty nearly the figure of a square; it is in reality a parallelogram of which the length from east to west is somewhat greater than that from north to south. And this is, in fact, the plan of almost all the Eastern churches built after the construction of St. Sophia.

Now, if we contrast this plan with that of the great original Basilican churches of St. Peter, St. John Lateran, St. Mary Maggiore, and St. Paul's without the walls, with their elongated naves, and long range of columns and arches in double rows on each side, and their flat wooden roofs, we shall be struck with the great difference that existed in Christendom between the type of the early architecture of the church of the East and that of the West.

During the next 500 years of the Christian Era we find few traces of the influence of Byzantine art in the churches of the West. At Ravenna we have, it is true, several churches, the ornamentation of which is of Byzantine character, but with one exception their plans are those of the Latin church: and that exception, San Vitale, although covered with a dome of very singular construction, is of octagonal form, and not therefore in accordance with that of the Greek Church. It is not, indeed, until the close of the first thousand years of the Christian Era that we meet with a church in Western Christendom the design of which reminds us of the plan of St. Sophia and of these early buildings of the Eastern Church.

In the Church of St. Mark, at Venice, we recognise at a glance the same great typical feature which distinguishes St. Sophia's, namely, the large central dome carried by four circular arches resting on four square piers. We see not only that, but four additional domes of nearly equal size and weight grouped round the central dome; and we thus see realised in the plan of a Western church, for the first time, so far as I know, the true form of the Greek cross, consisting of four limbs or arms of equal length, height, dimensions, and importance, differing in this respect from all Eastern churches with which I am acquainted.

St. Mark's has been so materially changed by work of later date, inside and outside, that we cannot form a correct idea of its primitive appearance or of the ornamentation with which it was clothed; but we have no difficulty in determining the primitive ground-plan, and of stripping it of all additional work of later date. The diagram behind me presents that ground plan in what I believe to be its original condition.

It is obvious that we have here the same great principle of construction that characterises St. Sophia. It is true that whereas the central dome of St. Sophia is 107 ft. in diameter, that of St. Mark is only 41 ft., but to make up in some sort for this, we have the four other great domes of the nave, transepts, and choir, altogether giving a total domical surface nearly twice as great as that of St. Sophia.

The 160 drawings on the walls are the enlarged diagrams of the same number of sketches, selected by me from the total number of 662 drawings that were made by the twenty working men of the party who accompanied me to La Charente. They are typical examples of the architecture of the department, which, I may explain, very nearly corresponds in its limits with the ancient province of "Angoumois." The department contains upwards of 500 churches, of which no less than 432 owe their chief character, if not their origin, to the church builders of the twelfth century; there are some few of probably earlier date, but very few that show any later date. Church building, in fact, seems to have been begun and to have been carried on in Angoumois during that century with a fervour and in a manner to which there are few parallels in Christendom, but which completely died out there at the close of that century.

We find, as we might expect, the repetition of the same main features throughout the whole of these churches, marked, however, by a distinctive originality of treatment, according as the church was a large or a small one,—a cathedral, a conventual, or a parish church,—which renders their study one of peculiar interest.

To attempt to give a detailed account of each of the churches that we visited during this excursion of fourteen days, within the limit of time that is at our disposal this evening, is quite out of the question. What I therefore propose to do is, first, to point out the chief characteristics of this remarkable phase of the architecture of Europe of the Transitional period, and afterwards to pass rapidly in review the drawings on the walls that best illustrate these chief points of interest, indicating, at the same time, the most remarkable of the buildings that we visited.

The first feature to be noticed is the dome; its existence over the central portion of the church or crossing, where the church was a cross church, is almost invariable; but its extensive use as a covering for the several compartments of the nave, where it occurs as a substitute for the Romanesque barrel vault of the middle and South of France, and for the quadripartite vault of the north, is much more remarkable. That it was an importation from the neighbouring province of Perigord there is little doubt. It does not appear, however, to have been thus used before the commencement of the twelfth century. In some few of the earlier examples its section is semicircular, and its form that of a hemisphere; but in by far the greater number its section shows the pointed form. With the exception of this modification it remained unaltered from its first introduction to its final disappearance at the close of the century; nor was its use extended beyond the limits of these western provinces, or turned there to any other account than has already been noticed; it was found, in fact, entirely unsuited to the new ideas in art that then began to prevail; its finite form had nothing in common with the aspiring features and vertical tendencies of Gothic work.

The experiment had been tried and had failed. The appearance, however, of this Eastern feature in buildings which, in all other respects, are thoroughly Western in character, has a singular and striking effect to those who see the interior of an Angoumois church for the first time. As regards the exterior, it does not appear that these domes were ever visible outside. They were covered with a timber roof, which stopped against the west gable, on which its traces, wherever the gable has not been destroyed, are always visible. There are numerous illustrations on the walls of these series of domical vaults over the nave which I shall point out by and by. Before, however, I leave this feature, I must explain that its employment as a covering of the crossing in this Department appears to be earlier than its use as a vault to the nave. Moreover, in the nave the spandrel between the arches and the dome is filled with a pendentive, whilst over the crossing we often find this space filled with a squinch, which appears in this country to be the earlier form of the two.

\* The next feature to be considered, one that is in immediate connexion with the last, and one that constitutes one of the leading characteristics of the architecture of the district, is the manner in which these central domes were covered, for of course it would never have entered into the heads of these Mediæval artists to leave this plain hemisphere to remain exposed in its crude nakedness, looking like a baker's oven in the North of England, or like a close kiln in the South of France. They covered

\* *Θολός* is the word used here *τρολλός* by the Auctor Incertus.

† *Μίαν ἁρμονίαν.*

‡ *Ἐκπριπριστήν.*

it in a seemly manner with a central tower, crowned, usually, with a conical spire of remarkable character; and, although by far the greater number of these towers are destroyed, a sufficient number of them remain to enable us to judge of their general character and effect. One of the best examples of which drawings are exhibited is that of the tower and spire of Trois Palis, the low conical spire of which consists of a series of stones resembling scales, somewhat difficult to describe. Another characteristic of this country is the manner in which the west fronts were designed. The chief ornamentation of the exterior was lavished upon them; they were usually divided into three compartments vertically, and into four or more horizontally, including the gable. The ground story generally shows three large arches, the central one containing the principal doorway. The second story usually carries an arcade of many small arches, the whole of the capitals of the small shafts being richly ornamented with figures and foliage. But there is one feature that is often met with in these west fronts that gives them a meaning, a significance, and an importance that add immensely to the interest with which we regard them as works of art. It has often been remarked that in several of the west fronts of this district is to be seen the figure of a knight on horseback, with accessories about it of a peculiar kind. The existence of this feature in the churches of Chateaufort, Ruffec, Aubeterre, and Civray has often been noticed, and variously explained; it remained for the Abbé Michon, who has published a very interesting account of the churches of this country, to assign to this feature its full significance. He asserts that this effigy represents the knight or baron who founded or constructed the church, and he finds in the prostrate figure before his horse's feet at Chateaufort the symbols of his feudality, and in the standing female before his horse's head the representation of his wife. I have no doubt whatever that this interpretation is the right one; but I am prepared to carry the proof that these west fronts,—the last works of the completed church,—had this monumental character; for where this effigy is wanting we have other proof that this was their true designation. We have, for example, at Chalais, the representation of a half-opened tomb, with female mourners in front of it,—a probable indication that the burial of the founder, who may have died before the church was finished, is thereby indicated; and at St. Arnaud we have, as I believe, the actual sepulchre of the founder himself, inserted, after its completion, in the west wall of the church, under the left-hand arch of the ground story, with an ornamental arcade on its front; we have also at Villognon and at Montbronn monumental slabs, in the former case existing in the west, and in the latter case removed to the wall of the south transept, when the west front was restored in later times; and at Chillac a monumental-coped slab, resting on the seat of the left-hand arch of the ground story. Regarding, then, these west fronts as the last work and the memorial of the founder of the church, we have no difficulty in accounting for their ornamental treatment and their pretentious character, and can readily understand the clerical wisdom which induced those who controlled the execution of these works to prescribe that the memorial of the benefactor who constructed the church should find its place in the part of the building which was the last to be constructed.

But perhaps the most remarkable characteristic of the architecture of this province is the extraordinary richness of its ornamentation. This ornamentation is of two kinds, that which represents figures of men, animals, and birds, and figures of a mixture of all three; and that which represents foliage. The former is altogether more or less of a barbaresque, the latter of an extremely rich and pure character. It is, of course, not difficult to imagine and to attribute meaning of a deeper interest than meets the eye at a first glance at these "*chapiteaux historiques*," as the French call them; but I confess that I do not think it is at all necessary to search the Scriptures for the interpretation of the scenes we find sculptured in these works. They seem to me to be the natural representations of the scenes of ordinary life with which the inhabitants of those countries were at that time generally occupied: scenes of battle and strife, scenes of the chase, and struggles with the beasts and animals with which the country abounded. Here and there an allusion to some Biblical text may be detected, but they are rare

cases. Mr. Sharpe concluded by rapidly passing in review a few of the chief buildings represented in the magnificent series of drawings on the walls, and expressed his great obligations to many gentlemen who had given up much time and labour to produce them.

Mr. Sharpe interpolated with his paper some supplementary comments, in the course of which he combated the notion that the pendentive was an abstruse or mysterious piece of construction. He coincided with the view of the late Mr. J. V. Papworth when he said that there was very little thrust on a dome unless it was loaded; indeed, a dome was very nearly self-supporting. But there was very considerable lateral thrust on the arches which supported the dome, and this had to be provided for. Even so great an authority as Sir Gilbert Scott had theorised about the dome, and had stated that the four pendentives were merely four segments of a larger dome; but this was the result of accident, and not of design. In reference to St. Front at Perigueux, which was almost a copy of St. Mark's at Venice, and was one of the earliest Byzantine domical buildings in France, Mr. Sharpe referred with regret to the fact that it had been "restored," the full significance of which term was not realised by Englishmen, loudly as English restorations were sometimes condemned. A French restoration frequently meant what had been done at St. Front, which had been absolutely pulled down and rebuilt, professedly in the same style, and no doubt with a greater or less degree of approximation to the original composition. The drollery of the situation was that although in France no buildings were eligible for "restoration" until they were old and interesting enough to be classed as "*monuments historiques*," the very process of "restoration" destroyed their history, and robbed them of all their interest. In reference to the two hundred drawings on the walls, Mr. Sharpe said that they had been enlarged from the same number of sketches selected by him from the 662 drawings, large and small, made by the excursionists. The whole of these drawings were the result of only fourteen days' work of from fourteen to sixteen gentlemen, although the preparation of the enlarged diagrams for the lecture had occupied a period of nine months. The ground plans of the buildings visited had been made by Messrs. Quilter, Paice, and Haynes; Mr. Kersey had groped amongst the roofs and taken the measurements, which had been chronicled and delineated by Mr. Garrett. The west fronts were the work of Mr. Arthur Hill. Mr. Waddington's pen-and-ink sketches were as remarkable for their excellence as for the rapidity of their execution. Mr. Penrose had made some graphic pencil sketches, while Mr. Spiers had made a beautiful series of water-colour drawings of the buildings visited. Mr. Burgess some time ago described the Association's excursion as a "scramble"; Mr. Sharpe only wished that such "scrambles" could become more general amongst young architects.

Professor Donaldson, in moving a vote of thanks to Mr. Sharpe, said that in his interesting account of the Church of St. Sophia, at Constantinople, he had given the poetry of Procopius, but not the prose, inasmuch as he had omitted to state that the dome fell three times. In fact, the present dome really consisted of two domes struck from different centres. The love with which Mr. Sharpe pursued his studies in architecture was only equalled by his public-spirited desire to further the welfare of young architects.

Mr. F. O. Penrose, in seconding the motion, bore testimony to the fact that the success of the Association's annual excursions was mainly due to the untiring energy, admirable foresight, and good management of Mr. Sharpe. He (Mr. Penrose) coincided in the expression of regret that by the so-called method of "restoration" in vogue in France pages of history were continually being lost which could never be replaced.

Mr. Phené Spiers, in supporting the motion, expressed the opinion that the dome of St. Sophia's was a purely Classic dome, and was not the same as the Mediaeval dome.

Mr. Roger Smith also supported the vote of thanks, remarking that Mr. Sharpe had in some sense, but in a different sphere, filled the void occasioned by the death of the late Professor Willis. The systematic manner in which he grouped his illustrations for purposes of comparison was a point well worth noting and remembering by others.

The motion having been put to the meeting and enthusiastically carried,

Mr. Sharpe, in reply, expressed his acknowledgment of the kind manner in which his efforts had been referred to by Professor Donaldson, Mr. Penrose, and Mr. Roger Smith,—all of them gentlemen whose commendation was exceedingly valuable. He thought that Mr. Spiers had slightly misunderstood him, for a dome was a dome, and was neither distinctively Classical nor distinctively Mediaeval.

The meeting then broke up.

## GENERAL BUILDING REGULATIONS FOR THE UNITED KINGDOM.

BY MR. J. HONEYMAN.\*

THAT I may fully utilise the time at my disposal, I shall, without preliminary remarks, plunge at once into my subject. My object is to show, first, that it is expedient that the regulations affecting buildings in all parts of the kingdom should be assimilated and made the subject of one Act of general application; and, secondly, to indicate the proper scope of such a measure. It will be convenient still further to subdivide my subject thus:—Under the first division I shall show (1) that the existing state of matters is unsatisfactory; and (2) that the defective and unsatisfactory character of the present system can only be remedied by the operation of a general Act; and under the second main division I shall direct your attention (1) to the class of subjects which alone should be dealt with in a Building Act; and (2) to the machinery by which its provisions should be enforced.

First, then, as to the existing state of matters: I shall only devote a few sentences to this part of my subject, and, indeed, I refer to it chiefly for the benefit of our metropolitan brethren who are in a great measure exempt from evils which afflict us less fortunate provincials. The special feature of legislation affecting buildings as it stands is this: that every borough throughout the country is allowed to devise its own bye-laws. Most of the large cities have done so, as well as innumerable insignificant boroughs, and their various local codes have received the sanction of the State, either in accordance with the provisions of the Public Health Acts or by special Acts of Parliament. Now this diversity of laws regarding matters which must ever be essentially the same in all parts of the country is obviously a mistake, and cannot fail to be a source of inconvenience. Moreover, where special Acts are obtained, an additional element of mischief is introduced; because in such cases corporations invariably reserve power to make bye-laws for themselves, and the community may be subjected not merely to bad laws, but to still worse and more harassing, because variable, bye-laws.

Addressing such an audience, I need not pause to illustrate this, but hasten on to show—secondly—what perhaps may not be quite so obvious, that relief from these and other evils of the present system must be sought in the operation of a well-devised general Building Act.

A variety of considerations have of late forced this conviction upon me, especially this, that there seems to be in the minds of civic rulers a sort of unaccountable, but distinctly pronounced, jealousy of the outside public, and a disinclination to be guided by, or even to listen to, any professional men, except their own officials, which makes it hopeless to expect that any local Act shall embody the collective wisdom even of the locality for which it is intended, much less that of the country. Now, in most cases, the collective wisdom of the Town Council and their architect is wholly inadequate, and the only way to concentrate the intelligence of those best qualified to deal with the subject, whether lay or professional, is to give the measure a central character. In this endeavour past experience would hardly warrant us to expect much encouragement or assistance from provincial authorities. The initiative must certainly be taken by others, and by none can this be done with more hope of ultimate success than by the architectural profession throughout the country, through the instrumentality of the Institute.

The failure of corporations in dealing with the subject in times past is manifest; and it is worthy of remark that whereas the London Building Act, which is the oldest, is still the best, the most recent attempts at legislation seem to be the worst. Nor is the reason of this

\* Read at the General Conference of Architects, as already mentioned. See p. 807, ante for discussion which followed.

far to seek: in framing the Metropolitan Building Act the highest professional talent was called into requisition, and the experiences gathered from many previous attempts at legislation were utilised; but, in framing local bye-laws the highest talent is apparently not desired, and is, in point of fact, unattainable. As a rule the only advice a corporation will consent to take is that of their own paid official, whose interests must be more or less affected by any legislation, and who, therefore, cannot be an entirely suitable adviser, even if he approach the subject free from those prejudices which in course of time naturally spring up in the comparatively isolated sphere of official duty. Let it not be imagined that I wish to throw discredit on borough surveyors, or in any way to imply that those in the large cities of the kingdom at least are not men of ability and integrity. I have the highest respect for those I know, have experienced much courtesy and consideration from those with whom I come most in contact, and bear ill-will to none. My object is simply to bring out clearly their comparative insufficiency as advisers in a case of this kind. However disinterested, however able, they comprise after all but a fraction of the profession, and "in the multitude of counsellors there is wisdom." Let us then endeavour to bring the wisdom of the many to bear on the subject, and unite in obtaining for the general good a wise and moderate measure.

I can hardly pass on to the second division of my subject without, in justification of my strictures on local legislation, making at least a very hurried reference to some of its recent results. Let us, for example, glance at some of the bye-laws newly promulgated by the Corporation of Birmingham. By these it is enacted that the builder must furnish not merely "detail plans and sections" showing the position and form of everything, and therefore, I presume, elevations, but also a copy of the specification, which with the plans "shall be retained by and belong to the Council." Again, "the borough surveyor shall determine the position, thickness, and situation" (sic) of division walls to prevent the spread of fire, and whether a new building requires such division or not. He shall also determine when a building must have a layer of concrete or other hard material, "of such thickness as he shall prescribe, spread underneath the floor-line." He shall determine the height of chimneys, their dimensions, and the materials to be used in their construction; also how drains are to be ventilated and how trapped. He must also design the means of egress and ventilation for every building "intended or adapted" for the reception of more than 200 persons. He is also, among other things too numerous to recapitulate, to approve of the plans and specifications of the urinals which every public-house keeper is required to erect, and he is to use his discretion in regard to a great many other things. Now, in view of such provisions as these, it must naturally occur to a stranger to ask if there are any architects in Birmingham at all? We know that there are able men in Birmingham; but apparently the Corporation and their advisers have thoroughly satisfied themselves that their architects are such a set of imbeciles as to be utterly unfit to be trusted with the most ordinary details of their professional work.

Of course it must not be forgotten that in all large towns the greater portion of the dwelling-houses are erected by speculative builders, without the aid or supervision of architects, and it is probably the necessity of dealing with such cases effectively which leads the authorities to seek somewhat arbitrary powers; but it is, I conceive, quite possible to define clearly what is required, and highly inexpedient to leave much to the discretion of officials, or practically to supply speculative or disreputable builders with architects at the public expense.

But both the laws and the administration of them are at present utterly inefficient; and even when corporations have it all their own way, they seem, with their present staff of officials, to be incompetent to exercise the power they possess. I shall just offer one illustration of this. In the important town of Greenock, which is blessed with a dean of guild court, a master of works, and bye-laws of its own devising, prescribing, among other things, the lodging of very complete working plans, and their appropriation by the authorities, a building has just been completed in which every sound principle of arrangement and construction, so far as these bear on the safety of the lieges, seems by a most perverse ingenuity to have been set at defiance. The

building is about 145 ft. long. The street-floor is occupied by shops, of which there are eleven, and three floors above these are occupied as dwelling-houses, the access to which is by galleries extending along the back wall. There are in all about thirty separate houses, and the only communication between the three upper floors and the street is by one confined stair ascending from a passage fully 100 ft. from one end of the building. The galleries are formed by simply allowing the joisting of each floor to pass through the back wall, and project to the required width; and to complete the picture, the whole area of ground behind is covered with buildings one story high, part being occupied as a hall, and the rest as saloons in connexion with the shops. The steps of the stair are stone; but they are actually supported and enclosed by lath-and-plaster partitions. There may be some brick partitions in the building above the first floor,—I believe there is one; but I must say that, on the occasion of my visit, none of those I sounded were brick. Now let it be supposed that a fire occurs in the cabinet-maker's shop, which is about the centre of the building; if the stair stood long enough the families nearest it might possibly escape, but the case of half the families would be utterly hopeless. The first burst of flame would destroy the wooden galleries, all connexion with the only staircase would be cut off, and they could neither get down nor up. The latter consideration certainly is not of much consequence, as the front wall has no parapet, and the building is much higher than those adjoining at either end. On the other hand, if the fire happened to occur in the shop immediately below the wood-supported stairs, the cremation of those thirty families would be a matter of absolute certainty. The arrangement is monstrous, even if the staircase and galleries were fireproof; what shall we say of it as it is, or of those who, with the full details before them, can sanction such an erection?

Perhaps in this connexion I should allude to a bye-law to which municipal bodies seem to attach much importance,—I refer to the law by which they secure copies of all plans which they approve. I do so for the purpose of stating a few facts regarding its working, showing what a great and useless burden it is upon the community, and not because it is a special grievance to our profession. I am satisfied that if it could be shown to be of any practical utility we,—I shall certainly say for myself, I,—would not object to it. We have ourselves to blame if we are not properly remunerated for any extra work it causes us; and it is not as a professional man, but as a member of the community, that I protest against it. The law is simply indefensible, and besides necessitating a vast amount of useless labour and expense, it undoubtedly subjects many architects to gross injustice. In illustration of the first of these results the following facts may be interesting:—

In the city of Glasgow alone, excluding the suburbs entirely, in the course of the year ending September 1, 1875, 657 sets of drawings (besides plans of new streets), were made for and retained by the Corporation. Each set comprises block plan and working plans, elevations, and sections, with all dimensions figured complete; and assuming that on an average five sheets are sufficient for these, we have this pleasing result, that the community are annually saddled with the expense of preparing 3,285 sheets of carefully prepared architectural drawings for no earthly purpose of utility,—“rubbish heaps,” in short,—where embryo city architects perchance may grope, and the mere custody of which entails an annually increasing expenditure.

But while, in large cities, there is not much likelihood of any unfair use being made of these drawings, the case, under the present system, is widely different in small boroughs. There the architect, who supplies a complete set of his working drawings, in terms of this bye-law, is entirely at the mercy of the borough surveyor; or the man who is variously styled surveyor, town architect, inspector, or master of works, who gets possession of the plans, and practically does what he likes with them,—a most disagreeable state of matters, and likely to give the surveyor a most unfair advantage over, it may be, a rival practitioner.

I must now refer to an objection to a general Act which will naturally occur. It may be thought that building regulations suitable for one part of the country could not very well be enforced in another without numerous modifications to suit peculiarities of local practice; but the force of this objection depends entirely upon

the scope of the Act. The object of the legislation we desire, and the only excuse for it, is to secure in the interest of the community certain desiderata not necessarily affected by locality, but the attainment of which must be made paramount alike to local prejudice, ignorance, or indifference; and this leads me to the second division of my subject,—the consideration of what can and ought to be embraced in a general Building Act.

I. The distinctive character of every regulation which is admissible must be that it has reference to something which is absolutely necessary for the public safety in whatever way that may be affected by the concentration of men in large communities. Such regulations, it is obvious, should be as applicable, and as obligatory, in one part of the country as in another. Admittedly, it is no easy matter to determine what these are. It would be a hopeless task for any single individual to attempt to do so, and hence the peculiar fitness of such a meeting as this taking up the subject, and such definite proposals as I venture to make will, I trust, not merely incite others to criticise, but also to contribute towards the elucidation of what is best.

It may help to clear our way if I commence here by pointing out some things which ought not to be included in a general Act. In this category I place all regulations relating to the laying out of land for building purposes, the width of streets, the formation and maintenance of streets and sewers, the prevention or removal of nuisances, the prevention of overcrowding, and other analogous details of local management. These and all purely sanitary regulations not affected by construction must, necessarily be excluded from a general Building Act, and be left in the hands of the different corporations or local authorities, rural or urban as the case may be, and their respective superintendents or masters of works, or sanitary inspectors, to be dealt with by special bye-laws as at present, under the provisions of the Public Health Act. In such matters uniformity of practice is neither possible nor desirable. For example, the corporation of Birmingham has decided that no street is to be less than 50 ft. wide, and no one outside of Birmingham has any cause to complain of this; but such a restriction in a general Building Act would be simply preposterous, because other boroughs may with equal authority fix upon 60 ft., or 40 ft., or 30 ft., as their minimum; and, in point of fact, the width of every street should be determined by accidental local circumstances; for instance, it should have a distinct relation to its aspect, as well as to its length, and a narrower street would be admissible in London than in Aberdeen.

I cannot, in the time allotted to me, illustrate this further, but trust it is unnecessary to do so. It must be evident to every one that in framing a general measure we cannot be too careful to steer clear of the quicksands which have proved so troublesome in the course of provincial municipal legislation—the accumulations of unnecessary details; the references to matters purely local, it may be temporary, expediency; restrictions of doubtful utility; and the ambiguity or latitude of interpretation which justifies officials in at one time approving and at another refusing to sanction the very same thing. Besides, it must never be forgotten that the less the building trade or any other trade is interfered with by a paternal Government the better. Undue interference discourages invention, diminishes proper responsibility and self-reliance, and is in every way inimical to those principles of sound political economy to the recognition and application of which our country owes its pre-eminence among the nations. We must therefore see to it that any new legislation on this subject is not of a reactionary or restrictive character, but rather that it is adapted to foster ingenuity and every beneficial innovation which our advancing science may suggest.

Keeping such limitations in view, I shall now attempt to sketch the outlines of a suitable measure; and here it will save time and make my treatment of this part of the subject intelligible if I say at the outset that I take the Metropolitan Building Act as the frame—the backbone of the new Act; and as you are all familiar with it, or at least may easily refer to it, I shall not recite the various sections which I approve of—that is, the great majority of them—nor such as I accept with very slight modifications. These must be held as read, and I shall thus be free to deal with additions and alterations only; and in the meantime I shall lay my proposals before you without note or comment.

1. A suitable title might be the Boroughs Building Act, or Boroughs General Building Act.

2. In any borough with a population of less than 6,000, the adoption of this Act should be optional, but the council would not be authorised to enforce any different regulations.

3. The limits of boroughs for the purposes of this Act should be extended; thus, in boroughs with less than 100,000 inhabitants, the limit would be extended to half a mile at all points beyond the borough boundary; and in boroughs with upwards of 100,000 inhabitants the limit would extend one mile beyond the borough boundary; while in certain exceptional cases, such as London, Manchester, Glasgow, and other cities of first importance, the area would extend still further, and be specially defined by the Act.

4. In all cases a block plan and block section, showing the relation of the proposed building to the street and to adjoining properties, and the relative positions and levels of the drains and sewer, should be lodged with and retained by the corporation. All other plans lodged and approved should be signed by the surveyor and returned.

5. No buildings should be exempt from the operation of the Act.

6. Sections C. to CIV. of the Local Management Act, relating to paving and draining of private courts, formation of vaults under streets, occupation of underground rooms, &c., should be incorporated in the new Act.

7. Sections CXXI. to CXXIII. of the same Act, regarding hoardings, should, with some alterations, be adopted.

8. Section CCIV. of the same Act, prohibiting the erection of buildings over sewers, &c., would also be useful.

9. It should be enacted that in certain circumstances when a building is to be erected on formed ground the entire area should be covered with asphalt, concrete, or some other impervious material.

10. Regulations for the construction of scaffolds, stands, and other temporary erections should be added.

11. The regulations affecting stone buildings must be amplified, to meet the requirements of localities where building with stone is the rule, and with brick the exception.

12. Before commencing any new work, building owners should, whether they intend to interfere with party structures or not, intimate to adjoining owners, by registered letter, their intention of building; and adjoining owners should have an opportunity of examining the plans of the proposed buildings in the office of the District Surveyor at any time during, say, four clear days after such intimation has been issued.

13. The twenty-seventh section of the present Act, limiting the size of buildings without a fire-proof division to 216,000 cubic feet, should be modified, and the limit extended.

14. While regulations affecting iron structures must remain somewhat indefinite, it is highly desirable that a minimum of strength should be prescribed for iron pillars and girders carrying stone or brick walls.

The other modifications of the existing Act which I think desirable refer chiefly to the duties and emoluments of surveyors, and will be most conveniently stated in connexion with the second head of this division of my subject, namely,

II. The machinery by which the provisions of the Act should be enforced.

It is important that the committee or court charged with the administration of this Act should be purely an administrative, and in no respect a judicial, body. Their business would simply be to see, with the aid of competent surveyors, that the various requirements of the Act were honestly enforced. It would require no special qualification,—except the possession of an average amount of common sense,—for the exercise of such a function; and, believing the creation of an *imperium in imperio* to be inadvisable where it can possibly be avoided, I propose that no new authority should be created, but that the work should be left to vestries and district Boards in London, and to a special committee of the town council in each borough. These committees or Boards would receive periodical reports from their surveyors, as prescribed in Sections LII. and LIII. of the present Act, and present a full report of their proceedings to the town council or central authority annually. The staff of surveyors would really constitute the most important part of the machinery for giving effect to the Act, and care must be taken to prevent any but experienced, efficient men being eligible for these

posts. With this view I suggest the following regulations:—The thirty-first and subsequent sections of the London Act, with reference to the qualifications and appointment of surveyors, would remain, with these two slight modifications—(1) no one should be eligible who had not served as an apprentice and draughtsman a certain number of years in an architect's office and (2) for the convenience of candidates in different parts of the country there should be one or perhaps two centres for examination in Scotland, and probably four in different parts of England, besides London, where the examinations would remain in the hands of the Institute, with which the different local boards of examiners should co-operate. A further and radical change in the office of surveyor which I propose is this—that in all cases he should be bound to devote his whole time to the duties of his office, and should be strictly debarred from engaging in any other professional work. He should also receive a liberal salary from the Corporation, to whom all fees should be paid. It may not be easy for those who have been accustomed to the present arrangement in London and elsewhere to reconcile themselves to the idea of such a change, but it seems to me to be recommended by weighty reasons. Its most obvious immediate effect would be the resignation of a large number of the present surveyors. This, though in itself not desirable, is inevitable; and from this would follow the worst, probably the only bad effect of the change,—namely, that the community would thus lose the services of many gentlemen of ability and great experience who at present hold appointments as surveyors. This, however, would only be a temporary inconvenience, and would probably be more than counterbalanced ultimately by the uniformity of practice which would result from the special experience of the new class of surveyors, whose further qualifications and duties I shall now attempt to sketch.

The sixty-second section of the present Act prescribes that, "it shall not be lawful for the superintending architect to practise as an architect, or to follow any other occupation;" and this rule should apply to every officer appointed under the new Act. In point of fact, most of the new staff would be in the position of the "superintending architect" of the old Act, as there are only about a dozen cities where more than one surveyor would be required, and where the rule would extend to subordinates. The name, "surveyor" or "chief surveyor" as the case may be, should be retained in preference to "architect," to prevent confusion with another official who would still continue in the employment of many corporations, I mean the "city architect." There ought to be no such official, I may be allowed to observe in passing. The chief surveyor should be able to give the corporation any professional advice they require, and if they wish professional work they can, and ought, to get it done by regular practitioners.

But, to return. It must be borne in mind, while considering this point, that we are dealing with the provisions of an Act which shall be enforced in towns great and small in every part of the country. Now it will, I think, be at once conceded that certain safeguards against unfairness provided by the London Act, and in force here, would be, to all intents and purposes, impracticable in smaller communities.

It is essential that the impartiality of the surveyor should be as far as possible insured, and the best security for this is, that he should simply act as the guide and officer of the corporation within clearly-defined limits, receiving from it adequate remuneration for so doing. Another incidental advantage of this arrangement would be that, the surveyor not being in a position to make use of the plans submitted to him for his own purposes, architects would more readily give him every facility for studying their plans, and all necessary information regarding them; they would, in short, co-operate with the surveyor, greatly to the advantage of the public.

There is still another reason for the change which seems forcible to me—perhaps because I have not a special gift for organising—namely, this, that by the present system the most experienced surveyors are just the men who have least time to attend to the duties of their office, and the greatest temptation to neglect them; and surely that is a bad state of matters. Observe, I do not say that any of the district surveyors do neglect their official duties; I have no information on that point before me, but the fact remains as I have stated it. The better

qualified a man is to act as surveyor by the acquisition of mature experience in general practice the less time he must certainly have for his duties, and the more must he depute these duties to subordinates. The value of large experience is unquestioned, but you will observe that the regulations I have already proposed insure the appointment of experienced men,—men at least who, even when they commenced their duties as surveyors, would probably possess the necessary qualifications for membership of the Institute. Now the great bulk of the surveyor's work prescribed by the Act could be performed by such men perfectly as well as by the most eminent member of the profession; they would receive suitable remuneration for the kind of work they were called upon to perform, and the eminent architect,—whose advice, of course, would always be available if required,—would be free to turn his wider experience to more profitable account.

But how would such a change affect the status of surveyors? Clearly thus: In a few exceptional cases, chiefly in the metropolis, the new surveyors would be inferior to those who at present hold the office; but in the great majority of cases throughout the country the status of surveyors would be vastly improved. To secure this, however, it is essential not merely that their qualifications and duties should be clearly defined, but also that their salaries should not be left entirely to the caprice of corporations. In no case should the salary be less than 500*l.* per annum, and chief surveyors should receive considerably more. To the ordinary municipal mind the idea of paying more than 500*l.* per annum to an inspector of buildings will seem ridiculous; but this is only another proof, if proof were needed, that the ordinary municipal mind is not competent to deal with the subject, and that the sooner the Imperial mind is brought to bear upon it the better. It seems, indeed, sufficiently difficult sometimes for corporations to comprehend any good reason for paying architects much more than labourers' wages, and we need not be surprised if they fail to discriminate between a district surveyor and a clerk of works or inspector of nuisances, who is probably overpaid at two guineas a week. Yet, in point of fact, there should be as wide a difference between these two classes of officials as there is between one of her Majesty's Inspectors of Schools and a School Board officer who looks after defaulting parents.

Obviously, 500*l.* would be too much for every petty borough to pay; but it is no more necessary that the work of a surveyor should be confined to one borough than that the work of an inspector of schools should be confined to the jurisdiction of one School Board. To each surveyor would be assigned a district, the fees from which should nearly, if not wholly, cover his salary and other incidental expenses. In some cases the district would be large, and embrace several boroughs; in others, it would be confined to one borough; and in others to a part of a borough. Let me offer one illustration taken from a district with which I am familiar. Glasgow, and the suburbs which would be connected with it for the purposes of this Act, would probably require four surveyors, and, without any additional burden on the community, we could afford to give each about 900*l.* per annum; but one surveyor would easily overtake all the work in Paisley, Johnstone, Renfrew, and Greenock,—perhaps I may say in every borough in Renfrewshire,—and the work would be better done and more cheaply than if each of these boroughs employed an inferior class of surveyor at a much lower salary. The distribution of surveyors, in short, would be determined by the requirements of the different districts, and precise information on that point could be easily obtained. By some such arrangement as this, the administration of the Act in every part of the country would be in the hands of thoroughly qualified independent men, who would command the respect and confidence both of the public and of their professional brethren.

Much more might be said on this important part of my subject, but time forbids. Doubtless much diversity of opinion must be expected in such a meeting as I now have the honour to address, but I trust this will not interfere with that patient and cordial co-operation so essential to the attainment of any valuable practical result.

Although I fear that I have already overtaken your patience, before resuming my seat I must allude, for a moment, to the gratifying circumstance that the subject which we have now been

considering has already engaged the attention of the Government. The Local Government Board appears to have arrived at the conclusion that it is not only possible to frame building regulations of general application, but that it is a thing which ought to be done. Through the very great courtesy of the president, Mr. Slater-Booth, I have had an opportunity of perusing the draft of model building regulations at present under the consideration of the Board. These are incomplete, and fail to embrace many of the requirements to which I have referred, but so far as they go, with some trifling exceptions, they are admirable, and, let me say, especially admirable in this, that they are well defined and free from ambiguity; that most objectionable expression, "to the satisfaction of the borough surveyor," or "in such a manner as the borough surveyor may direct," does not once occur in them. I sincerely hope that the Local Government Board will persevere and carry on to completion the good work which it has so fairly commenced; and I may be allowed to say in conclusion that the evident desire of the heads of this important department to benefit by the collective wisdom of our profession is not the least hopeful augury for the ultimate result of their deliberations.

#### OPENING OF A NEW BOARD SCHOOL AT DEPTFORD.

ON Tuesday evening last the 120th new school built by the London School Board was opened in Regent-street, Deptford. This school is planted in a district teeming with the class variously designated "street arabs," "gutter children," and by Lord Sandon recently as "wastrels." The chair was taken by Sir Edmund Hay Currie, vice-president of the London School Board, whose opening address vindicated the policy and work of the Board.

The building is in the Queen Anne style, and was designed by Mr. Robson, architect to the Board, with Mr. J. Jackson as clerk of the works. The contract has been executed by Mr. B. E. Nightingale. The building has a frontage of 180 ft., the premises extending in width between Regent-street and Stanhope-street, in each of which streets there are separate entrances to the schools for boys, girls, and infants. Each of the principal schools is 60 ft. by 21 ft., the rooms for the infants and babies being on the ground-floor. In connexion with each of the three schools there are three rooms, 20 ft. by 19 ft. each, those on the ground-floor being appropriated, one as a babies' room, and two as infants' class-rooms. The boys' and girls' schools on the first-floor have each three class-rooms attached. There are also rooms provided for the head master and mistress.

The whole area, including the playgrounds, is 13,000 square feet, which is much less than the Board desired to provide. The schools are fitted with Elsley's patent window gearings, and with Boyd's ventilating stoves. The whole of the rooms are lofty, light, and airy. The cost has been 7,526*l.* 9*s.* 4*d.*, or 9*l.* 0*s.* 11*d.* per head. Provision is made for 300 infants and babies, and 266 each of boys and girls. On the first day of opening there were 234 infants present, 130 girls, and 180 boys. Sir Edmund stated that while this was the one hundred and twentieth school opened, they had fifty more schools building, and twelve others under consideration. They had already made provision for 106,000 scholars, and were providing accommodation for 37,000 more, or 143,000 in all. When they commenced their operations there were 174,000 children attending school; at Christmas, 1875, the number was 288,497, or 114,000 more children attending school. Of these 35,000 had gone into voluntary schools and the balance to Board schools. There were sixty districts in London in which there were no Board schools, but the Board visitors were none the less doing good work in such districts. Respecting the incidence of the rate, he reminded his hearers that Greenwich, which was the largest division embraced by the London School Board, while it paid a twentieth, received a tenth,—the City of London and St. George's, Hanover-square, contributing largely for the erection of schools in Deptford, although they had not one single Board school of their own.

**Southport Free Library and Art Gallery Competition.**—Competitors are asked to allow their designs to be suspended for another week, as there has been unavoidable delay in obtaining builders' estimates of cost for the satisfaction of the committee.

#### DOINGS AT BRIGHTON.

*The Aquarium.*—Some additions and alterations to the Brighton Aquarium were opened on the 24th of June. Upon a piece of enclosed land below the Marine Parade, and to the east of the main building, has been erected a series of apartments which will afford greater facilities for carrying on the work of the aquarium, and above these a skating-rink, balcony, *café*, &c., have been constructed. The south-eastern corridor has been continued for a further length of 145 ft., and abutting on this additional length are several new apartments in modernised Gothic style. The new chess-room is 23 ft. square, the billiard or lecture room 59 ft. long by 22 ft. in width, and 15 ft. high; the smoking-room 23 ft. by 22 ft.; and there is also a room erected for performances of classical chamber music. The skating-rink has been constructed immediately above, and, with the new terraces, forms the roof of the new part of the building. It may be approached either through the terrace gardens or from the Madeira-road, and is distinct from the aquarium proper. The floor-space is some 150 ft. long by 50 ft. wide, and is laid with Claridge's patent asphalt. A light iron hand-rail runs round the parapet of the rink, lamp pillars and brackets being placed at intervals. Adjoining the rink are skate-rooms, lavatories, and a refreshment-bar, and an orchestral stand is in contemplation. In direct connexion with the aquarium is a balcony communicating with an elegant *café*. The balcony is 171 ft. in length, and about 15 ft. in width, projecting from the side of the cliff over the southern side of the rink. It is laid with encaustic tiles, and, being covered by a verandah, forms an agreeable promenade. A conservatory, which is not yet complete, is to be constructed at the east end of the balcony, and will be available for smoking and refreshment. The entrance to the *café* is from the balcony. This portion of the building is 55 ft. long, and the interior is decorated with plate glass, marble, gilding, and colouring in neutral tints relieved with black and gold. Messrs. Patching & Webber were the contractors.

*School of Science and Art.*—Sir Henry Cole, K.C.B., recently laid the foundation-stone of the new buildings for the School of Science and Art. The building is situated near the centre of the Grand Parade. A florid style of architecture has been chosen. When completed, the school will include an elementary art-room, 38 ft. by 32 ft.; an antique-room, 33 ft. by 22 ft.; painting-room, 22 ft. by 16 ft.; modelling-room, 20 ft. by 16 ft.; lecture-room, 31 ft. by 22 ft.; two science class-rooms, each 33 ft. by 16 ft.; also a laboratory, library, Board-room, professors' room, occasional class-rooms, master's room, and a ladies' room, as well as all the minor accommodation necessary. Mr. J. G. Gibbins is the architect, and Mr. G. R. Lockyer is the contractor. The cost will be between 8,000*l.* and 9,000*l.*

*A People's Park.*—Negotiations are in progress between the Mayor (Alderman H. Abbey) and the legal representatives of Mr. and Mrs. Benett-Stanford, for the acquisition by the Town Council of the piece of ground, about 40 acres in extent, in front of Preston-place, which for some time past has been the scene of the Polo Club's exploits, and the drill-ground of the local volunteer corps. The addition of such an open spot in continuation of the Steyne enclosures, St. Peter's Green, the Level, the grounds of Park-crescent, and situated in what will be in course of time the centre of the town, is viewed with great satisfaction.

*Proposed Rebuilding of St. Mary's Church.*—When, some short time since, it was decided to enlarge the chancel of this church, that was thought to be all that was necessary, and was, indeed, all that was necessary to meet the wants of the congregation; but an unfortunate accident which has occurred has raised so many misgivings as to the soundness of the structure that the advisability of pulling it down and rebuilding it has been seriously mooted. Messrs. E. Nash & Co., builders, of Hove, were selected to do the work of enlarging the chancel. A few evenings ago the old flat arch over the chancel was observed by the foreman in charge to be cracking. The workmen, who were engaged in erecting a portion of the walls of the new chancel, were at once called off, the arch almost immediately afterwards crumbling under the weight of the old pediment, and falling in. With it came the piers, a part of the old chancel which it was intended to leave, and a small portion of

the northern end of the roof. The chancel piers stood until after the arch had fallen, when the pediment brought the upper part down. It would appear that the alterations had previously been effected to the chancel; and as the walls were found to be very roughly built with rubble work, Messrs. Nash did not pull them down so much as intended; but were, at the time of the occurrence, engaged in building up the lower portion of the work of greater thickness to strengthen the piers. It is stated that, if rebuilt, the style will be Gothic instead of Classic, whether it be erected on the same site, or on that which adjoins it. It has been suggested that, instead of standing at right angles with St. James's-street, the new church should be rebuilt parallel with that thoroughfare.

*Widening of the Preston-road.*—Simultaneously with the formation of the grand Drive round the outskirts of the town, another great improvement (thanks to the liberality of Mr. Benett-Stanford, M.P.) is to be carried out, namely, the widening of the Preston-road, the plans for which (prepared by Mr. P. C. Lockwood, C.E., the borough surveyor) have received the sanction of the Brighton Town Council. That portion of the Preston-road which is to be widened is on the western side, at its northern extremity, just before entering the village from Brighton. It runs, in fact, from the grand old trees, once known as "the Shaw,"—beneath whose shade Brighton fashionable society in the early part of the century was wont to hold its picnics,—almost to the Black Lion (formerly the old toll-house), a distance of over 1,000 ft.

*St. Luke's School Church.*—St. Luke's School Church, situated at the corner of Islingwood-road and Park-road West, has been opened by the Bishop of Chichester. Mainly by the liberality of Miss Elliott and her family, and Miss Thompson, of West Hill Lodge, Brighton, who laid the foundation stone, sufficient subscriptions were gathered to justify the commencement of the work. This was done by Messrs. E. Nash & Co., contractors, of Hove, and by them was completed on the 25th March. Mr. W. White, of London, was the architect. A light building, in Early English style, whose interior measures 80 ft. long, 40 ft. broad, and 37 ft. to the ridge, and which can accommodate 450 persons, has been raised. One of Constantine's convoluted stoves has been procured to heat the building; a floor of blocks of wood on concrete, from which little or no noise arises when trod upon, has been laid, and rush-bottomed chairs and hassocks have been provided all over the church. In the brickwork over the porch is a carved emblem of St. Luke in stone.

#### BUILDING ASSOCIATIONS IN AMERICA.

At a Conference of the American Social Science Association, held at the College of Physicians on the 1st ult., a discussion took place on "Building Associations," resulting in the adoption of a resolution commending this Philadelphia institution to other communities. The secretary, Mr. F. B. Sanborn, stated that he had sent queries to members of the Association in different cities as to the peculiarities of living in those places. From William F. Channing, of Providence, R. I., a paper was received describing the peculiar conditions affecting the homes of operatives in that State. Rhode Island is a hive of workshops, and has an unusually large proportion of skilled mechanics. Many of these live in houses containing two tenements. This style of building is a Rhode Island institution. The houses are generally two-storied wooden structures, built for the occupation of a family on each floor. These are considered as respectable socially as separate houses, and, practically, the families are entirely independent of each other. Rhode Island was founded on the idea of individual freedom, while in Massachusetts a rigid organisation characterised its early history. This difference in early training shows itself in the different modes of living. Providence is a city of 100,000 inhabitants, with almost every dwelling house by itself and surrounded by a garden. People consent to live in blocks in Massachusetts town, while the passion throughout Rhode Island is for isolated houses.

Mr. Oliver H. Stratton, of Louisville, reported that the first organised effort in that city to establish what are commonly known as building or homestead associations was begun in 1868, and there are now thirty-nine associations of the kind there.

From other cities reports were received showing that building associations had been established and were being operated on a substantial basis in all parts of the country.

Judge Pence remarked that in his experience of ten years upon the Bench he had known of but one case of speculation in all the societies existing in Philadelphia. This peculiarity, he thought, was wonderful. The judge was forcibly impressed with the perfect safety of these investments. He believed that the ownership of homes made all citizens interested in the public welfare, and made each one feel that a responsibility rested upon him in advancing the general prosperity.

Mr. Lorin Blodgett suggested that the discussion be directed toward inaugurating such associations in New York, where a great necessity existed.

Dr. Harris, of the Sanitary Department of New York, agreed entirely in this view, and conceded to Philadelphia remarkable facilities for commerce and remarkable advantages for the investment of capital, because there the highest skill of any city could be obtained. He said a conference of New York capitalists and representative working men, with prominent building association organisers of Philadelphia, was projected, and he offered as the sense of the conference the following resolutions, which were adopted:—

"That the development and results of the system of home building, or home ownership, by the working men of Philadelphia and Wilmington, commends to our fellow citizens and the promoters of social and economical improvements in the cities and large manufacturing towns the agencies by which the success and benefits of the system have been attained."

"That among the most essential agencies and influences of this system we recognise:—1. A simple method of offering adequate means and prudently guarded conditions for enabling working men and the wage classes to acquire ownership of their homes. 2. The operation of care and responsible concern for the co-operative, safe using, and control of the self-accumulating funds from which loans are offered for the purchase of homes. 3. Most important of all, agencies to promote the desire and efforts of working men's families to obtain and own their houses, we recognise that general diffusion of information of the methods and benefits of enjoying self-made homes and the ownership of them as real property."

"That in cities and villages no less than in rural communities the working men need to be encouraged to become freeholders and owners as respects their family dwellings, and, if ownership is not practicable, that the relations of tenants and families should be such as to interest and help the tenant to make the tenement as perfect and attractive a home as possible."

#### SANITARY CONDITION OF RAILWAY PROPERTY IN SOUTHWARK.

A CASE came before Mr. Partridge, at the Southwark Police Court, which disclosed the fact that railway companies sometimes prove themselves to be culpably negligent as to the sanitary condition of the property under their control. Some time ago the South-Eastern Railway Company became the owners of several small dilapidated blocks of cottages in the neighbourhood of Gravel-lane, Borough, for the purpose of making the junction line, now nearly completed, for connecting their railway with the London, Chatham, and Dover line at Blackfriars. The following statements show the disease-breeding character of the company's property. Mr. Errington, the sanitary inspector of the St. Saviour's Vestry, summoned the occupiers of six of the houses in Glasshouse-yard, Gravel-lane, to show cause why the houses should not be closed, being in such a filthy and dilapidated condition as to be unfit for habitation, and injurious to health. He stated that they contained three rooms each, and were inhabited by from ten to a dozen men, women, and children in every house, very poor, and chiefly Irish. The roofs of some of the houses were partially off, the shutters and doors gone, and the flooring, balusters, and nearly every bit of woodwork torn away for lighting the fires. The walls were in an extremely filthy state. The only water-closet was in ruins, and unfit for use, and the small yards unpaved and very dirty. The inmates had been turned out by the railway company some time ago, but as the company did not require the houses after that, they were taken possession of by the present occupiers, who not only paid no rent, but refused to leave. The medical officer of the Saviour's District Board of Works said that the houses were in such a filthy condition as to be totally unfit for human habitation, and unless they were soon emptied and closed, the whole neighbourhood would be in danger of fever. He added that he could not think how human beings could live in such dens. One of the occupants of the houses appeared, and objected to being evicted, and, admitting that he had not paid any rent for three months, said the houses "were quite com-

fortable." The magistrate ordered all the houses to be closed forthwith. It may be asked, why did not the railway company at once demolish the whole of those uninhabitable places the moment they were empty, instead of allowing them to stand and be taken possession of, as above stated?

#### SCIENCE AT SOUTH KENSINGTON.

THE Department are now doing good work with the Loan Collection of Scientific Apparatus in the South Kensington Museum. The apparatus is put in action at intervals, and explanations are given.

Programmes for the week may be had showing what is to be done.

Arrangements are being made for the delivery of Lectures in the Conference-room on the various Scientific Apparatus in the Collection on Saturday and Monday evenings at eight o'clock, to which visitors to the Museum will be admitted, so far as space will permit. Men of high class have agreed to lecture.

#### BRISTOL STATION OF THE GREAT WESTERN RAILWAY.

A "TRAVELLER FROM ABROAD" wishes to know who is responsible for the architecture of the new station, now in course of erection for the Great Western Railway Company in Bristol, and indulges in some lamentably unfavourable comparisons with structures of a similar character recently seen by him in other countries. We do not wonder at his despair and horror. The style of the station in question is Pseudo-Gothic of the commonest and most vulgar kind, utterly wanting in refinement and knowledge. We cannot answer his question. The shareholders, however, ought to learn at the next general meeting who it is who is thus wasting their money. An ornament (?) which runs round the walls of the refreshment-room, midway, might be safely worshipped,—it is like nothing on the earth or in it.

#### MANCHESTER SOCIETY OF ARCHITECTS.

THE Manchester Society of Architects has for some years given prizes to be competed for by the students attending the classes of the Building Trades Institute.

The competition was held at St. John's Church Schools, in Garside-street, in the presence of the honorary secretary of the Society, and the prizes were awarded in accordance with the report of the committee. We learn from this that,—

"The competition took place on April 25th last, in the presence of our hon. secretary. The students were allowed about two hours for making the different drawings, after which they were collected by the teacher.

Twenty-one drawings were submitted by different students, of whom eighteen belonged to the elementary class, and three to the advanced class.

The number of questions which must be answered, either by description or drawing, was fixed by the instructions at three. Out of the number of students thirteen either answered or attempted to answer more than the three questions. Many of the answers were wrong; but altogether the attempts showed that the students really thought of what they were attempting to do."

The prize of two guineas offered by the Society was given to Lorenzo Benson; the prize of one guinea, placed at the disposal of the Council by Mr. Bennett, architect, to John Clark; and the prize of one guinea, given by Messrs. Holden & Son, to J. S. Richardson.

**Area of Exhibition Buildings.**—Dr. D. G. F. Macdonald writes:—As considerable misapprehension exists respecting the area of the Centennial Exhibition buildings at Philadelphia, and as most persons are fond of comparing similar structures, a statement of the relative space occupied by each may interest the public. The area of the main exhibition building at Philadelphia, exclusive of annexes, is 21½ acres; of the Sydenham Crystal Palace, 14 acres; the Paris Universal Exhibition building occupied 11 acres; the New York Pavilion, 4 acres; the Dublin one, 6½ acres; and the Hyde Park Crystal Palace of 1851, 17½ acres. The five principal exhibition buildings in Philadelphia extend over 48 acres, and the fenced-in part for exhibition purposes comprises 236 acres of Fairmount Park, the most beautiful I ever set eyes on, containing about 3,000 acres. Our American cousins do everything on a grand scale, and the outlay for the great national enterprise of 1876 represents about 1,700,000l.

#### "PICTURESQUE EUROPE."

UNDER this title Messrs. Cassell, Petter, & Galpin have commenced the publication of what promises to be a very charming work. The numbers already issued relate to the British Isles. Nearly every page is illustrated by a woodcut or steel engraving, and the descriptive particulars are written by authors supposed to be acquainted with the different localities. As a specimen of the woodcuts, though by no means the best, we give one of the views which accompany the account of "Warwick Castle," lately burned and now restored, and we take a passage from the letterpress connected with it:—

"The Castle, as a glance will show, is not the work of one age, but has been patched up and altered, and renovated from time to time. Of the 'donjon' of Ethelfleda, daughter of Alfred; of the buildings of Turhill, its last Saxon lord, nothing remains. Ruined in the wars of the Barons, it was almost rebuilt towards the end of the third Edward's reign; but after the fall of its princely owner, Warwick, the king-maker, its next three possessors died by violent deaths, and its walls became dilapidated under the reign of the Tudors. Sir Fulke Greville (created Lord Brooke by James I.) restored it at great expense, 'making it the most princely seat that is within the midland parts of this realm.' His restorations and yet later alterations have almost obliterated the earlier work in the upper part of the Castle: but the sub-structure, with its massive vaulted roof and clumsily-moulded octagonal pillars; Cæsar's Tower, with its machicolated battlements; the entrance-gate and barbican, with their double portcullises—all the work of Thomas Beauchamp, in the fourteenth century—are still perfect, as is the picturesque Guy's Tower, which crowns the highest part of the rock, and is, perhaps, of slightly later date than the rest.

Few dwellings in Britain are more closely connected with the most stirring scenes in English history. Here was the home of a line of warriors, whose swords did service in many a fight against Scotland and France. Here lived the 'Black Hound of Arden'; and hither he brought the miserable Gaveston to meet his fate on Blacklow Hill. Here also lived the 'father of courtesy,' Regent of France, and guardian of Henry VI.; here open house was kept by the king-maker, who fell on Barnet field, 'his glory smeared in dust and blood'; and after him came the ill-fated, 'false-fleeing, perjured Clarence,' and, in the next century, John Dudley, the Lord High Admiral, whose head, like that of the previous owner of the title, fell on the scaffold. Since then more peaceful endings have been allotted to the Earls of Warwick, though the title has twice become extinct.

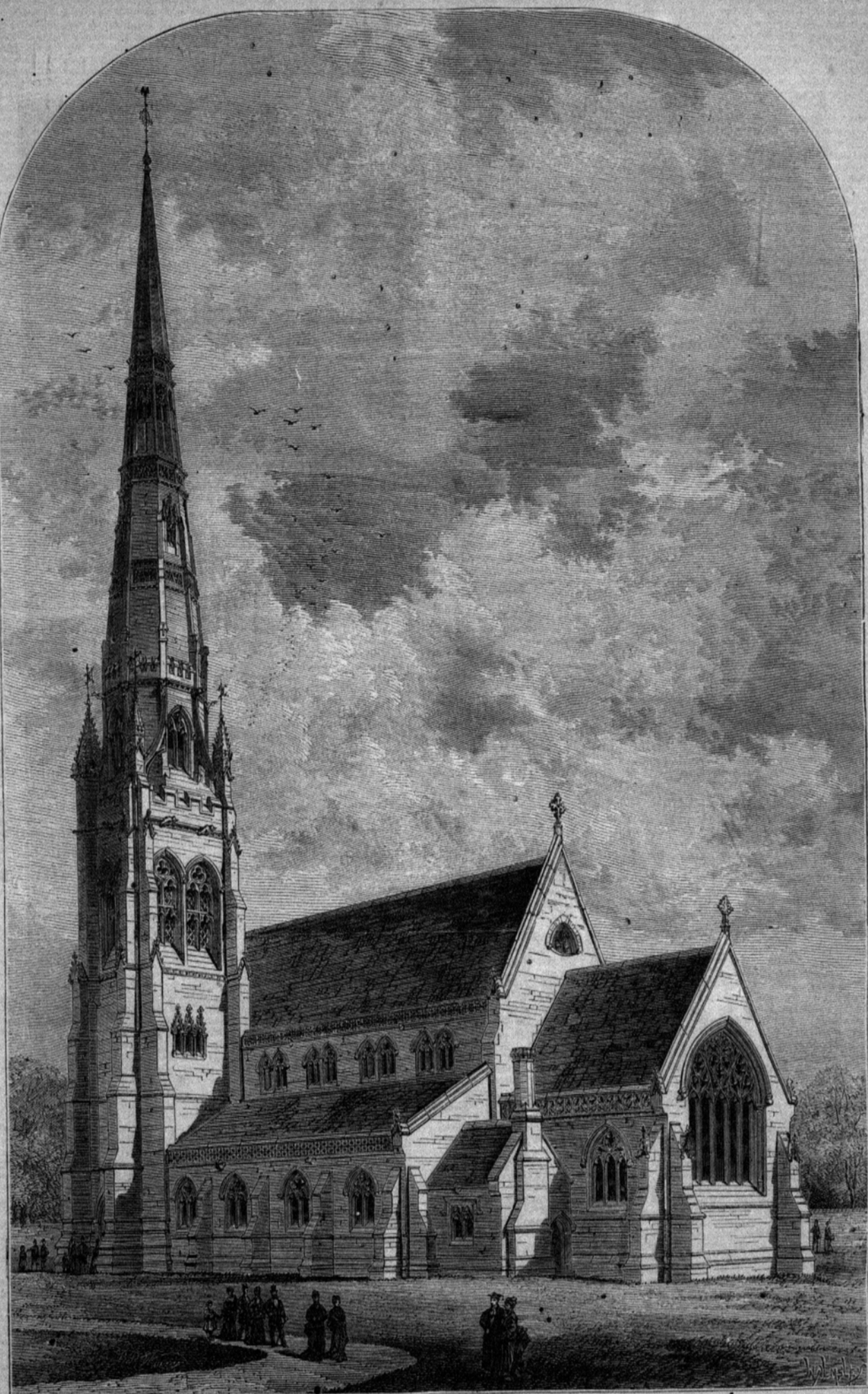
We must not linger in the interior of the Castle, tempting as that still is, though sadly shorn of its choicest treasures by the fire which raged in the eastern part in the year 1871, when the library, the baronial hall, with its magnificent collection of armour, many valuable pictures and ornaments, were almost wholly destroyed.

From the home of the Earls of Warwick turn now to their last resting-place. The antiquity of the town is still indicated by the four streets crossing one another near the middle at right angles. In the northern of these is the parish church. From a distance its general proportions and its lofty pinnacled tower are remarkably effective, but it is disappointing on a nearer view, from its defective details. The reason of this is at once obvious. It is a Gothic building of the reign of Queen Anne. The town suffered terribly in the year 1694, from the ravages of a fire, in which the western part of the church was destroyed. As the architects of that day were masters of proportion, but without the slightest sympathy with or understanding of Mediæval details, the result of their attempt to rebuild in the original style is what might be expected. In our time the case is exactly reversed. It never seems to have struck our architects, as a rule, that in planning a great work they have not only to satisfy a material want, but also to embody a poetic conception. The consequence is, that they exhibit learning without genius, imitative but not creative power; and we get ill-composed structures covered with details so incoherent that they might be termed 'scorbatic,' were they not by themselves beautiful."

We should have preferred a little more order in the arrangement of the subjects. North Wales follows Eton, and Warwick North Wales. Doubtless, however, the publishers could give a reason.



WARWICK CASTLE, FROM THE WEST.



A TERRA-COTTA CHURCH: PLATT CHURCH, NEAR MANCHESTER.—MR. EDMUND SHARPE, ARCHITECT.

## PLATT CHURCH, NEAR MANCHESTER.

TERRA COTTA.

In the course of a paper on the adaptability of terra cotta to modern church work, by Mr. Sharpe,\* an account was given of a church erected in this material, from the author's designs, at Platt, near Manchester. To illustrate what was then said, we now give a view of the church, as promised. Mr. Sharpe reminds his readers that this design was made in the year 1844,—that is to say, thirty-two years ago, and, therefore, very early in the Gothic revival,—and says, should you find any shortcomings in this design, you must put them down rather to the early period at which it was made, than to any incapacity of the material to produce a different result.

The church has clustered piers, floriated pier capitals, and moulded pier arches. It has a large five-light east window of flowing tracery, a diapered parapet to the aisle and clearstory walls, and a tower and spire, 170 ft. high. The whole of the exterior is of terra cotta, the coursed walling being of 5 in. blocks. The backing of the walls is of brickwork, and the interior surface is plastered throughout. The spire springs from an octagonal lantern of particularly light work, which has suffered from a cause that is noticed in the paper. Altogether he thinks he is right in holding this tower and spire, considering the time at which, and the material of which it is constructed, to be a very remarkable work, and deserving of more care than it has of late received from those who have, under the Lord Chancellor, the charge of it. The whole work has been treated, as will be seen, as a work in masonry, and very few of those who live in the populous neighbourhood in which it stands are aware that it is not so.

## THE PRIORY OF ST. JOHN OF JERUSALEM, CLERKENWELL.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On the 10th ult., Mr. G. H. Birch conducted a large party of the Architectural Association to the scanty and much-mutilated fragments which now remain of the Priory Church of St. John of Jerusalem, Clerkenwell. The visitors assembled at St. John's Church, situate in the somewhat out-of-the-way close, St. John's-square, a locality teeming with clock and watch makers, jewellers, enamellers, gravity-escapement makers, and, in short, with almost an infinity of tradesmen engaged in the manufacture of horological, meteorological, and mathematical instruments. This somewhat sequestered place (so far as vehicular traffic is concerned, for of pedestrians there are a goodly number) is approached from Smithfield Bars by a narrow street known as St. John's-lane, at the top of which is St. John's-gate. It is also approached from St. John's-street-road by a short and narrow thoroughfare called Albemarle-street, and from Aylesbury and Red Lion streets by two or three narrow courts or entries. The comparative seclusion of the "square" is about to be rendered a thing of the past, for the new street from Oxford-street to Shoreditch, now in course of formation by the Metropolitan Board of Works, will cut obliquely across it, about equidistant between the church and the gatehouse, necessitating the demolition, amongst other buildings, of the house on the west side of the square, known as Burnet House, at one time occupied by Bishop Burnet. St. John's Church, which has its west end abutting on to the east side of the "square," and its east end overlooking a churchyard between it and St. John-street-road, presents (as seen from the west end especially) a more than usually bald and ugly "churchwardeneseque" appearance, and many of the visitors were loth to believe that it could possibly be the appointed rendezvous. We never look up to the insignificant clock-turret of this church without being reminded of the proverb to the effect that "the shoemaker's wife is always the worst-shod woman in the village," for here, in the very midst of a busy centre of horological industry, the church clock, having got out of repair, stopped at twenty minutes to two one morning or afternoon, and for several years (three or four at least—perhaps it is ten or twelve years ago now) sought to persuade the inhabitants and passers-by that "tempus fugit" was an aphorism of the past, for the clock-hands remained stationary, neither retreating nor advancing.

The church, however, although appearing externally to be so unpromising to the antiquary, is built over what remains of a very interesting crypt.\* Four bays of this crypt remain, the two easternmost ones being of the Early English period, while the two westernmost bays are of Transitional work, the division between the work of the two periods being well defined and plainly visible. The visitors having passed through the church descended into the crypt, which is so damp and noisome that even architects and archaeologists would not care to remain in it very long.

*The Church.*—Mr. Birch read a paper, in which he said:—The church in which we are now met is one which is not very well known to the generality of ecclesiologists, the exterior giving no clue to what is to be found in the interior, so completely has the hand of the destroyer eradicated every vestige of antiquity from its principal front. Indeed, generally speaking, nothing remains of the original magnificent church of the military order of the Knights of St. John of Jerusalem but a few fragments in the church, the beautiful Early English crypt, and the gatehouse. The order to which the buildings belonged was one which owed its origin to the Crusades; more fortunate than their contemporaries the Templars, they not only escaped their destruction, but were enriched by their possessions. They were called the Knights Hospitaliers of St. John of Jerusalem. When Jerusalem was taken from the Saracens, vast numbers of pilgrims flocked to the Holy Sepulchre and to other places of the Holy Land, and one Gerardus, associating himself with others of like mind, devoted himself to the most useful and humane intention of harbouring and sheltering the pilgrims, and furthermore of defending them from insult in either going or coming. The Knights Hospitaliers adopted a black habit with a white cross of eight points. Godfrey of Boulogne instituted them as a regular order, and they soon increased in wealth and numbers. In England they attained to great power and position, and on the loss of Jerusalem the military knights had to settle first at Rhodes and then at Malta, and took their names severally from those places. They never lost their title in England, but retained it to the Dissolution. Their prior ranked as the first baron. More popular than the Templars, they yet incurred the hatred of the vulgar, and in 1382 their house at Clerkenwell was burnt by the Communists of that period. Garnerius de Neapoli was their first prior, and Sir William Weston their last. Their revenues, according to Dagdale, amounted to 2,385l. 12s. 8d. The order is not extinct in England, and, I am told, never has been. This house in Clerkenwell (near unto Clarke's Well) was founded by Jordan Brisset and Muriel, his wife, A.D. 1100, in the reign of Henry I. Ten acres of land were purchased from the neighbouring priory of St. Mary, twenty acres in the parish of Willingham, Kent, being given in exchange,—an early record of the value of land in London. When Heraclius, or Araclius, patriarch of Jerusalem, was in London, he dedicated the "chyrche of ye Hospitall of S. John's, Jerusalem, to ye honor of S. John Baptiste, in ye yere of Christ 1185, on the 6th ides of Merche. Ye same dey was dedycatyde ye high altre and ye altre of S. John Evangelist." Joseph de Channey, prior (1274-1280) built a chapel, and William de Henley, prior, erected a cloister between 1280 and 1284. The church was Transitional, of a very fine type, judging from remains of capitals discovered from time to time, and still to be seen, I believe, in the south wall, next Jerusalem-court. I have alluded to the church and buildings being burnt in 1381-82. It is recorded that they were burning for seven days; but immediately after this disaster they were rebuilt, not being completed until 1504, John Docwra being then prior. This rebuilt church was, of course, Perpendicular, the earlier remains having been incorporated, and it consisted of a nave with aisles, a great bell-tower (of which John Stowe has the following curious entry: that it was a lofty and beautiful steeple, curiously graven, gilt, and enamelled, to the great beautifying of the city, and passing all other that he had ever seen), and a choir with aisles and side-chapels. Of all this scarcely anything now remains, the present church being only a portion of the choir,—the crypt, now bricked up, having extended westward. The width of the crypt is 16 ft. 3 in., the height being 12 ft. A compartment on the south side

was bricked up in 1793, and is the vault of Simon Michell, who so utterly destroyed the church and disguised it in its present garb. The crypt, although now partly, if not entirely, subterranean, was not so formerly, Hollar's view showing the entrance. The central portion of the crypt is of four bays, the two western ones being Transitional, and the two eastern ones Early English, and the work deserves most careful examination, for the vousoirs of the arch-ribs, instead of being cut to a curve,—i.e., following the line struck from a centre, are each of them straight, the necessary curvature being obtained by making these vousoirs so small that their want of curvature is scarcely perceptible. My attention was drawn to this curious fact by Mr. Pettit Griffith, F.S.A., when he read a most valuable paper on this Priory Church before the London and Middlesex Archaeological Society, in whose "Transactions" it is published. In 1854 the bases of the columns were exposed, in an excavation made for that purpose, and were found to possess some curious characteristics. The real floor is 1 ft. 5½ in. below the present one, a layer of clay having been spread over it to prevent damp from rising. The two western bays were lighted by a narrow lancet window on each side. The wall is 4 ft. thick, and is considerably splayed. In 1860 the coffins were removed into the side-aisles, and the openings bricked up, thus considerably curtailing the crypt of its proportions; and an Early English trefoil-headed doorway which existed on the west side of the north compartment was obliterated from view. In this crypt was buried the body of the girl who figured in 1762 as the "Cock-lane Ghost,"—a singular imposition believed in by many at the time. History repeats itself, however, and the unquiet spirit of the Cock-lane ghost manifests its presence by the knockings and scratchings so extensively indulged in by the modern spiritualists. The church above the crypt has been so completely gutted that little remains to be said of it. The fragment which had been left of Docwra's choir was tinkered up and "Classiced" by Michell when the church was made a rectory by the Commissioners for building fifty new churches in London and the neighbourhood. When Mr. Pettit Griffith repaired the church in 1845 he noted the following particulars. When the plaster was removed from the inside of the east wall and central window it was discovered that Docwra's masonry still existed from the ground to the middle of the said window-arch,—about 27 ft. high. Above that was the brickwork of Michell's time. The window is in the same state as shown in Hollar's view. The mullions are perfect, but the cinque-foil cusping is all destroyed. When the pews against the south wall were removed, it was found that portions of the former church had been used as a foundation to them. These consisted of moulded vaulting ribs, parts of shafts and gnoining, and capitals of clustered columns, coloured and gilt; these showed the masons' marks. The floor of the church is 14 in. above the old level. The south wall had been rebuilt by Docwra on the remains of the Early English wall, which still remains some few feet above the floor, showing the narrow splayed openings of the original windows, and a doorway opening into Jerusalem-court. Docwra's wall contains large Perpendicular windows, above which Michell has rebuilt the wall. The north wall was also rebuilt by Docwra, and shows several large windows. A very beautiful angle capital was found built in in this wall.\* The arms in the east window are those of Prior Botyler, a chevron between three combs. The establishment was suppressed by our English Caligula in 1541, but was not destroyed at once, like so many other splendid fabrics. It was converted into a repository for military stores. The king's tents were kept here, and so remained until 1550, when the so-called Lord Protector Seymour, Duke of Somerset, caused the nave and side-aisles, and the great bell-tower, to which allusion has been made as being richly graven, gilt, and enamelled, to be blown up by gunpowder, in order to use the stone in building Somerset House in the Strand, and the porch of All Hallows', Gracechurch-street. This was not the only sacred building which fell into the devouring maw of this Protector,—the cathedral itself was not respected. The part of the choir that remained, with some side-chapels, was closed up at the west end, and otherwise repaired, by Cardinal Pole, in the reign of Queen Mary, and Sir Thomas Tresham, knight, was made prior; but it again

\* See p. 553, ante.

\* Illustrated in the Builder some years ago.

\* All these fragments have now entirely disappeared.

was desecrated by Elizabeth. The buildings of the Priory had been sold by Henry, together with the site, circuit, and precinct of the hospital, to John Dudley, Viscount Lisle, Lord High Admiral, in consideration of his services, and for 1,000l. sterling,—no inconsiderable sum in those days. James I. granted the site, described as containing one great mansion-house and one great chapel (the mutilated choir), to Ralph Freeman and to his heirs in free and common socage. Then it became the property of Lord Burleigh, whose daughter married Bruce, Lord Elgin, by whom the choir was used as his private chapel until 1706, when it was again sold, and was finally bought by Simon Michell, in 1721. Its subsequent history has already been noticed. When Michell bought the choir, the north aisle had been turned into a dwelling-house, and the upper part of the south aisle was used as a library. It is very much to be desired that sufficient money were forthcoming to once more exhume, as it were, the treasures still hidden in its mutilated walls, and to more perfectly reveal Prior Docwra's choir.

*The Gate-house.*—Adjourning to the gate-house (locally and generally known as "St. John's Gate"), which has been much mutilated to serve the purpose of a tavern, the visitors passed up into "Dr. Johnson's Room," where Mr. Birch read the following short paper:—This structure must often have impressed you when you passed through its noble archway, as Boswell says it impressed Dr. Johnson when he beheld it for the first time. This old gate, apart from its other associations, will always be inseparably linked with the name of that great man, for here he was wont to shut himself up in a room assigned to him, and to allow no one to disturb him but some compositor or "printer's devil" waiting for "copy," for the time-honoured publication of "Sylvanus Urban," yclept the *Gentleman's Magazine*, was printed and published within the walls. Of course a gate-house stood on this spot in 1100, when the hospital was first founded, but that was probably burnt down during Wat Tyler's abortive attempt at Communism. The present structure, like the choir of the church, was rebuilt by Prior Docwra, the last prior but one before the Suppression. The walls are about 3 ft. thick, and are of brick faced with Reigate stone. The ground plan consists of an arched opening with rooms on the east and west sides. Towards the north or St. John's-square side two towers project from the face, as well as two towers on the south or St. John's-lane frontage. The archway, being thus recessed, has a great appearance of breadth and solidity. The arch was, until a few years ago, partly filled up by a wooden erection serving for a billiard-room, greatly curtailing the height of the headway, and quite ruining the appearance of the entrance. This erection was put up when the gatehouse was converted into a tavern. The original ground level is 3 ft. below that of the present pavement. On the south front over the archway are sculptured five shields in foliated panels,—in the centre France and England quarterly, surmounted by a crown; on each side the arms of the priory, a cross; beyond, Docwra's arms, a chevron engrailed between three roundels cross in chief.

Numerous discoveries have been brought to light during the last thirty years in excavating for drains, foundations of new houses, &c. When the Metropolitan Building Act of 1845 came into operation, the gateway had a narrow escape. It was condemned as dangerous, and it was proposed to "compo" it. However, this calamity was averted, and in 1846-47 the stonework was reinstated, battlements added to the north front and partly to the south front, and the angular turrets partly rebuilt, with new windows, &c., under the direction of Mr. Pettit Griffith. "Among the spoiliations which have been effected in order somewhat to fit the gatehouse to serve as a tavern, the projecting tower in St. John's-lane, on the east side, was cut through and supported at the angle by a cast-iron column, totally disfiguring the south front. The original stone mullions of the windows in the large room over the gateway have been removed, and miserable deal mullions substituted. All these alterations were effected many years prior to the restorations of 1846. In 1865 the freehold was purchased by Mr. Wickens, in whom the old gatehouse found a friend anxious to retain the fabric as far as possible in all its integrity. With this view, in 1866, 350l. were expended upon its further restoration. The modern staircase on the west side was cleared away, and the oak staircase in the north-west tower (this staircase winds from top to bottom with solid oak steps

and an oak newel) was restored, also the old stone doorway in the same tower, formerly the entrance to Cave's printing-office, was raised 3 ft. in height, the continual raising of the street paving having shorn this doorway of its fair proportions."

Once more the gate has changed hands, and after all its vicissitudes, belongs again to the very order of the Knights of St. John of Jerusalem who formerly possessed it. Sir Edmund Lechmere has purchased the building, and as his name is as a tower of strength for the preservation of ancient buildings, we may safely leave this old building in his hands, in quietness and confidence as to its future. We may add that one of the upper rooms is now in course of restoration under the direction of Mr. Norman Shaw, for the purpose of serving as a chapel.

The afternoon's proceedings were brought to a conclusion by a visit to the interesting Chapel of St. Etheldreda, Ely-place, Holborn, now in course of restoration by Messrs. Whelan & Young, with Sir Gilbert Scott as consulting architect. The walls being now stripped of the galleries, lath and plaster, &c., a good opportunity is afforded of realising what the building must have been before its successive mutilations. The chapel is a good specimen of Decorated work, and will well repay a visit at the present time. We have so recently† referred to it in detail that we need say nothing here.

#### FIRE-PROOF TOWNS.

It is curious that, while we have such disastrous and numerous fires in this and neighbouring countries and in North America, there are cities and towns not far off absolutely fire-proof,—as Buenos Ayres and Montevideo. In Buenos Ayres, a city of 250,000 inhabitants, a poor charwoman sleeps with her children with more safety from fire than the Princess of Wales and the Royal children,—who have been in danger from a fire taking place in Marlborough House, and the Prince being present first directed the children to be removed to a distant part of the house, and then ascending to where the fire was, he fell over the joists. Sandringham has also been on fire since his Royal Highness purchased it. Yet it is so easy to make houses fire-proof, using wood, not to speak of iron, that the older architects and builders of Buenos Ayres and other towns there probably never knew they were building fire-proof! They neither use iron nor the arch; but simply, that province being without trees, they have to use the hard woods from far up the river, which are therefore dear, and so they use little, this being the whole secret.

A hundred walking-sticks may be placed 2 in. from each other, and yet a fire cannot be made of them if they are spread gridiron-fashion, say, across two little walls of brick and a fire kindled below; it will burn through, say four of the sticks which are in the flames, but there it ends. In the same way, if a cartload of shavings and pieces of pine were provided, and half be packed under the best bed in a Buenos Ayres house, and the other piled over it and set on fire, the bonfire would eventually burn through four or five of the joists above, and the bricks and tiles of the floor would fall through; but there it would end, the house could not be set on fire.

The houses are built as follows, the material being brick. Alike each floor and the roof (which is flat) are supported by joists of hard wood about the same distance apart as in this country; across these are laid rails of the same (3½ in. by 1½ in.), and the space between these is bridged over by thin bricks 13½ in. long; another layer of bricks is then laid, and generally on this a layer of tiles. The roof is exactly the same, but has a slope of 1 in 30 or 35. Then the doors and windows have no boxes, but simple frames, which are set up on building the walls and built in; and there is no lathing, nor wainscot, nor skirting of the bottom of the walls. And all the wood is of the hard and hardish kinds, the doors and windows and shutters of cedar, slow to ignite.

The modern houses of Buenos Ayres are pretty much like those of London, Bath, or Edinburgh, nor would any one see hardly any difference. It would be easy, therefore, to adopt the same way of building here with the necessary slight modifications. The ends of the joists in the walls would probably rot in course of time, from external damp penetrating if they were not of wood indestructible from damp, like

in the River Plate towns, where, in the experience of the Spaniards, which extends to nearly two centuries, it does not rot in the damp in that time. Hence, if they were only of oak in this country, a *battre*, like a cornice, should be built at the top of the walls of each story on which the ends of the joists are to rest, so as to sustain them if their ends, built into the wall, ever rotted. The projection, stuccoed over, would form a cornice; but the joists could easily be of iron instead, this being the cheapest country for iron in the world.

The lathing of the ceilings and walls should be done with iron ribbons, and the slates be supported by sheet iron, to which they could be fixed by small screws and nuts. Then the coldness of the floors should be obviated by a lining of black poplar, ½ in. or ¾ in. thick, and carpets above; but all the rest to be of oak or teak, or other hard wood, both hard and wanting in that resin which makes pine so combustible.\*

Instead of filling our houses with combustible pine it would surely be better thus to copy the Spaniards in their fireproof towns,—Buenos Ayres, Monte Video, Rosario, Parana, &c. No human lives are lost there by fire,—no priceless works of art! We not only make combustible private dwellings, but hospitals, infirmaries, lunatic asylums, sailors' homes, and the like, and the inmates are burned alive, or they are nearly killed by the bursting of the cistern on the roof, as in St. George's Hospital, the other day. Lord Clyde returns from India, from the mutiny, and is nearly burned alive the first night he reaches a friend's mansion in the North. A noble mansion is passed in the train, in England, and some one says, "That is the Earl of —'s,—the new castle. The old one was burned down, and the Dowager Countess was found a cinder"; and a Buenos Ayrean who listened thought it strange that an English earl had not a house where his old mother would be safe. Even royalty is not safe. Theatres, halls, and churches are built combustible, exposing us to frightful risks, and the money losses are tremendous. Mills, factories, ironworks even, in the country where iron is so cheap, are built combustible, and then insured. ALMA.

#### SHRINKAGE OF TIMBER.

SIR,—In your report of the discussion at the Architectural Association which followed the reading of Mr. J. Douglass Mathews's paper, "Modern Improvements in Housebuilding," Mr. Phené Spiers says, "As to the shrinkage of timber in modern houses, he did not know how it was to be prevented, seeing that the bulk of the timber used in modern work was brought wet from the dock, and cut up and used often without the slightest attempt being made to 'season' it," and he proceeds to explain that the practice in America is "to place the timber for about three weeks in a hot room having a temperature of about 200°," and that "to a slight extent this precaution was adopted in this country, it being the practice of some builders to place their timber in the boiler-house, where it was subjected to a temperature of 90°."

May I suggest that in the discussion of these questions it would be very useful for the avoidance of vagueness to adopt the builder's nomenclature, and to confine the use of the word "timber" to the structural woodwork of the carpenter, and to call the wood of the joiner "deal," or "stuff"? Many persons, on reading Mr. Spiers's remarks, would be led to believe that our cousins desiccate their joists, plates, roof principals, and rafters; but I do not think that this can be his meaning: if it be, I think he should be cautious in recommending us to adopt the same course, as there can be no doubt that "timber" thus dealt with loses a large quantity of its power of resistance to cross strain, is rendered less lasting, and becomes so brittle that, to use a carpenter's phrase, when it breaks, it breaks short like a carrot.

Doubtless, wet timber drawn out of the floating docks, cut up, and fixed in the building, and the work hastily carried on to ultimate completion, is the source of many ceiling cracks, and assures at the junctions of quarter partitions with brick walls, and (in London with the Building Act-encouraged V gutters) is the cause of

\* In Buenos Ayres they use carpets in winter, which are replaced by cool mats in summer. For greater warmth, however, and probably as now cheaper, some builders have lately put in pine floors on the hard-wood joists, instead of bricks and tiles, which is bad policy, and these new houses are not included when I state that the city is absolutely fireproof.

many leaky roofs. But here again the terms should not be confounded. Wet timber is not necessarily unseasoned; in fact, timber cannot be properly seasoned without the water process. The true remedy is less haste in building, nor let the architect cast all the blame of this on the hurry-scurry of the times. Many a client would adopt his advice to erect the building in carcass, and allow it to remain in that state for a season open to the free wind to dry both walls and timber, not to be finished until the drying process is completed. But this does not suit us. We, like all the rest, wish to get the job finished and have our money, even if it be at the sacrifice of some efficiency.

If the building must be pushed on at all hazards, then you should use as much as possible for your constructional carpentry the stuff of the joiner, in the shape of planks, deals, and battens; these, being imported in their converted forms, are not brought wet from the docks, but are comparatively dry, but, as compared with timber imported in the bulk, they are neither so well "seasoned" nor are they cut from trees which supply wood of so vigorous a growth or so lasting a nature: they are perhaps a little tougher than timber, but not so strong.

For joiners' work, the objection to desiccating the wood is not so strong, as it has no strain to bear, and is in great part protected from weather, but for joinery the wood will be much sounder and more lasting if dried by a more gradual process than that suggested by Mr. Spiers.

The want of knowledge sometimes displayed by architects on this subject is lamentable. I remember reading in your pages the remarks of a gentleman to the Architectural Association accounting for shrinkages in doors and splittings of panels in outer framings, by stating that the timber for these was drawn wet out of the water of the docks, where it floated, and was immediately put into door thicknesses, and put together. His great mistake was in imagining that doors are made out of logs, whereas the commonest joiner could have informed him that the framings, even of the most scamping of Jerry-built houses, are made from deals which are stacked on land in the docks, and have never been in the water after their conversion at the port of export.

#### OBITUARY.

Mr. Matthew Noble, the sculptor, has just died, at his residence, in Kensington. He was born at Hackness, near Scarborough, in Yorkshire, in the year 1819, and was a pupil of the late Mr. John Francis. Among his best-known works are the statue of the Queen, in St. Thomas's Hospital; the statue of the late Lord Derby, in Parliament-square, near Westminster Hall; and the statue of the late Sir John Franklin, in Waterloo-place. Twenty years ago he was successful in the competition for the Wellington Monument at Manchester. Latterly he has been engaged in executing posthumous memorials. Last year he exhibited at the Academy busts or figures of the Rev. Henry Venn, the late Bishop of Manchester, and the late General Sir James Yorke Scarlett. This year he has exhibited the late Mrs. Lionel Astley and the late Mr. Hope Scott, and the latter work is to be placed at Abbotsford. In October, 1874, Mr. Noble had the misfortune to lose a son of great promise, who was expected to make a prominent mark in his profession, which was also his own. Last year Mr. Noble lost another son, in the Abbott's Ripton railway accident, and this double bereavement has accelerated his death.

Mr. Robert Morris, a Liverpool contractor, died at his residence, 42, Bedford-street, Liverpool, on the 23rd ult., after six days' illness. He had for many years carried on the business of a contractor, and his name will be remembered in connexion with many works of importance, including the Berwick and Kelso Railway and the Neath Valley Railway. Among other large works which were entrusted to him was the building of the Prescott Workhouse, and he was associated with Mr. Jesse Hartley in some important dock works. Mr. Morris was much esteemed for his charitable disposition and kindness of heart. He was in his fifty-ninth year.

Mr. Richard Clarke, the Borough Valuer of Birmingham, is dead. He was appointed Borough Valuer in 1853, and parish-surveyor in 1867.

Mr. C. Hide, architect and surveyor, died at his residence, 2, Colonnade, High-street, Worthing, on the 20th ult., at the age of 66. He was a civil engineer by education, and was senior

partner in the firm of Hide & Patching, auctioneers, &c. He filled the office of Town Surveyor for a period of about thirty years, commencing his duties under the old Town Commissioners, and continuing them under the Local Board. During his surveyorship, the drainage scheme was carried out under his personal superintendence. He built the town-hall; and several of the terraces and villas in Worthing were designed by him. A year or two ago he patented a new kind of cement called "Fresco," for facing the outside of buildings in imitation of different kinds of stone.

The Rev. Walter Field, rector of Mersham, Surrey, has died from fever caught at Rome. He was long connected with the Church Building Society, and was the founder of the *Church Builder*.

#### COMPETITIONS.

*The Drainage of Horsham.*—At a meeting of the Horsham Local Board on the 23rd of June, Mr. Alfred Agate moved, "That the premium of 100*l.* for the best scheme produced should be given for the plan submitted by 'A. B.'" Mr. W. Lintott seconded.—Mr. W. Aldridge moved, "That the premium of 50*l.* be awarded for the plan of 'Tria juncta in uno,'" and Mr. Thomas seconded.—Mr. Cowan said he considered the plans named were as worthy as any two that could be suggested, but he could not help thinking that the scheme of "Gravitation" was equal to either of them, and these three were so nearly equal that he felt it would be more in accordance with justice and the intention of the Board if the second premium of 50*l.* was given to each; and he should move an amendment to that effect.—Mr. Agate had no objection to withdraw his motion if the premiums could be divided in the manner suggested.—Mr. Aldridge also expressed his concurrence. It was then proposed by Mr. Cowan, seconded by Mr. Bostock, and carried, that the 50*l.* premium be given to each of the three schemes, viz., "A. B.," "Tria juncta in uno," and "Gravitation."

*Tyldesley Cemetery.*—Nineteen sets of drawings have been submitted in this competition. Premiums of 50*l.* and 20*l.* were offered by the Local Board for the best and second best designs respectively, and plans showing the site of the proposed cemetery, and "conditions" were issued for the guidance of the competitors. In the conditions it was specially stated that the cost of the work should not exceed 5,000*l.* A critique, avowedly written by an architect, appeared in the *Leigh Chronicle* for Saturday last. The writer states that he has seldom seen a more commonplace series of drawings. Some of the competitors appear to have ignored the limitation as to cost. The *Chronicle* has a leading article urging that professional advice should be obtained before the premiums are awarded.

#### REPORT ON THE RESULTS OF THE CONFERENCE ON HEALTH AND SEWAGE OF TOWNS AT THE SOCIETY OF ARTS.

The Chairman of the Conference and the Executive Committee, after having considered the information furnished from the various localities, as well as the facts brought forward during the Conference, have submitted the following as the conclusions to which such information appears to lead:—

1. In certain localities, where land at a reasonable price can be procured, with favourable natural gradients, with soil of a suitable quality, and in sufficient quantity, a sewage farm, if properly conducted, is apparently the best method of disposing of water-carried sewage. It is essential, however, to bear in mind that a profit should not be looked for by the locality establishing the sewage farm, and only a moderate one by the farmer.

2. With regard to the various processes based upon subsidence, precipitation, or filtration, it is evident that by some of them a sufficiently purified effluent can be produced for discharge, without injurious result, into water-courses and rivers of sufficient magnitude for its considerable dilution; and that for many towns, where land is not readily obtained at a moderate price, those particular processes afford the most suitable means of disposing of water-carried sewage. It appears, further, that the sludge in a material point of view is of low and uncertain commercial value; that the cost of its conversion into a valuable manure will preclude the attainment of any adequate return on the outlay and working expenses connected therewith, and that means must therefore be used for getting rid of it without reference to possible profit.

3. In towns where a water-carried system is employed, a rapid flow, thorough ventilation, a proper connexion of the house drains and pipes with the sewers, and their arrangement and maintenance in an efficient condition, are absolutely essential as regards health; hitherto sufficient precautions have rarely been taken for efficiently ensuring all the foregoing conditions.

4. With regard to the various dry systems, where collection at short intervals is properly carried out, the result

appears to be satisfactory, but no really profitable application of any one of them appears as yet to have been accomplished.

5. The old midden or privy system, in populous districts, should be discontinued, and prohibited by law.

6. Sufficient information was not brought forward at the Conference to enable the committee to express an opinion in regard to any of the foreign systems.

7. It was conclusively shown that no one system for disposing of sewage could be adopted for universal use; that different localities require different methods, to suit their special peculiarities; and also that, as a rule, no profit can be derived at present from sewage utilisation.

8. For health's sake, without consideration of commercial profit, sewage and excreta must be got rid of at any cost.

The Executive Committee, whilst abstaining from submitting any extensive measures, have no hesitation in recommending that the prevention of dangerous effects from sewage gases should receive the immediate attention of the Legislature, and they submit the following resolutions as the basis of petitions to Parliament:—

"1. That the protection of public health from typhoid and other diseases demands that an amending Act of Parliament be passed as soon as possible, to secure that all house-drains connected with public sewers in the metropolis, and towns having an urban authority, should be placed under the inspection and control of local sanitary authorities, who shall be bound to see to the effective construction and due maintenance of all such house-drains, pipes, and connexions. Provisions having this object in view already exist in the Act constituting the Commissioners of Sewers in the City of London, in the Metropolitan Local Management Act, 1855, and in the Public Health Act, 1875, but practically they seem scarcely sufficient for the purpose.

2. That plans of such drains and connexions be deposited in the charge of the respective local authorities, who shall be bound to exhibit them and supply copies of them to the public on payment of a moderate fee.

3. That the owners of houses be compelled by law to send to the respective local authorities, within a specified time after the passing of the Act, plans of all house-drains on an appointed scale."

#### PAYMENT OF ARCHITECTS IN MARYLEBONE.

At the last meeting of the Marylebone Board of Guardians, a debate on the reconstruction of the workhouse was resumed by Mr. Galsworthy stating that the information he had had furnished him with reference to the opinion of Sir G. Scott that 2½ per cent. was a reasonable charge for an architect for a public building was found to be incorrect, and he apologised to the Board, as did also Mr. Endeau, of Oxford-street, his informant.

At the desire of the Board, Mr. Galsworthy then read a letter from Sir G. Scott to Mr. Endeau, in which he stated that he never took 2½ per cent. in his life, and only once less than 5 per cent., and that many years ago. He questioned whether an architect could be a member of the Institute of British Architects if a less commission was taken. He was opposed in general to commissions amongst architects, but if one was selected, it should be for his professional merit, and not because of friendship and low charges. After alluding to a matter of a personal nature, Mr. Galsworthy said the question, although in one motion, would have to be divided—that was, whether they should have one architect, and whether the rate of commission should remain as at present; and if it was adopted he should have to divide the question on another occasion. He then went into what the Asylums Board were doing, with a view to show that 2½ per cent. commission was sufficient.

The motion, "That it be an instruction to the Workhouse Reconstruction Committee to draw and issue to a limited number of architects a series of instructions inviting plans; that one of such instructions be that the architect's commission be 2½ per cent. on the amount of the contract," was then put and negatived.

#### The "Church of the English Martyrs."

Cardinal Manning has opened the new "Church of the English Martyrs," which has been recently built in Great Prescott-street, Minories, adjoining Tower-hill. The new church, which supercedes a small, close, and inconvenient chapel, is a Gothic structure of lofty dimensions, in the Decorated style, but many of the details, especially in the carving of the arches and capitals of the pillars, have been left rough. The roof is groined in stone. It will accommodate about 1,500 worshippers, and consists of a nave and two side aisles. The architect was the late Mr. E. Welby Pugin. Owing to the fact that other buildings adjoin the church on all sides, it is lighted by a clearstory. The cost of the building is between 10,000*l.* and 12,000*l.* A certain old writer of the name of Foxe would have been greatly edified by the sermon that was preached on the occasion.

## MASTERS AND MEN.

**Bristol.**—At a delegate conference of builders' labourers on June 24th, it was unanimously resolved to cease work on the first Monday in August should the Master Builders' Association refuse to concede the terms demanded. The painters' strike has terminated, the masters agreeing to a general advance of one halfpenny per hour. A strike of operative stonemasons commenced on the 19th ult., in consequence of the refusal of the employers to grant a halfpenny per hour advance, and to accept a new code of rules which the men seek to impose. The dispute has since been settled, the masters yielding the additional halfpenny, and the men giving in in another direction.

**Chester.**—The carpenters and joiners of Chester are still on strike. The men are being supported by their trade societies, and are receiving from 12s. to 15s. per week as strike pay. They assert that they will remain "out" during the summer unless the masters concede their demands. On the other hand, employers say that trade is dull, and it will do them no harm, and do the men much good, to remain idle for a while. In the meantime there are rumours that the bricklayers intend to make common cause with the joiners.

**Cardiff.**—The strike of painters at Cardiff still continues. They ask 7½d. per hour and their tools found. They are receiving assistance to the extent of 12s. each a week.

**Newcastle.**—The Newcastle master-painters have rejected the operatives' offer of arbitration. The latter ask an advance from 7½d. to 8½d., and 3s. for staying out of town over Sunday. They say their present wages are 5s. less than those of joiners, and 8s. less than masons' or bricklayers'. It is now three years since they received an advance. They have agreed to continue the strike.

**Richmond (Yorkshire).**—The strike amongst the masons employed in the erection of the new barracks at Richmond has terminated, an amicable settlement having been arrived at between employers and men. The depot centre has to be completed within a certain time, and the contractors having been thrown back by the strike, have been obliged to advertise for 200 more men.

**Greenock.**—During the late strike of masons, several of the masters employed more apprentices than the number allowed by the operatives' bye-laws to each employer, and now since the dispute has been settled two of the firms are being called to account by the men. One of these firms is the Messrs. Coghill & Son, who are building the large poorhouse at Smithston, a contract amounting to nearly 100,000l., and who employ at present about 200 men.

**Portsmouth.**—The whole of the members of the Portsmouth branch of the Operative Bricklayers' Society have struck work, demanding an increase of 1d. per hour in their wages, 6½d. per hour being the present general rate, although some masters are paying 7d. The employers, as a rule, are resisting the demand, holding that the present rate of wage is a fair and equitable one.

**National Federation of Builders' Labourers.**—An important step has been taken by the operative labourers employed in the building trade throughout the country, and numbering, it is said, some 200,000 workmen. They have decided upon a scheme for federating the whole of the existing district and local unions into one large national association. Hitherto there has been a marked absence of unanimity upon trade and other questions among the builders' labourers. With a view to remedying this state of things, the Executive Council of the London Amalgamated Labourers' Union have convened a congress of delegates representing various labourers' societies throughout the United Kingdom, to assemble in the Albion Hall, London, on August 7, when a scheme will be discussed for the regulation and government of the proposed national federation.

**Glasgow.**—A meeting of the operative joiners was held at Glasgow on the 22nd ult., when a motion asking those who were at work to contribute the increase of pay was adopted unanimously, the mover suggesting that the men at work should give 5s. a week in support of the non-society men. One of the speakers held out hopes of success, even though the struggle should be prolonged beyond the Fair time. He said only 650 men were now on strike; and that they had more to fear from "low-class workmen" than from the opposition of the employers. The masters were bound to give in,

and he believed, instead of 9d., the men would, ere long, be receiving 10d. per hour. It was simply a question now between the operatives and the employers, how much each could grind out of the other, a state of matters which was to be attributed to the conduct of the masters. A non-society man ridiculed the idea of men being expected to go about idle, receiving only 6s. a week, when they could easily be earning 38s.; but his remarks were not in consonance with the general feeling of the meeting. A case of considerable importance in connexion with this strike was heard by Bailies Lamberton and Ure, at the Northern Police-court, on the 21st ult. Two workmen, named George Turnbull and Fergus Jardine, were charged with having intimidated a third operative, named David Wright, while he was at work in Hope-street, on the 17th ult. The accused were fined two guineas each, with the alternative of fourteen days' imprisonment.

## THE WAGNER THEATRE, BAYREUTH (BAVARIA).

THE new theatre erected for the performances of Herr Wagner's new operas is on a gentle eminence to the south of the town, amid most lovely scenery. The building has been constructed of solid stone, and the works have been executed by the architect, Herr Bruckwald, upon the monumental plans laid down by Herr Semper. A correspondent of the *Times* says,—"The internal arrangements differ materially from those of other theatres, since they have been adapted to the special requirements of the great composer. Herr C. Brandt, director of the machinery of the Darmstadt Court Theatre, has superintended the disposal of the stage and the machinery; while Herr Hofmann, scene-painter, of Vienna, is preparing the most elaborate decorations.

As to its internal organisation, it may be stated that the space set apart for the audience rises in the form of an amphitheatre, culminating in the Princes' gallery at the back. It will hold 1,344 persons, all told, and the seats are exceedingly comfortable and commodious. There being neither side boxes nor proscenium boxes, the seats are all alike excellent for witnessing the performance. The public will be able to quit the building with rapidity,—in fact, within the space of a few minutes,—since there are no less than twelve places of exit. Moreover, the precautions against the dangers arising from fire are admirable, the stage being surrounded by four high so-called water-towers.

The novelty in the arrangements is the provision made for the orchestra, which we have described and illustrated. Its members will be seated in a deep hollow between the stage and the hall of the spectators, this hollow being divided into three terraces. The musicians will be invisible to the audience, being screened from view by a sound-board, intended to catch and repel the sound, thereby carrying it to the auditorium.

## NEW SKATING RINK NEAR MANCHESTER.

THE populous suburbs of Manchester, Sale and Ashton-on-Mersey, have now an excellent skating-rink, in the construction and arrangement of which are some novel features.

A plot of land, one acre and a quarter in extent, within seven minutes' walk of the railway station, has been laid out as an open and covered rink, and in the whole there are 3,000 yards of surface of Val de Travers asphalt. The open rink has in the centre a spacious lawn, suitable for promenading or for the various games now in vogue, such as croquet and lawn tennis. Along the boundary walls are beds planted with trees, shrubs, ferns, and flowers, the skating surface being between the lawn and the borders. The covered rink consists of a brick-walled and iron-roofed building, of such ample dimensions and so well built, that it would be suitable for almost any public purpose, such as a flower-show, a bazaar, volunteer drilling, or public addresses.

The internal dimensions are,—163 ft. long, 52 ft. wide, 16 ft. high to the eaves, and 36 ft. to the peaks of the skylight. The walls are built of Raabon bricks, the light colour of which, both inside and out, is agreeable to the eye. The construction of the roof is worthy of notice. The ends are hipped, and an ornamental cast-iron gutter goes all round the building. The principals, 12 ft. apart, are of wrought iron, strongly trussed; on these are wooden purlins,

which receive tongued and grooved ½-in. board ing; over this is laid Croggon's asphalted felt, and on the outside are screwed down galvanised tiles, curved to the sweep of the roof. This construction prevents condensation and draughts, and tends to preserve an equable temperature, resisting alike the cold of winter and the heat of summer. The galvanised tiles are each about 8 ft. long and 2 ft. wide, with corrugated rolls 3 in. wide, 12 in. apart.

There are five large doorways for skating in and out, which can be closed by Clark's roller shutters. At the entrance end are the pay offices, and rooms for various purposes, and the upper part forms a convenient gallery for a band of music or for spectators. The general effect of the interior is good, as the purlins and the boards of the roof are stained and varnished, and the iron framework painted a delicate blue. The whole of the works have been carried out in accordance with the designs of Mr. J. H. Lynde. The skating surfaces have been laid down by the Val de Travers Asphalt Company; the brickwork and excavations were executed by Messrs. Luke Winstanley & Son; the whole of the roof and ventilators by Messrs. Edward T. Bellhouse & Co., of Manchester; and the plumbing and glazing by Mr. Collier, of Sale.

## DEMOLITION OF THE LONDON TAVERN.

THE well-known London Tavern, which for many years back has been the scene of an untold number of banquets and festivals, will shortly be a thing of the past. It was finally closed for business purposes three weeks ago, and during the past fortnight the furniture, stock, and the entire appointments have been sold preparatory to the removal of the old structure, which is to be replaced by a new palatial edifice for banking purposes. The building, which covers an area of little more than 6,000 ft., has been sold by the London Tavern Company to the proprietors of the Royal Bank of Scotland for 80,000l. In a few weeks it will be taken down, the purchasers intending to enlarge their bank premises, immediately adjoining, by the erection of an additional building, covering the whole of the site at present occupied by the tavern. The new building will be of Portland stone, and the Bishopsgate frontage is intended to be a striking one.

## ROYAL VISITS AND PEST-HOLES.

SPECULATION has been rife as to the cause of the postponement of H.R.H. the Duke of Connaught's visit to Liverpool last week to join his regiment, the 7th Hussars. When the visit of his Royal Highness was announced, the Corporation resolved to place Newsham House at his disposal; but the Duke courteously declined the offer, preferring to occupy the officers' quarters at the barracks in Rupert-lane. It now turns out that these were discovered to be in such a disgraceful state that a communication was forwarded to the Duke requesting him to postpone his visit. Below the house which forms the officers' quarters a huge well was discovered, containing a large quantity of offensive matter. The well, it seems, was sunk when Rupert House was built, some thirty years ago, for the purpose of receiving rain-water, which was stored and pumped up for domestic purposes, for at the time referred to the wants of Liverpool were supplied by the old water companies. The odour from this disused well was sufficient almost to have bred a pestilence in the neighbourhood. As soon as the discovery was made, steps were taken to empty the well. For three hours, on Tuesday, the 20th ult., the steam fire-engine Hamilton was engaged in pumping up the foulest of stagnant water, ere the more solid refuse could be got at, and the following morning the nightsoil carts removed the offensive matter taken out of the cesspool. The *Liverpool Journal* very pertinently comments upon the matter by saying that "it is all very well to be specially solicitous for the health of Royalty. . . . But can anything exceed the fatuity of officers and others who have allowed this atrocity to exist for many years under the rooms they occupy without making an effort to get it abolished? Why should the arrival of a Prince be required to arouse gentlemen of education to a sense of the necessity of the commonest safeguards of health? . . . We read of Indian villages being half depopulated with cholera, and take notice with a feeling of superiority that such calamities are natural enough where all sanitary principles are defied. And

then we discover that beneath well-appointed officers' quarters in one of the greatest towns in England has accumulated for sixteen years, in a deep well, filth of the most horrible and intolerable kind. Will it never be understood how terrible is the responsibility incurred by all who anywhere tolerate conditions of living which are inimical to health? It is a satire on common sense that a Royal visit should be needed to make us empty our pest-holes."

#### GUILDHALL AND BOW CHURCH.

THE last afternoon visit of the Architectural Association for the present session took place on Saturday last, when a visit was paid to Guildhall, by the courtesy of Mr. Hadland, the hall-keeper. After examining the crypt—the greater part of the eastern portion of which is in a tolerably perfect condition, though of the western portion nothing is left except the springings of the ribs on either side—and other portions of the building, under the guidance of Mr. G. H. Birch, who read a short paper on the subject, and was accompanied by Mr. W. H. Overall, F.S.A., the librarian, the visitors made their way to the Church of St. Mary-le-Bow, Cheap-side, where they examined the remains of the well-known Norman crypt. The church ranks first among the parochial churches of the city, and has played no inconsiderable part in history. It is one of the "peculiar" of the Archbishop of Canterbury, the Bishop of London having no jurisdiction within its walls. Its name was derived from the crypt—St. Mary of the Arches. In the crypt the ecclesiastical tribunal known as the Arches Court formerly met. The church was always looked upon by the citizens as *their* church, in contradistinction to St. Paul's, which was more in the hands of the clergy. From its tower the curfew was tolled, and later on, the London apprentices used to wait for its bells to ring as a signal to shut up shop. The present church, with its well-known detached campanile, was built by Wren after the fire of London.

#### THE HOLBORN SCHEME: ARTISANS' DWELLINGS.

MR. SECRETARY CROSS has declined to confirm the scheme, or any portion of it. His secretary, in writing to the Metropolitan Board of Works, says,—

"The partial scheme appears to Mr. Cross to be inadequate and also objectionable, from want of proper space, the street not being sufficiently widened in proportion to the height of the adjacent buildings. On the other hand, the entire scheme, as deposited, does not, as shown in Mr. Nichol's report, provide accommodation for as many persons of the working class as would be displaced. The failure to comply with the statutory requirement would alone put it out of the power of the Secretary of State to confirm the scheme, even were it in other respects not open to objection. This, however, is not the case. Mr. Cross is of opinion that the area proposed to be dealt with is too irregular in its configuration, and too much broken up by other buildings (which are not taken) to admit of being converted into a convenient and appropriate site for working men's dwellings on the scale which is required to meet the necessities of the case. He much regrets that he had not before him the larger scheme of improvement, which was originally submitted to the Board by Sir J. Bazalgette and Mr. Vulliamy."

The delay which will thus be caused is much to be regretted. We had hoped that by an interview, and improvements on the part of the Board, the Home Secretary might have found himself able to authorise the commencement of the works.

#### SUGGESTED NON-LIABILITY FOR RENT ON ACCOUNT OF DEFECTIVE DRAINAGE.

BLACKBURN-MAIZE v. TOWNEND.

THIS was an action (tried in the Common Pleas Division of the High Court of Justice, before Mr. Justice Denman and a special jury) to recover 30%, the amount of one quarter's rent of a house which the defendant had rented of the plaintiff. The defendant denied his liability upon the ground that the house had not been kept in a fit state to be inhabited, and he also set up a counter claim for damages upon the ground that his wife met her death in consequence of the improper drainage.

It appeared that the plaintiff was a gentleman living at Bound's Park, Tonbridge Wells, and in 1858 he took from Alderman Sir Thomas Gabriel an interest in one of three houses in Panington-road, Southborough. He lived there with his family from that time until 1873, and afterwards let the place to the defendant. This gentleman lived there until June last, when his wife died; and he, having had the drainage examined and reported upon, refused to remain longer in the house, but left, and declined to pay any rent except down to the day when the occupation ceased.

The case for the plaintiff was, that he and his seven children had excellent health while they lived in the house, and that the same could be said in reference to the other two houses, which were occupied by the Baroness de Larpent and Colonel Hebbert. The level of the land was such that the houses could not drain into the public sewer, and they had to be drained into cesspools. They were three cesspools, one for each house, and these overflowed into a fourth cesspool. Previous to the defendant taking the house, Mrs. Townend went over the place with the plaintiff, and he fully explained the system of drainage to her, and the periods when the cesspools should be cleaned out. The defendant went into the house in November, 1873, and in October, 1874, he wrote to the plaintiff: "My wife and family enjoy good health at Southborough, so I am willing to take the premises for three years further provided you do the following repairs." A few days before the death of the defendant's wife he wrote to the plaintiff complaining of a smell from the housemaid's sink, and added that this was the cause of the illness. It was a case like that of the Prince of Wales. There had been a previous complaint, and the plaintiff sent workmen to do what was necessary; but they were not allowed to proceed with their work because their noise disturbed the patient.

Evidence was given for the plaintiff to the effect that the drainage of the house, though not perhaps the best, was good. [The case was settled by arrangement between the counsel, a juror being withdrawn.]

#### COMPENSATION CASE.

KELLOCK v. THE CHESHIRE LINES COMMITTEE.

THIS case was recently heard at the Sheriff's Jury Court, St. George's Hall, Liverpool, before Mr. Aston, Q.C., assessor, and a special jury. The Cheshire Lines Committee require, for the purposes of their new branch goods line to the north end of Liverpool, to pass through the estate of Mr. C. W. Kellock, shipbroker, of Liverpool, and the jury required to assess the amount he should be paid for the land actually taken, and as compensation for injury to the rest of the estate.

It appeared that Mr. Kellock purchased the estate with the residence thereon some ten or twelve years ago. It is situated at Woolton, abutting on Grange-road, and adjoins the lands of the Marquis of Salisbury, Major Walker, and others. Mr. Kellock resided upon the property, which is some 36 or 37 acres in extent, and has spent considerable sums upon it, having established a miniature model farm. The new line intersects it in such a way as to sever a portion of it,—about nine acres,—from the main part by an embankment ranging from 18 ft. to 21 ft. in height. The valuers on both sides agreed that the estate might be considered building land; but the two sides differed even in a greater degree than usual in their estimates of the total compensation. The first witness called for the claimant valued the 18,312 yards of land actually required by the railway at 2s. a yard, or 2,754l. 6s.; or, with the 10 per cent. for compulsory sale, 3,029l. 14s. 6d. The damage by severance to the main portion he computed at 6d. per yard on 88,323, or 2,233l. 1s. 4d., and to the eastward or smaller section, 1s. 6d. per yard, to 3,345l. 15s. He also allowed 1,000l. for the erection of a residence, making his total estimate 9,596l. 9s. 6d. Several other valuers called for the claimant brought up their estimates to similar amounts. The valuers for the railway company, on the other hand, placed the actual value of the land at a much lower figure, and their estimates for injury to the land were correspondingly low, and they allowed nothing for injury to the residence. Their total valuations averaged only a little over 2,000l. The jury found, as the value of the land taken, 2,524l. 15s.; as severance damage, 2,507l. 6s. 9d.; and as injury to residence, 1,000l.; making a total of 6,122l. 1s. 9d.

#### THE BURSTING OF THE TANK AT ST. GEORGE'S HOSPITAL.

AN inquest has been held by Mr. Bedford, the coroner for Westminster, touching the circumstances attending the death of Eliza Gomez, aged twenty-four, an in-patient lying in the Wright ward, which is situate on the east side of the building, and above which, on the extreme top, was erected an iron tank, capable of holding a sufficient quantity of water to supply the whole of the hospital. On Saturday, June 3rd (as already recorded by us), one side of the tank gave way, crashing through the flooring of the above ward, as well as the ward below, destroying the furniture, and severely injuring several of the patients, amongst whom was the deceased, who, after lingering in great agony, expired from the effects of the injuries.

Charles Todd, secretary to the hospital, said,—The tank was constructed in 1869 by Messrs. Eastons & Anderson, according to a tender sent by them, which was accepted by the authorities of the hospital. The tank has been in operation ever since that year, and cleaned quarterly by the plumbers of the hospital. It was last cleaned in the month of April of this year. There was no intimation then that there was anything wrong with the tank.

Mr. Henry Hunt, Victoria-street, surveyor, deposed that, having been instructed by the governors of the hospital to make an examination of the broken cistern, he had done so, and found that the tank was of cast iron, 10 ft. by 10 ft., by 12 ft. in height, fastened with 5-8th wrought iron bolts. The immediate cause of the accident was the breaking of one plate of each pair of cheek plates, which, being weakened by corrosion, were unequal to the double strain put upon it. The cast-iron plates, two tiers in height, being thus left without restraint, bulged out, cracked, and fell. This corrosion was in the wrought-iron rods and cheek plates, and in consequence of such corrosion the plates and rods became weakened, and the tank therefore burst. Persons getting upon the rods or placing a ladder upon the cheek plates might possibly weaken

them. The cross bolt in the plates was not long enough, and the accident possibly occurred through that.

By the Coroner.—It was quite possible that the fracture in the tank might have resulted from frost, but it was very unlikely.

Mr. Stephen Salter, Wolburn-place, Russell-square, said,—I am the architect of this hospital, and on Saturday, the 3rd, I was informed of this lamentable occurrence. I examined the premises to see if anything had given way in the walls, and found, to my great relief, that the walls had not the slightest crack in them, and I came to the conclusion that the fabric of the hospital was perfectly sound and safe. The cast-iron girders traversing the various floors were quite intact, and the cast-iron shoes also sound, the damage being confined to the rafters and woodwork and plastering of the floors and ceilings, together with that portion of the roof smashed by the falling water and cast iron. I took no part in the construction of the tank, and therefore would rather not say anything about the cause of the accident. As architect I superintended the construction of the brickwork upon which the tank was to rest, but the engineering work, of course, I left to Messrs. Eastons & Anderson themselves.

The jury returned a verdict that the death of the deceased resulted from the slipping of the tie-rods in the tanks, and that such slipping was due to an accidental cause. The jurors furthermore expressed a hope that in future the governors of the hospital would take measures for having the tank examined by a competent engineer, instead of a mere workman like the carpenter of the hospital, every time it was cleansed.

#### PAISLEY.

THE new Burgh Lunatic Asylum has been inspected. The new building is situated at Riccartbar, about a mile to the south of the town, on an elevated plateau, commanding a magnificent view. The main building is of a T shape. There is a spacious entrance-hall in the centre, behind which is the dining-hall, kitchen, &c., and on each side the accommodation for the male and female inmates. Behind the main building is placed the engine-house, washing-house, laundry, &c. The frontage is 270 ft., and the pavilions at each side extend backwards 120 ft. The heating and ventilation are effected by air,—cold in summer and hot in winter,—being forced by a steam fan into every apartment. This part of the work was executed by Messrs. Weems, of Johnstone. The asylum will accommodate 120 patients, and the total cost is about 12,500l., exclusive of the price of ground. The whole has been carried out from the designs of Mr. John Honeyman, architect, Glasgow. The builders were Messrs. Lyall & Leckie, and the clerk of works was Mr. O. Henderson.

#### ST. MARGARET'S CHURCH, TOPSHAM, DEVON.

THE parish Church of Topsham, on the Exe, near Exeter, has been partly rebuilt, and the eastern portion was reopened on the 17th ult. The former church had long been found inconvenient and unsuitable. On the site of the ancient church, of which the tower only remains, a large room (literally), nearly 70 ft. square, was erected about 1790, in a very unbecoming style, with wood windows, and a plaster ceiling, groined into imposts on a few wooden Doric columns. The greater part of this building is now removed, and a good portion of a church, in the Decorated style, is erected in its place, being the chancel, its aisles and transepts, at a cost of 3,700l. The nave portion, wanting to complete the edifice, is now commenced. The material is Torbay limestone, with Bath stone dressings. The whole outlay (retaining the old tower) will be about 5,550l. The site is rather a favourable one, on a steep bank of the river, and well seen from the South Devon Railway.

The architect is Mr. Edward Ashworth; The contractors are Messrs. Stephens & Son, of Exeter; and the clerk of works is Mr. R. Bradford.

The east window of the chancel (five-light) has the four Evangelists and the Good Shepherd, central, by Drake. There is also stained glass in the north transept window,—eight subjects in our Lord's life,—the gift of Capt. Greatwood, the work of Beer & Driffeld; another stained-glass window in the chancel is the gift of the Rev. H. T. Ellacombe, by Hughes.

**Memorial.**—A bronze statue of the late James Carmichael, engineer, from the chisel of Mr. John Hutchison, R.S.A., has been unveiled in Dundee. The ceremony was held on the centenary of the birth of Mr. Carmichael. Mr. Carmichael was the inventor of the fan-blast, and of many improvements in mechanics. The statue and pedestal rise to the height of 17 ft. Mr. Carmichael is represented in sitting posture examining a plan, with miniatures of his inventions on the plinth.

## FINE IRONWORK.

At the Philadelphia Exhibition, an ornamental pavilion in cast and wrought iron, designed by Mr. Thomas Jeckyll, of London, and manufactured by Barnard, Bishop, & Barnards, of Norwich, is exciting some attention, and justly.

This pavilion, which is intended for use upon a lawn, or ornamental grounds, is 35 ft. long by 18 ft. wide, and 35 ft. high to the extreme ridge. It is mounted upon a dais of four steps. It has two floors, the upper of which is reached by a spiral staircase. It is supported by twenty-eight square columns placed 2 ft. 6 in. apart. The ornament in the shafts of these columns is of a very rich and varied character. At a height of 7 ft. 6 in. from the ground, a transom bar connects the columns. The lower verandah is supported by cast-iron brackets, firmly secured to the columns. The outlines of these brackets are in all cases alike, but the enrichment of their spandrels is varied by bas-reliefs, the subjects of which are studies from the "Apple Blossom, with flying Birds," "Whitethorn, with Pheasants," "Scotch Fir, with Jays," "Sunflower," "Chrysanthemum, Narcissus, Daisy and Grass, with a Crane and rising Lark," &c. These brackets further support the gutter and cresting of the lower roof.

The upper floor is surrounded by a wrought-iron balcony railing, 4 ft. high, of a light and severe design. The upper roof is supported in its turn by twenty columns of a similar design to the lower ones. These are connected by a transom bar, above which is a rich open-work fish-scale panel supporting the upper gutter, with cresting and fans of a like character to the lower ones. The brackets, however, upon these columns are of a different outline to the lower ones, and the spandrels are filled with many designs of a bolder character. Between each bracket, both upper and lower, is an ornamented ceiling of a combined floral and geometrical pattern, the chrysanthemum being taken as the type for its ornament. The roof (the rafters of which are of wrought T-iron) is covered with zinc, in curved tiles, and is surmounted by an elaborately-carved cresting.

One of the most important and novel features of this work is the railing which surrounds the entire building. This is 4 ft. 6 in. high, and is entirely of wrought iron. The sunflower has been taken as the type for its ornament. The railing is divided into seventy-two panels, each of which is occupied by a sunflower 3 ft. 6 in. high, the flower itself being 11 in. in diameter, having carefully-veined leaves, six in number to each flower.

## THE CHIMNEY-SWEEPERS ACT.

At the Huddersfield Borough Police Court, Messrs. Stead & Co., master builders, Cowcliffe, were summoned for unlawfully constructing a chimney by not having rounded off the angle of flue 4½ in., as required by law. Mr. R. P. Berry appeared for defendants.

Mr. Learoyd appeared on behalf of the prosecution, and informed the magistrates that the charge was brought by an inspector of chimneys (Mr. Hill), who was employed by some philanthropists, who, throughout the various towns in the country, had taken up the question, considering by so doing that they were serving humanity. In the first place, they took up the question in reference to the employment of boys in sweeping chimneys, and in the next place they took up the question on the legal ground that the flues ought to be of such a dimension as that chimneys could be swept by brushes so far as domestic dwellings were concerned. The Act of Parliament, in order to do this, provided that there must not be an angle, but a curve, and therefore it was an offence if any one built a chimney with an angle instead of a curve.

Mr. Rowbottom, assistant to Messrs. John Kirk & Sons, architects, Lion Arcade, was then called, and said he inspected four houses, which were being built by the defendants, at Marsh, on the 27th of October last, and found the angles in each acute instead of round, while the "with" between the flues was only about 1½ in.

For the defence, Samuel Crowther, mason, said he did the mason's work at the chimneys. The chimneys were rounded off, and he was sure it was quite possible to sweep the chimneys with a machine from the bottom. The angle was not chipped off, but rounded with mortar, so that a brush could pass.

The Bench, after a brief consultation, stated that they had given the case very serious consideration, and they felt bound to convict, but at the same time they had decided to convict in the lowest penalty, 10l. in each case and costs, in all 21l. 2s. Other builders were also fined.

## THE NEW MINERS' HALL, DURHAM.

THE new Miners' Hall, at Durham, was inaugurated on the 10th inst. by a special meeting of the Council of the Durham Miners' Association. It contains offices for all the leading officials, together with a large public office, committee-room, retiring-rooms, and lavatories upon the ground floor. Upon the upper floor are the large hall, ticket-office, cloak-rooms, smoking-rooms, and other conveniences. The hall is 55 ft. long by 32 ft. broad, and is 22 ft. high. At one end is the raised platform for the speakers, and at the opposite end is a gallery. The hall is lighted by sunlights, and the seating is cushioned throughout.

The building is in the Italian style, and has at the north-western angle a lofty unequal-sided octagonal clock tower, with domical roof covered with lead, and surmounted by lofty gilded finials.

The foundations of the building, when opened, proved to be of the most treacherous nature, the soil being for the greater part nothing but a wet spongy bog, whilst in one portion a quicksand, from which the water rose in large quantities when tapped, had to be dealt with. It is satisfactory to hear, however, that the building has been successfully completed, and that although some portions are heavily weighted,—as, for instance, the tower portion,—nothing in the shape of settlement has taken place. The estimated total cost will be about 9,000l. Mr. Thomas Oliver, of Newcastle-on-Tyne, was the architect.

## THE GLASS-LINED IRON PIPE.

THIS is an American invention of recent date, and seems an important one in a sanitary point of view. It consists of a wrought-iron pipe, into which a tube of flint glass, one size smaller, is inserted. The space between the glass and the iron is filled with a plastic substance, composed of plaster of Paris and other ingredients, forming an excellent non-conductor. This filling is uniform and perfect, all the air being pressed out of the intermediate space by the process of lining. This connecting substance firmly unites the two materials, and at the same time overcomes the difference of expansion and contraction between the glass and iron. The lining is protected at the ends of the sections of pipe by cement or paraffine, a thin layer of those materials being placed in the space where two ends of the pipes or fittings are screwed together, so as to make perfectly water and air-tight joints. Bends, branches, and connexions, are made by means of glass-lined elbows and tees, and the pipe is put up or laid in the same manner as gas and steam pipes. The pipe is manufactured in lengths of 8 ft. for continuous lines, and such shorter pieces as may be required for special locations. After a line of pipe is completed it should form a perfect inner surface of glass.

## THE ADAPTABILITY OF TERRA COTTA.

SIR,—In his paper on this subject, published in a recent issue, Mr. Edmund Sharpe, writing with the authority of experience, assumes that the value of terra cotta as a building material is commensurate with its "solidity." I think that an examination of the best examples of ancient terra cotta would prove the fallacy of the assumption; and, that we possess these examples, proves that their makers knew pretty well what they were about. That its durability is due to the paramount condition of being thoroughly "fired" is undoubtedly true, but this amenability to heat is in its turn dependent upon the antecedent condition of being thoroughly "dry."

The difficulty of drying a solid block is at once apparent. The drying proceeds from the surface inwards, thus gradually imprisoning within the block a sufficiency of moisture (and, probably, other latent force) to occasion its disruption under the subsequent heat of the kiln. Thorough "drying" is the prime necessity in obtaining first-rate work, and which being properly carried out, there is little danger of warping under firing.

Some noteworthy examples of the successful manufacture of terra-cotta in considerable bulk may be found in most of the school buildings recently erected by the London School Board. The steps used in these are of hollow terra-cotta, 4 ft. 6 in. long, with a rise of 6 in. and a tread of 10 in., and 1½ in. in thickness of material after leaving the kiln, in which they require to remain a fortnight.

These steps, therefore, are not "solid"; but, to use Mr. Sharpe's words, are solidly built into the walls just as if they were of stone. They essentially form part and parcel of the body and strength of the structure in which they are placed, and I think it must be conceded that, on the point of strength and durability, terra-cotta can hardly be submitted to a more trying test than to fall beneath the daily-reiterated tread of our energetic school children. C. W.

## WORKMEN'S TRAINS.

"To live in London or not to live in London" is now the question for the wage-earners. Leave off work at five, a walk home of five minutes, and after that the theatre, music-hall, or tap-room; or a short railway ride toward your own country house and the evening spent in your garden, plant-house, or shop, besides having room to move and good air for the growing family,—that is the question discussed in the *Builder* of the 17th ult. With workmen's trains the latter method is possible, but ought not the Legislature to compel railway companies to issue tickets (weekly if desirable) as late as eight o'clock in the morning, so that warehousemen should get to their business before half-past? Some time back I spoke to a brewer who had to walk between Fulham and Caledonian-road, and a few days back with a pipe-maker who had to be at business at least an hour before time and walk near 1½ mile because no workmen's trains ran between King's-cross and Kensington. If the railway companies obtain exclusive rights, ought they not to use those rights for the public benefit at the most suitable times, and allow the use of passes between District and Metropolitan lines for workmen as well as other persons? JOSEPH CHRETIEN.

## "GALVANISED IRON CISTERNS AND PIPES."

SIR,—Galvanized iron cisterns are steadily supplanting all other domestic appliances for the storing of water. Builders, a class singularly free from prejudices and the trammels of tradition, long ago recognised the superiority of "galvanised iron cisterns" over those constructed of lead or slate. They saw that they were cheaper, lighter, less likely to get out of order, and that the water drawn from them was cool, pure, and free from all metallic taint and chemical association. If a slate cistern gets leaky, it has to be caulked with "rasket and red lead," and unless the cistern is constantly kept full, the red lead perishes, leaving behind a poisonous powder, which the water absorbs as soon as the cistern is refilled. Your correspondent, "R. B.," in his letter complains that his "galvanised iron cisterns" rust. Now, this is just what good "galvanised iron cisterns" do not do; therefore, in the absence of fuller information, we are drawn to the conclusion that your correspondent's cistern is of inferior manufacture, and badly galvanised. I have had one constantly in use for the last six years, and the "rust" he alludes to is "conspicuous by its absence." W. C. B.

\* \* \* Much longer experience than this is needed. Many of the galvanised iron cisterns sold are utterly worthless, and fall into holes in a few years. The question is how long, under various circumstances, will the best last?

## PRESBYTERIAN CHURCHES AT LIVERPOOL.

Kirkdale.—The foundation-stone of a new Presbyterian Church, situated at the corner of Stanley-road and Fountains-road, Kirkdale, and which is to be called the Union Presbyterian Church, was laid on the 15th ult. by Mr. Samuel Stitt, J.P. The edifice will be in the Venetian Gothic style of architecture, and is to accommodate 900 persons. Beneath the church there will be spacious schoolrooms, intended to provide for about 600 children. The building will be bounded on the south by Fountains-road, and on the east and west by two streets yet to be constructed. The main entrance to the church will be from Fountains-road. There will be vestries and minister's room, with separate entrances, attached to the church. The estimated cost is about 7,000l. Messrs. Thomas Wainwright & Sons, Leigh-street, are the architects. The contract for the building has not yet been let; but Messrs. Wells & Sons provided the foundation-stone and necessary fittings.

**Waterloo.**—On the same day the memorial-stone of a new church at Waterloo was laid by the Moderator of the Presbyterian Church, the Rev. Dr. Anderson. The church, which is being built at the junction of Crosby-road and Great George's-road, is a substantial brick structure in the Early French Gothic style, with stone and black brick dressings. The dimensions are 85 ft. 6 in. in length by 32 ft. 6 in. in width, and it is intended, when completed, to accommodate 500 persons. The design includes a tower and spire rising some 60 ft. from the ground. Hitherto the congregation have worshipped in the Assembly-rooms in East-street. The new building, including the land, will cost about 5,000*l*. The building operations were commenced about eight months ago, and the church, it is expected, will be opened in the course of another three or four months. The builders are Messrs. Costain & Keen, of Great Crosby. Mr. Barker, the architect, made a statement as to the details of the building. He said that in the nave of the church there would be sittings for 323 persons, but there would be an end gallery, in which the organ would be placed, and in that gallery there would be sittings for 40 people, making a total accommodation for the present for 363. As soon as the funds permitted they proposed to couple two transepts, which would give extra accommodation for 168, thus making a total accommodation for 531. The present contract was for 3,200*l*.

#### PRESBYTERIAN CHURCH, BLYTH.

The new English Presbyterian Church at Waterloo, Blyth, was opened on the 6th ult. The building forms a commanding architectural feature. The lofty nave, and the tower and spire, are visible for miles around, and from far out at sea. The principal front, with the partly-detached tower and spire rising straight from the ground, the large buttresses to the nave, with sunk and traceried panelling and carving, the deeply-recessed doorways, and the exceedingly lofty traceried windows, are its characteristics. The chancel arch is executed in stone, and supported by marble columns. Within the chancel is placed the platform, of somewhat larger and more ornate character than usual. Accommodation is provided for between 700 and 800 persons. The estimated cost is from 4,000*l*. to 5,000*l*. Provision has been made for the erection of a large school room. Mr. Wm. Winship has acted as clerk of the works; and the contractors were Messrs. White & Sproat for the excavation, mason and bricklayers, and carpenter and joiner's work, also the slater's and plasterer's works; Mr. T. Walker for the painter and glazier's works; and Messrs. Walker & Elmley for the ironfounder's, plumber's, and engineering works. Mr. Thomas Oliver is the architect for the building.

#### CHURCH-BUILDING NEWS.

**Putley (Herefordshire).**—Putley Church, near Ashperton, on the Hereford and Worcester line, has been reopened, after restoration under the direction of Mr. Thomas Blashill, architect, London. The church formerly consisted of a nave, with a wooden south porch, and a square wooden belfry, which was probably erected about 1799, a chancel, and a small modern vestry. Every portion was in a state of extreme dilapidation, though the building had been renewed from time to time, and but little of the ancient architecture remained when the work of restoration was lately commenced. The work of restoration was commenced last June. The north wall of the nave and the greater part of the chancel and vestry have been rebuilt, and a new timber belfry has been provided. The fittings throughout the church are new, and there are a new heating apparatus, new deep drainage, and new roof coverings. In the restoration of the church some interesting relics were found. In the debris of the north wall of the nave a considerable quantity of fragments of Roman bricks, roofing tiles, coarse pottery, and mortar was found, which would lead to the belief that a Roman building of some description once existed on or near the spot. These "foot-prints on the sands of time" have been carefully preserved. The old east window was a single-light, 3 ft. 1 in. wide, and was evidently composed of the fragments of an older window which it in turn replaced. Some exception was taken to the proposal made by the architect to replace it by a new three-light window. He found a precedent for his proposition in the fact that the

jamb of an old three-light window were still *in situ*. A new roof of trussed rafters has been put to the chancel, and the old fifteenth century roof of the nave has been cleaned and repaired. All the roofs are covered with Broseley tiles. The modern belfry still retained fragments of the ancient pyramidal-roofed structure, of which an illustration was given in the *Gentleman's Magazine* for 1795, from a sketch by James Walthen. The new belfry is made of similar design. The whole work has cost over 1,300*l*. The works have been carried out by Messrs. Collins & Cullis, of Tewkesbury.

**Newabbey.**—The foundation-stone of a new parish church at Newabbey has been laid by Mr. Oswald, of Auchenorruive and Cavens. The new church, of which Mr. Barbour (of the firm of Halliday & Barbour, Dumfries) is the architect, is a Latin cross on plan, the main part of which will measure internally 73 ft. by 25½ ft., and be placed due east and west; and the transept arms of the north and south will each measure 17 ft. 9 in. in width, and project 11 ft. 3 in. In the northern angle of the building will be placed the vestry, measuring 9 ft. 3 in. by 7 ft.; and in the centre of the south side wall will be the porch—an open one—measuring 12 ft. by 8 ft. The number of sittings to be provided for is 400. The roof will be open, the principals being framed with carved struts springing from stone corbels in the walls, and over the principals will be purlins, rafters, and sarking—all cleaned. The principals and purlins will be of pitch pine, and the rafters and sarking of white pine. The walls will be built of granite rubble and red freestone dressing. The style adopted is thirteenth-century Gothic.

**Letheringsett.**—Letheringsett Church has been re-opened, after restoration (with the exception of the circular western tower). The church, which is of the early Norman period, is supposed to have been built, or else restored and enlarged, by Grimbauld Bacon, a Saxon, who settled in Letheringsett, or Leringsett as it was then called, soon after the Conquest. The long and short work at the east corner of the north aisle and the round tower, together with its non-parapeted and pyramidal roofing, are thought to be the remains of Grimbauld's church fabric, and probably much of the side walls are of the same date. The chief work of restoration in the present instance, in addition to the usual repair of defects and removal of worthless fittings, has been the return to the original level of the floor in the nave and aisles; the bases of the clustered columns having been found buried 12 in. under a modern brick pavement. The internal proportions of the building obtained by the removal of this pavement have thus been set right and the ascent to the chancel increased by two steps. The arcade used to finish eastwards with what appeared to be half columns, but these proved to be entire clustered columns like the others, but half enclosed by masonry. This masonry has been removed so as to disclose the columns, and to enable archaeologists to determine what may have been the original or intended form of the church. The east window has been filled with stained glass (by Freedy), representing the Ascension. The internal sill level of the old window has been retained, and used as a shelf, upon which a stone reredos has been placed, with a black marble super-altar, the gift of the architect. All the fittings throughout the church are new, and as there were no old ones to dictate a restoration, they have been designed as nineteenth-century work. The whole work has been carried out by Mr. Chapman, of Hanworth, from designs and under the superintendence of Mr. E. J. Tarver, architect, London.

**Hastings Town Hall.**—The Town Council are certainly unfortunate. What was stated by those who took this question in hand in November last, and whose opinion was cast on one side as worthless, and which was again pressed by Mr. Alderman Williams in Council as to the right of the Town Council to erect the proposed building upon the Central Cricket Ground, in Meadow-road, has after seven months been discovered to be true, as it is stated the Council are now advised that the property in question is trust property. The land is to be used for recreation purposes and cannot be used for public building, unless every subscriber consent to the arrangement; but Mr. Williams was told the law propounded by him was bad, and if the consent of the Cornwallis Trustees were obtained any building could be erected, and this has proved to be an error.

#### DISSENTING CHURCH-BUILDING NEWS.

**Newcastle-on-Tyne.**—On June 5th, the corner stones of a new United Methodist Free Chapel at Bulman Village were laid, the present chapel at Bulman Village having been found to be too small. The new chapel, which will provide sittings for 730 adults, is to be built from plans by Messrs. Septimus Oswald & Son, architects, Newcastle, at the junction of the West-avenue (a newly-formed street on the Gosforth Park Estate) and the North turnpike road. The architecture of the chapel is English Gothic of an early type, with a trace of French feeling in some of the details. The walling throughout is to be of "snecked rubble," with chiselled ashlar dressings. The extreme internal dimensions are 82 ft. by 43 ft., and 38 ft. high. The estimated cost of the building is upwards of 4,000*l*., and with the price of the site the total cost will be about 5,000*l*. The contractors for the whole of the structural works are Messrs. Henry Hudspeth & Son, their sub-contractors being:—Messrs. Wylie for joiner and carpenter's work; Messrs. G. & T. J. Waite for plumbing work; Messrs. J. Montgomery & Son are the contractors for plaster work, and Mr. C. S. Wardroper (Bulman Village) for painting and glazing.

**Reading.**—A new Congregational church is about to be erected in this town as a mission church to accommodate a body who have for some time past held services in a schoolroom. Messrs. Wm. & J. T. Brown & F. W. Albury are the architects.

#### SUUM CUIQUE.

On the stairs of the Delavan Hotel, at Albany, New York, there is a marble slab, upon which there is the following inscription:—

"Delavan House, erected 1845.

J. W. Adams and J. P. Kirkwood, Architects.  
William L. Woollett, Jm., Superintendent.

Enlargement completed, 1849.

Enlarged and improved, 1856.

W. L. Woollett & E. Ogden, Architects.

W. Delumano, Decorative Artist.

James W. Eaton, mason; John N. Parker, carpenter; William Gray, stone-cutter; Ridgway, Russ, & Nesbitt, plumbers; Iva Porter, painter and glazier; W. Munsig, gas-fitter and steam work; Dixon & Munson, marble work; Prunyn & Lansing, iron work; Hoch Strasser & Blachall, bell-hangers; Steele & King, paper-hangers; Henderson, Kennedy, & Kaeeland, grates; Richardson & Barrett, tinnermen; Van Houson & Charles, gas-fixtures, Aubin Gas Works; H. Gilbert, foreman carpenter; P. Mansfield, foreman mason."

To make the list complete, the name of the man who mixed the mortar ought not to have been omitted. Is the tablet a proof that those who were employed "took it out" in advertisement? H.

#### Books Received.

*Architectural Ironwork: a Practical Work for Iron-workers, Architects, and Engineers, &c.* By WILLIAM J. FRYER, Jun. Illustrated. Willey & Sons, New York; Trübner & Co., London.

This book, the lengthy title-page of which designates it as written generally for "all whose trade, profession, or business connects them with architectural ironwork," and as including "valuable suggestions for the successful conduct of business," is apparently a practical ironfounder's experience put into systematic form, as a general book of hints and reference for those engaged in ironfounding, and the application of ironwork in building. "Years of study, observation, and hard practical toil were the price of the author's thorough knowledge of this class of work," he tells us, and the book conveys the idea that this is the case, and that the writer has drawn his conclusions from practical observation, combined with a good deal of thought and shrewdness.

In regard to the bulk of the book, the practical directions for carrying out iron construction, we observe nothing new; but the book may be said to be generally very full and very systematically compiled. There are sufficient diagrams to render clear every point in construction that is described, and the pages bristle with tables of figures for simplifying calculations and ascertaining the proper proportions between load and sectional area, and other such prac-

tical problems. Some other suggestions which are special to the book are in relation to the conduct of the ironfounding business, and are worth attention. The author strongly urges keeping an accurate account of the cost of material and labour on each separate job turned out, and on all the different portions of the work, as the only way of arriving at a certain knowledge of how the business is prospering, and of getting a basis for safe and reliable calculations of cost in future work. The reason that many ironworkers, after doing a large business, find themselves at the end of the year little better off, is that they have neglected a thousand and one small items in making their estimates, and, in fact, have practised a system of self-deception. It is true, observes the author, that the man who has fixed a line of prices upon accurate calculations will often find work apparently leaving him because he cannot compete with the lower prices of less careful estimators. But "such a man need have no regrets. Let him confine himself to such articles as do pay, or raise the standard of his work so as to command a superior price in the market." More money, he observes, is made or lost in the foundry than in any other department. This part of the work should be superintended by a foreman possessing practical ability in the turning out of good castings, rather than one full of scientific theories. The foundry business, also, is "peculiar" in one respect. "The manager has continually to overcome a tendency to name lower rates per pound in taking orders than the facts of the real cost of production warrant. The business is carried on for the purpose of making money, and that aim needs to be constantly enforced by thorough and systematic management of and reference to tables of costs." This is good, sound, wholesome advice; but we should hardly say the tendency referred to was "peculiar" to the ironfounder's business.

The only fault we find with the book is in reference to the first word of the title (which had better have been "Practical Ironwork," than "Architectural Ironwork"), and some of the reflections which have reference to that view of the subject. The author has aimed at doing something to improve the nature of architectural design in iron, in regard to which he observes that "there is a growing discrimination between the true and the false in this branch of productive industry. A higher order of taste is being developed, and the tendency is towards more finished and more ornamental work": a state of things which, though "encouraging," involves an increased expenditure in pattern-work. But Mr. Fryer, though meaning well, and in some respects writing sensibly on this point, has not got hold of the principle of the matter quite. He thinks architectural character in ironwork is to be ensured by conforming to the details and style that have long been accepted as good in masonry design. "The principles of architecture," he says, "which have endured so long, will remain for ever, simply because they embody true taste and common sense, both of which the public have and understand." If the public in America have it, they are better off than the public in England; but, as Hamlet says to Polonius,—"Your news is not true." Mr. Fryer is quite correct in saying that the principles of architecture are those of common sense, and will remain for ever; but he seems to think "the principles of architecture" consist in certain forms, such as cornices, modillions, columns, &c. The said principles, on the contrary, consist in the effective treatment and ornamentation of material in the way best suited to its qualities and its manner of construction; and the author's specimen of an iron-fronted building (p. 81) is directly contrary to the principles of architecture. It is a sham altogether. Columns and pilasters of Classical proportions, and with elaborate foliated capitals, are used, and pedestals and panelling—all the details belonging to a masonic style, and having no affinity or relation with iron at all. He complains in one place that some persons call iron a sham, and that it is no more so than a stone front, which he calls a veneer front to a brick wall. But the stone front is built up with the brick wall and bonded to it, and partakes of the same construction; whereas Mr. Fryer's iron front is iron imitating stone in every point; a tensile material imitating a compressible material. His entire want of realisation of the problem is shown in other passages. Iron, he says, is "the best material for American street architecture," and on that point we will not undertake to contradict him here; it may or may not be; but he proceeds to

say "whatever moulding is good in stone, for projection and general outline, is good in iron." The statement would have been much more like the truth if it had run "is not good in iron." Iron requires a totally distinct treatment from stone; a much lighter treatment, and one in which the putting together, the construction, is clearly shown. In his typical front the nature of the construction is entirely masked and falsified, and made to look as if built up instead of, as it really is, tied and bolted together. He shows in one place a drawing of a heavy cornice in iron, with the section of an Italian stone cornice, only a mere empty shell. Such a thing is simply an insufferable sham, one of the worst that could be made. The Corinthian capital stamped as a decoration on the back of the book is enough in itself to show how little Mr. Fryer is acquainted with the real nature of the problem before him. Such a capital, with its leaves cast and filed up separately and riveted on, is a piece of clumsy humbug in design, the only use of which is to provide something that will pass muster with the general public, and save the trouble of thinking how best to treat the material decoratively at that point, and at the same time suitably. The author inveighs against those who treat iron in such a merely utilitarian way, using it in thin and starved proportions. They may not do it artistically, but they are more likely to be in the right with a purely practical treatment, than Mr. Fryer with his iron front imitating a stone-built edifice. One of the reasons given for the superior suitability of iron fronts is that they can be painted so frequently, and are always, therefore, fresh and new and inviting, and that if a man has a "store" with a stone front next door to one with an iron front, the latter, with its annual spring coat of paint, will be much more attractive to customers than the stone front without paint, and in which presently every stone assumes a different tinge or colour; which seems to be thought very untidy in America. Indeed, one proprietor who rejoiced in a marble front had to give in, and have it painted, in order to keep pace with his neighbour of the iron front. Comment on this, as the papers say, "would be superfluous."

In short, Mr. Fryer unfurls the iron-founders' flag, though in a perfectly open and honest manner, and with an evident wish to fight well under that standard. But before he talked so much about architectural common-sense, he should have learned a little better, in what it consisted, and what manner of constructive design is really suitable for the nature of iron. He speaks very feelingly in one place of the mischief which every building in bad taste or dishonestly designed exercises, more or less, in lowering the general public taste; but if he is building or putting up iron fronts, after the model illustrated in his pages, he himself is a far greater culprit in this way than he appears to be the least aware of.

#### VARIORUM.

"THE Peasant's Home, 1760—1875" (Stanford, Charing-cross), is the title of an essay by Edward Smith, F.R.S., to which the Howard Medal was awarded by the Statistical Society. The author's personal attention to the subject seems to date from a very recent period, and the book is a mere compilation. Still it may be useful.—"Handbook of Rural Sanitary Science," edited by Dr. Lory Marsh (Smith, Elder, & Co.), is, like the last-named work, the result of an offered premium for an essay, but of a much higher character. It includes the pith of four of the essays sent in. The editor thinks it may prove useful to justices of the peace, the clergy, sanitary officers, and others. So far as regards the justices and the clergy, we fully agree with him, read, and learn; but the sanitary officers who find and hope the classes in question will buy read, much that is new and scarcely fit for their position.—"He that overcometh" is the title of a clever tale, in two volumes, by Miss Fanny Aiken-Kortright, better known as the author of "The Dean," just now published by Remington & Co. The characters are clearly discriminated, and the story is full of incident and very interesting. Like all that Miss Kortright has written, it may safely be placed in any hands.—Belgravia is going ahead. A shilling number which includes a story by Chas. Reade, a poem by Algernon Swinburne, a serial story by Miss Braddon, and another by E. Lynn Linton, with illustrative engravings, and much other writing, must be pretty sure of a large circulation.

#### Miscellaneous.

**Freemasonry and Architecture.**—Mr. Emra Holmes, in "Notes on the Old Minute Books of the British Union Lodge, No. 114, Ipswich," in the *Masonic Magazine* for June, says:—"We have alluded to the introduction of operative masons into our order as testified in these records, and we are disposed to suggest that Grand Lodge, the Supreme Council 33°, and Grand Mark Lodge especially as being perhaps most nearly allied to operative masonry, should foster the study of architecture in every way. Why should they not, for instance, give a gold medal away every year to the writer of the best paper on architecture or archæology, or any kindred subject, or the best design for cathedral, church, castle, or mansion? Would it not be a good thing if operative masons were encouraged to join us by being admitted at a lower fee, and in the case of the A. and A. Rite we believe it would popularise that Rite and make it much more useful if all architects were given up to the 12th degree, that of Grand Master Architect, for a nominal fee on taking the usual obligation of allegiance to the S.G.C. 33°. Further we submit that such offices as Grand and Prov. Gr. Superintendent of Works in the Craft, and Grand Inspector of Works in the Mark Grand Lodge, should be confined exclusively to professional architects or civil engineers, or to such as have made architecture and archæology their peculiar study. We have known drapers appointed to such offices who did not know what archæology was. The restoration of churches and cathedrals and the preservation of castles and other places of historical interest ought to be a matter of the greatest possible interest to the three great Masonic bodies we have named; and Freemasons at large, if they are worthy of their descent, and believe at all in the traditions of the Order, should surely show as keen a delight in these records of the past,—these monuments of history,—as do the outer world, who are not Masons. But do they? That is the question."

**Discovery at Stoke-upon-Trent.**—A few days since an interesting relic was discovered in the churchyard of the parish church of Stoke-upon-Trent. In digging a grave on or near the site of the church which was taken down when the present modern church was erected, the workmen came upon what (according to the *Staffordshire Advertiser*) is to all appearance the shaft of a churchyard cross of the eleventh century. It is quadrangular in shape, and the ornamentation bears a general resemblance to that of several other Norman crosses still existing in the county. On one side is a plain treatment of a trefoil leaf and stalk, on another a chain ornament, on the third a guilloche, and on the fourth a "key pattern" of the simplest kind. The old church at Stoke had a round-headed chancel arch and other indications of a Norman church having once existed, but the chancel, at the time of the removal of the church, was Early English, and the nave and tower were of considerably later date. The shaft has been dressed to form a door lintel, and it may fairly be inferred, from the position in which it was found, that it once formed the lintel of a priests' door in the south wall of the chancel.

**"Fires in Cathedrals."**—Mr. Frederick S. Waller, architect and diocesan surveyor and surveyor to the Dean and Chapter of Gloucester, writes from Gloucester:—"I venture to ask space for a few lines to relieve anxiety as regards Gloucester Cathedral, and to show that there has been no neglect of duty on the part of the authorities here. In 1872 I adopted the same course that Mr. Ferguson had recourse to in 1874: I wrote to all the cathedral authorities, asking for information as to the means adopted by them to guard against the destructive effects of lightning. From nearly all replies were received. I submitted to the chapter a report upon the whole subject, and, after much consideration devoted to it, the following costly works were at once ordered and carried into effect:—1. The whole of the cathedral was protected by lightning conductors, on the same system as that used in her Majesty's Navy. 2. Water-pipes of ample dimensions, with hydrants at intervals of 110 ft., were laid all round the building, connected with the largest main from the city works; and many other safeguards were adopted in this cathedral. The Dean and Chapter of Winchester, with a view to protect the cathedral in case of fire occurring, are about to place a tank containing 1,000 gallons of water, on the top of the building."

**Penny Banks and Thrift.**—A meeting was held on the 20th ult. at the Belle-isle Mission-hall, Metropolitan Cattle Market, in order to further the establishment of a branch of the National Penny Bank (Limited) in that neighbourhood. Mr. George C. T. Bartley (general manager of the bank) having explained the principles of the institution, the Right Hon. C. E. Childers, M.P., who occupied the chair, said that as one of the trustees of the bank, and as one who took an active and lively interest in the success of the undertaking, he certainly hoped to see very shortly a flourishing branch of the establishment at work in the vicinity. He thought that those persons who had the welfare of the country at heart could do nothing better than encourage thrift, especially among the working classes. Thrift should be encouraged from one end of the land to the other, and he thought that the bank of which he was speaking gave great facilities for the cultivation of those habits of thrift on which the future of the country so much depended.

**The Employers and Workmen Act.**—At the Lambeth Police Court, last week, a bricklayer named Steer, who was accompanied by a dozen fellow-workmen, waited on Mr. Chance and raised a point of some importance under the Employers and Workmen Act. He wished to know whether, when men were kept waiting for their money, they were not entitled to pay for an hour's time. They left off work at one o'clock on Saturday, and were not paid until half-past two o'clock. Mr. Chance was of opinion that if workmen gave notice that they should expect to be paid for waiting after a specified time, he should be disposed to grant a summons. If, however, after notice, a master declared that he would not be bound by such a notice, and men kept in his employ, there would be no remedy. Steer thanked the magistrate. The matter was of interest to workmen generally, as they were frequently kept waiting beyond a reasonable time for their money on pay-days.

**The Thames Toll Bridges.**—At a meeting of the Richmond Select Vestry, on the 20th ult., some discussion took place with reference to the Toll Bridges (River Thames) Bill, the vestry having at a previous meeting resolved to oppose the Bill as it originally stood. Mr. E. C. Dermer stated that he had some conversation with Mr. Alderman M'Arthur, the promoter of the Bill, and the latter expressed his willingness that the Metropolitan Board of Works should pay the compensation for taking to the bridges, and that the counties of Middlesex and Surrey should make an annual payment. The subject was brought up at a meeting of the County Finance Committee of Surrey last week, at which Mr. Cubitt, Sir H. Peek, Sir Trevor Lawrence, and others, were present, and it was then thought that the proposal of Alderman M'Arthur would be exceedingly acceptable to the county.

**Short Time at the Crewe Engine Works.** A Manchester paper announces that, commencing with this week, the whole of the men employed in the great locomotive works of the London and North-Western Railway Company at Crewe, to the number of 7,000, have been put upon short time. This means that the men will leave their work on Friday night, and not resume it till breakfast-hour on Monday, making only five days. This has resulted from three causes:—1. A decision in the Court of Chancery restraining the London and North-Western Company from making engines for other companies; 2. The introduction of superior machinery by the chief engineer, Mr. Webb; and 3. By the depression in trade.

**The Arundel Society.**—During 1875 the financial prosperity of this society, which seemed to have met with a slight temporary check in the preceding year, was, according to the annual report just now published, fully restored. The gross receipts amounted to 7,187l., a total which exceeds that of 1874 by more than 1,000l., and is only surpassed by that of 1872, a year which had before been noted as exceptional in the society's history. The increase of income last year was accompanied by a more than equivalent increase of expenditure; but this, when explained, is no cause for dissatisfaction.

**Art Exhibition at Southampton.**—The annual exhibition of works of art at the Hartley Institution, Southampton, was opened on the 20th ult. The exhibition comprises about 800 examples of high-class painting in oil and water colours, drawings, etchings, &c., and a selection of objects from South Kensington Museum.

**Technical Education of Bricklayers.**—A second meeting in furtherance of the social as well as trade condition of bricklayers was held on the 21st ult. at the Artisans' Institute, St. Martin's-lane. After the committee appointed at the last meeting had presented their report, a permanent committee of ten bricklayers was appointed, and it was arranged that a class for technical instruction should at once be formed, and twenty-eight men from the body of the meeting handed in their names as students, and paid their entrance fee of 1s. each.

**Architect to the North-Eastern Company.**—Mr. William Peachey, architect, of Darlington, has been appointed successor to the late Mr. Barleigh in the post of architect to the North-Eastern Railway Company. Mr. Peachey has been for twenty years architect for the Stockton and Darlington Railway Company, including the period during which that company's district has been part of the North-Eastern system. The appointment will necessitate the removal of Mr. Peachey to York.

**Fatal Fall of a Building in Sheffield.**—On the 22nd ult. an accident, involving loss of life and great damage to property, happened at the South Yorkshire Steel and Iron Works of Andrew S. Burrows & Co., Pothouse-lane, Attercliffe, Sheffield. Without any warning the lofty and heavy wall dividing the steel warehouse and the rail-mill fell, killing George Smith (33) on the spot, and injuring another. Mr. Burrows narrowly escaped.

**Ebury-square.**—The Duke of Westminster has asked the Board of Works to take upon lease from his Grace the ornamental garden known as Ebury-square, Buckingham Palace-road, Pimlico, to be thrown open to the public in the day-time throughout the year, the Board paying the expense of the police, and of maintaining the garden and the railing.

**Tamworth School Board.**—The designs of Messrs. R. J. & J. Goodacre, architects, of Leicester, have been selected, in a limited competition, for the above schools. The other competitors were Messrs. Giles & Brookhouse, of Derby, and Mr. Basil Champneys, of London. The schools are intended to accommodate 800 children.

**Hogg's Ventilating Company.**—The system worked out by this company for ventilating dwellings and other buildings seems very well calculated to be effective, and we have no hesitation in advising such of our readers as really desire to have properly-ventilated houses to apply to the Company for assistance.

**Statue of Tyndale.**—The Board of Works has granted the use of a site in the garden of the Victoria Embankment for a monument to William Tyndale. The design for the monument will be submitted to the Board for their approval.

**The Paris Exhibition, 1878.**—It is proposed to fix the sum to be subscribed by the City of Paris towards the fund for the Exhibition of 1878 at 200,000l.

## TENDERS

For proposed vestry-hall and offices, for the parish of St. John, Hampstead, with Portland cement dressings. Quantities by Mr. Abbott. Messrs. Kendall & Mew, architects:—

		Bath stone	Portland
		dressings,	stone
		extra.	dressings.
Beach Brothers ...	£11,822	£1,829	£2,439
Carter .....	10,270	1,170	1,970
Manley & Rogers ..	10,130	2,670	2,970
Ennor .....	9,807	1,930	2,840
Tyerman .....	9,570	1,264	2,562
Burford .....	9,472	979	1,745
Temple & Foster ..	9,648	1,057	2,169
Crockett .....	8,999	1,434	2,026
Garrud .....	8,990	1,300	3,350
Hunt .....	8,508	1,755	2,517
Shepherd .....	8,500	1,100	1,900

For mortuary, fence walls, &c., to public recreation ground, for the parish of St. George-in-the-East. (First contract.) Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Hearle .....	£1,335	0	0
Ennor .....	1,311	0	0
Palmer .....	1,298	0	0
Manning & Dowdney (accepted) ..	1,250	0	0

For rebuilding the Roebuck public-house, Cannon-street-road, E. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Grimwood .....	£3,373	0	0
Coleman .....	3,224	0	0
Palmer .....	3,175	0	0
Ennor .....	3,079	0	0
Bennett .....	2,998	0	0
Manning & Dowdney (accepted) ..	2,990	0	0

For Cinderford drainage. Messrs. Gatto & Beasley, engineers:—

Brock & Bruce .....	£8,635	0	0
Coleman Bros. ....	7,438	0	0
King .....	7,000	0	0
Flewitt & Henderson ..	6,703	0	0
Cowdery & Son .....	5,733	0	0
Dickson (accepted) .....	5,675	0	0
Marfell .....	5,543	0	0

For alterations and decorations, Sydenham. Mr. Robert J. Worley, architect:—

	Decorations.	Billiard-room, &c.
Land .....	£130 12 6	£947 17 0
Howe .....	94 0 0	535 0 0
Smith .....	98 0 0	429 0 0
Vincent .....	94 0 0	406 0 0

For rebuilding the Castle tavern, Moorgate, for Mr. T. Norton. Mr. R. Roberts, architect:—

Coleman .....	£5,835	0	0
Kiddle & Son .....	5,799	0	0
Ashby & Horner .....	5,763	0	0
Rider & Son .....	5,687	0	0
Hart .....	5,584	0	0
Perry .....	5,555	0	0
Newman & Mann .....	5,529	0	0

For two studios, Stanley Gardens, England-lane, South Hampstead, for Mr. Auguste Ballin. Messrs. Batterbury & Huxley, architects. Quantities supplied:—

Warne .....	£1,155	0	0
King (accepted) .....	1,100	0	0

For the enlargement of Grayshot-road chapel, Battersea. Mr. A. J. Rouse, architect. Quantities supplied:—

Wilde .....	£1,433	0	0
Bland .....	1,384	0	0
R. & E. Smith .....	1,321	0	0
Grieve & Littlejohns ..	1,259	0	0
Moy & Giles .....	1,200	0	0
Tull .....	1,185	0	0
Hoborn .....	1,180	0	0
Jopling & Co. ....	1,140	0	0
National Co-operative and Contractors' Society, Limited ..	1,100	0	0
Lose .....	1,055	0	0
Hocking (accepted) .....	1,040	0	0

For the erection of cottages in the Boston-road, Walthamstow, for Mr. J. Coningsby:—

Thomason (accepted) .....	£200	0	0
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For new roof and ceiling, painting, and sundry work, at the Queen's Arms, Hackney-road, for Mr. B. Phillips. Mr. H. W. Budd, architect:—

Thomason (accepted) .....	£188	10	0
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For additions to the stores at the Bethnal-green Industrial Schools, Leytonstone, for the Guardians of St. Matthew, Bethnal-green. Mr. W. Munday, architect:—

Stamp & Bowtle .....	£119	10	0
Taylor .....	116	10	0
Wire .....	109	12	0
Judd & Hawkings .....	103	11	0
Arber .....	98	0	0
Thomason (accepted) .....	97	10	0

For enlarging chancel of St. James's Church, Hampton Hill, for Rev. J. F. Pitts Wygram, M.A. Mr. W. Wigginton, architect:—

Falkner (accepted) .....	£630	0	0
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For St. Barnabas Parsonage, Grove-road, Bow, for Rev. Mr. Barnes. Mr. W. Wigginton, architect:—

Falkner (accepted) .....	£1,810	0	0
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For Lewes Skating Rink (exclusive of iron roof and asphalt floor):—

Harman .....	£498	0	0
Cheesman & Co. (accepted) ..	478	0	0
Steer .....	465	0	0

For the erection of a villa residence, at Finchley, for Mr. Albert Saunders. Quantities by Messrs. Rogers & Vining. Mr. Walter Graves, architect:—

Cooper (accepted) .....	£2,340	0	0
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For erecting additions to surgery, &c., to Westbury House, Willesden, for Dr. H. Branthwaite. Mr. Walter Graves, architect:—

Tilbury (accepted) .....	£144	0	0
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For erecting additions to "Ellerslie," Nicol-road, Willesden, for Mr. Wm. Burgess. Mr. Walter Graves, architect:—

Horne (accepted) .....			
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For rebuilding a warehouse, Wood-street, City. Messrs. Ford & Heskel, architects:—

McLachlan & Son .....	£5,291	0	0
Adamson & Son .....	4,941	0	0
Perry & Co. ....	4,917	0	0
Kirk & Randall .....	4,834	0	0
Ashby Bros. ....	4,871	0	0
Peto Bros. ....	4,859	0	0
Downs & Co. ....	4,817	0	0
Browne & Robinson ..	4,719	0	0
Brass .....	4,667	0	0
Newman & Mann (accepted) ..	4,536	0	0

For the erection of villa residence, at Fairfield-road, Chesterfield, for Mr. H. Slack. Messrs. Rollinson & Son, architects:—

Fattinson & Co. ....	£1,499	0	0
Hoole & Handby .....	1,390	0	0
Madin .....	1,342	10	0
Slim .....	1,343	0	0
Greenwood .....	1,281	0	0
Forrest (accepted) .....	1,283	0	0

For residence in Corporation-street, Chesterfield, for Mr. J. Carnegie. Messrs. Rollinson & Son, architects:—

Forrest .....	£2,933	0	0
Tutin .....	2,917	0	0
Marriott .....	2,760	0	0
Wright & Madin .....	2,687	0	0
Slim .....	2,598	0	0
Wright .....	2,580	0	0
Greenwood .....	2,578	0	0
Saul (accepted) .....	2,540	0	0

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ster. Maps. Post 8vo. 12s.

JOHN MURRAY, Albemarle-St.

# The Builder.

Vol. XXXIV. No. 1744.

SATURDAY, JULY 8, 1876.

## ILLUSTRATION.

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### Kensington House.



H & C

ANY of our readers must have noticed the gradual growth of a large stone mansion, consisting of centre and wings, in the Kensington High-road, and many more have heard rumours as to the sale of it by the well-known gentleman for whom it has been built, first to one distinguished personage and then another. Some reticence has been shown as to the communication of information, and nothing has yet been said as to the arrangement of the interior. A few particulars will, doubtless, be found interesting. Kensington House has been built from the designs and under the continuous personal superintendence of Mr. James Knowles, architect. The site comprises about 7½ acres of freehold land, which four years

ago was chiefly covered by one of the worst and most squalid neighbourhoods in London. The front opposite Kensington-gardens was occupied by Kensington House and Colby House. The high road at this point was narrowed almost to a lane, and has now been widened by setting back the front-fence of the new Kensington House. On the opposite side (the park side) of the road stood a long dead wall, with a gardener's cottage, which wall is now replaced by an open iron railing, giving a fine view of the old palace.

It is worth noticing that so large a site was acquired and cleared without any sort or kind of compulsory powers, and at no extravagant cost,—considering the prices which have been given for land in this neighbourhood.

The house itself is probably (excepting the palaces) the largest private residence in town,—the ground-floor alone containing a suite of family rooms as well as of state rooms, which are usually distributed over the ground and first floors in houses of the highest class. The arrangement of the family suite, it is necessary to say, as well as of other parts of the house as it now stands, has been considerably altered since originally built as planned by the architect.

The leading idea of the plan is to make a central feature of a large conservatory, which lights the main hall and two drawing-rooms,—all of which are capable of being thrown together upon occasion into one grand reception-room of many compartments. From this, as its centre, the rest of the plan radiates.

On entering by the principal portico (fronting the high road), which is sustained on monoliths of pink granite in the form of coupled Ionic columns, the visitor finds himself at once on the general level of the ground floor, which is

uninterrupted by a single step throughout. Passing through a vestibule having on either side waiting-rooms and conveniences, and beyond these two morning-rooms looking on to Kensington-gardens, he enters the great hall, upwards of 90 ft. long and 30 ft. wide. Immediately opposite is the conservatory, about 40 ft. square and 40 ft. high, opening from the hall by five wide and lofty casements, which together make a wall of glass, designed expressly to give an effect of brilliant colours from the groups of flowers, lighting up, as it were, the whole house from the first moment of entering it. Going forward into the conservatory, drawing-rooms, each about 50 ft. long, open from it on either side, while all three open on to the raised garden terrace, paved with marble, which extends along the entire south front of the house, and forms a link of connexion for the whole of the various rooms.

Returning to the main hall, it will be found divided into three compartments by two screens of coupled fluted Corinthian marble columns, of which each shaft is a single block. The central compartment opens on to the conservatory as already explained, and in the compartments right and left, behind the screens of columns, rise two staircases of solid Sicilian marble to the level of the second floor. The first landings of these staircases are carried upon marble caryatides, supporting a marble balustrade and gilded candelabra, and form a kind of porch-like approach to the rooms beyond. On the left hand these caryatides represent Spring and Summer, and flank the opening to the picture-gallery, and ball-room, in the eastern wings of the building. On the right hand they represent Autumn and Winter, and lead to the dining-rooms, billiard-room, library, and the other apartments of the western wings of the house.

A vista from east to west through the whole length of the house is formed between these caryatides and the column screens, or rather was formed, until an alteration of the dining-rooms blocked up this vista at the eastern end of it.

The pavement of the hall and staircases is of Roman mosaic in marble, and the walls are cased with a veined marble dado.

Passing from the hall to the east wing, under the landing carried by the eastern caryatides, the picture-gallery is next entered. It is 106 ft. long by 25 ft. wide, and at the two ends is lobbed off by screens of columns into rooms with side-lights for water-colours. These ends are fitted with fire-places, and treated as rooms, and should be divided by velvet curtains from the main picture-gallery.

The picture-gallery leads to the ball-room, 84 ft. long by 25 ft. wide and 30 ft. high, divided into three compartments by lofty arches carried upon marble monolithic columns. The centre compartment, opposite the entrance to the room, is enlarged by a tribune for the music. The picture-gallery is connected with the ball-room by three entrances, for use upon the occasion of great receptions.

\*Turning back to the hall, traversing its length, and passing between the western caryatides, on the right is the billiard-room, about 35 ft. by 25 ft.; on the left the library, 32 ft. by 25 ft.; and in front the two dining-rooms, each 42 ft. by 25 ft., and capable of being thrown together into one large room. These dining-rooms were originally built as three rooms, one in the centre having a large bow window facing the centre room at the end of the vista of the house, and two others of about 25 ft. by 25 ft., one on each side, all throwable together for large entertainments. The alteration is a considerable injury to the house as a place to live in, but the original plan would be easily restored.

The whole of the reception-rooms open on to the garden terrace before mentioned, which is about 223 ft. long by an average width of 30 ft., and has a central flight of steps opposite to the conservatory, 38 ft. wide, leading on to the tower, as well as two side flights of steps of lesser width.

The basement accommodation is arranged so as to have the offices lighted from the front and the two ends of the house, no lights whatever being placed on the south or garden front, which is occupied by the raised garden terrace.

The upper floors of the house are devoted almost entirely to bed and dressing rooms, most of which are provided with fixed hot and cold baths, so as to avoid the daily necessity of setting out pans and cans. The house contains in all about 100 apartments, of all kinds, or *pièces*, as the French call them.

It is built on a massive and thick slab of concrete, the ground having had to be taken out to a considerable depth over the whole surface, to get rid of the old drains and cesspools with which it was honeycombed, and every trace of which was rooted out, until nothing but clean and virgin soil remained to place the concrete upon. The materials used are brick in cement, and stone ashlar also in cement, the stone being Bath Box-ground Weather, with all upper members of strings, cornices, &c., in Portland stone. The whole of the ground-floor is divided from the basement by Dennett's fireproof arching, and the floors, where not marble, are either oak parquet or pitch-pine throughout the house.

The grounds have been entirely made up from a very low level (about the level of the existing garden-lake), until the effect of a natural slope of park-like land has been obtained, which falls towards the garden-lake, and is raised to a considerable height all round the boundaries of the property, so as the more effectually and rapidly to screen out, by planting, the circumjacent houses. To those who knew the neighbourhood originally the change effected here is wonderful.

From the terrace the Italian garden is first reached, having the orangery and the aviaries forming the chief part of the north side of it. Beyond this is a small open-air skating-rink, and following round the border of the ornamental water is a boat-house and a summer-house, and a winding walk to the stables. These front to Kensington-square, and contain accommodation for twenty-four horses and twelve carriages.

with kitchen and mess-room for grooms, grooms' dormitories, and second coachman's rooms on the first-floor, and head coachman's house looking on to Kensington-square. The stables are built of brick and stone, in the same manner as the house, with a wooden pavement in their two court-yards.

Returning from the stables, and passing along by the lake, we come to what is intended to be a sub-tropical garden; and beyond that, by another winding walk through the shrubbery, to the American Bowling-alley, placed where the noise of the players would be least audible from the rest of the grounds. Beyond the sub-tropical garden are the plant-houses, lily-tank, forcing-pits, potting-sheds, gardener's bothie, and the poultry-house, with a green trellised run for the fowls.

The various contractors employed deserve to be mentioned.

The bulk of the work to the house itself has been done by Mr. Chappell, of Great George-street; the internal plumbing, by Mr. Hall, of Bulstrode-mews; the hot-water services and warming by Mr. Herring, of Chertsey; the pitch pine flooring by Messrs. Geo. Smith & Co.; the Roman mosaic of the hall, by Mr. Orr, of Baker-street; the marble staircases and columns, by Messrs. Walker, Emley, & Beall, Newcastle-on-Tyne; the marble paving of conservatory and vestibule, and the marble dado to the hall, by Mr. Burke, of Newman-street; the electric bells, by Mr. Sax, of Great Russell-street; the French plate-glass, throughout, by Mr. Willmore, of Kensington; the ironmongery and fittings, by Mr. Gibbons, of Wolverhampton; the marble cariatides, by Mr. Fontana, of Gledbe-place, Chelsea; the wrought ironwork and the iron-work of the conservatory, by the Thames Iron-works Co.; the gas supply, by Messrs. Stode, of Osanburgh-street; the stoves and chimney-pieces, by Messrs. Benham, of Wigmore-street, and by Messrs. Yates, Haywood, & Co., of Thames-street; the cast-iron crestings and balustrades, by Messrs. Turner & Allen, of Thames-street; the iron scroll balustrades of the principal stairs, by Mr. Turner, of East-street; the revolving shutters in the basement, by Mr. Clarke; the carton pierre and other enrichments to the ceilings, by Mr. Bookbinder, of Thornhill-road, Barnsbury Park; the pink granite shafts of the portico, by Mr. Wright, of Aberdeen; the oak parquet floors, the walls of the dining-rooms, the picture-gallery, and the front entrance walnut screen, &c., by Messrs. Howard, of Berners-street; and the coloured decorations of the enrichments and ceilings, mentioned hereafter a little in detail, and the general painting and papering, by Mr. Sang, of Sackville-street.

The stables, the orangery, the garden terrace, the lodge, trellis, &c., were executed by Mr. Thorn, of Cremorne Wharf, Chelsea; the stable fittings, by Messrs. Barton, of Oxford-street; the bowling-alley, by Messrs. Nixon; the plant-houses and poultry-houses, &c., by Messrs. Weekes; the front iron fence, by the Cadogan Ironworks Co.; the boat-house and summer-house, by Mr. Fox; and the gardens and grounds, by Mr. John Gibson. Mr. Anton has been the architect's zealous and active clerk of works throughout.

#### Coloured Decorations.

To the right and left of the entrance-hall short corridors lead to two waiting-rooms, one attached to the proprietor's study, the other to the lady of the house's room. In the study, a room of about 25 ft. square, the woodwork (as doors, skirtings, and window-sashes), is brown, black, and gold; the walls a Pompeian red, with a Turquoise blue frieze below cornice, studded with ornament and golden stars. The ceiling is rich in modelled and gold ornaments.

The corresponding room, on the other side, has warm pale blue walls with enriched green and gold borders accompanied by gold mouldings, the ceiling in light Raffaellian and white and straw coloured grounds, flowers, cameo heads as medallions, the cove with relieved white festoons on a blue ground.

The ceilings of the double staircase are painted in positive sky blue, brown spandrels surrounded by gold mouldings, festoons, Raffaellian, and clusters of fruit, &c., on a dark blue ground. The side walls of hall and staircases are of a quiet sunny pale green. The ceilings of the two drawing-rooms, with their triple glass doors into the conservatory and their spacious bow-windows, have each oval centre panels, enriched cove, cornice, and mouldings, most of them gilt and variegated coloured

grounds, and extensively embellished by figure subjects and Capricci. The panels of walls of the one drawing-room are amber satin, with gold frames and turquoise blue styles, while the opposite drawing-room has panels in turquoise blue satin, white and enriched framing, with borders of pale Naples yellow.

The treatment of the picture-gallery is quiet, and in its colouring and ornamentation kept in a tone to receive oil paintings. The woodwork is of dark walnut and ebony; the walls a dark green, similar to those of the Palazzo Pitti at Florence; the cornice is simple grey, white, and gold; the cove, again, is grey, white, chocolate, and gold.

The two dining-rooms, one the summer and the other the winter dining-room, on the west of the building, and approached by a spacious corridor from the central hall, are different in treatment from the other rooms, the walls being in panelled oak and walnut. Some large panels in the walls lined with morone cloth are intended for pictures. The ceilings are massively panelled, the beams and mouldings being treated similarly to those of the side walls, while the larger compartments of the ceilings are embellished with pictures representing fishing, shooting, the pressure of the grape, and so on.

The ceiling of the library, one of the most elaborate in the building, is embellished in various sombre and some very bright tints, with allegorical figures of the arts and sciences, while cameo heads on a gold ground, viz.—Chaucer, Bacon, Milton, and Shakspeare,—form the principal ornament of the central panel.

In the ball and concert room a large bow-window opposite the principal entrance forms a striking feature of the room as you enter. The dome of this latter has an orchestral group of juvenile Cupid musicians, and sylvan scenery in the background. The leading tints of this room are white, mother-of-pearl, and gold. The central ceiling, domed, is painted with a group of Apollo and the Muses,—panels, spandrels, and borders being framed in gold. The two ceilings at the ends of this room are similarly treated, though with other subjects and ornaments. The walls are panelled, having arabesques as pilasters of original design on a ground of mother-of-pearl, the centre of each containing portraits of the leading ladies of the English and French courts, from Charles II., Louis Quatorze, down to Marie Antoinette. For these, which are indifferent copies of indifferent pictures, we have no admiration. The three doors leading to this apartment from the picture gallery have on the panels small views by Mr. Joseph F. Sang, jun.,—two of Versailles, one of the Forum at Rome, one of Venice, and two of Richmond.

The colouring, as a whole, is overdone, but several of the rooms are very satisfactory.

#### AN AFTERNOON AT ROMSEY ABBEY.

THE Abbey Church of Romsey, though well known to fame, is hardly so much a shrine for architectural visitors as its remarkable and unusual features of interest would lead one to expect. For one thing, Romsey is not exactly on the way to anywhere. It stands on a branch line of railway, and it has not the prestige of a cathedral town, though possessing a church to which some of our cathedrals may yield, not only in interest but even in grandeur of internal effect. Our own route to the quiet little country town did not in this instance lie along the Bishopstoke and Salisbury Railway, but along some of the white chalky roads which lead northward from the skirts of the New Forest, and on which in full summer the sunlight flares in a way that makes the roads here, as pleasant to the eye as to the feet. Threading our way along some of these, diverging now over a patch of furze-covered common, now along a narrow bridle-road by way of a short cut, dipping into the hollow and crossing the stream past Wellow Mills (pleasant-sounding name on a hot day, reminding one of Chaucer's "colde welle streames"), we presently leave on the right the meadows and the square and squat white mansion of Broadlands, late the country-seat of the most practical of recent English statesmen, and enter the town by the bridge that spans the strong current of the Test, in whose brown water the long green weeds sway to and fro continually. Romsey ought to be well off for water, we think, as we go up the straggling street, for on our right there runs all down the street a deep, rapid brook, close to the front of the houses, artificially hemmed in and

narrowed by retaining walls on either side,—a kind of miniature Thames Embankment scheme,—which reduces the channel to 3 ft. or 4 ft. Over this the front doors of the dwellings are reached by stone landings; or the water disappears for some yards in a tunnel, to fume out all the more rapidly when it emerges; or it splashes through a weir and slowly turns a wheel to assist some industrial purpose; everywhere a rapid, strong, and, to all appearance, clear current, looking a very healthy and refreshing companion by the road-side. Yet, unfortunately, it is whispered that this lively tributary of the Test does not conduce to the sanitary state of Romsey; that it is put to base uses by thoughtless inhabitants, and carries down with it a percentage of things that would be better disposed of otherwise. This may be libel; the sense neither of sight nor smell discovers such an abuse. But if there be any foundation for the charge, it is a matter that cannot be too soon or too strictly looked into. Better turn the stream out of the town at once than make it a disseminator of impurities. A running stream is a delightful neighbour in itself, but then, like Caesar's wife, it must be above suspicion.

As to Romsey itself, it is not a picturesque town; nor is there anything besides the church to attract the eye of the architectural visitor, if we except the new Boys' School, near the station; a brick Gothic building, showing much refinement of detail and true architectural feeling. In the centre square or "place," an irregular open space, stands the bronze statue of Lord Palmerston, and also the White Horse Inn, not without solid attractions, other than architectural, for the traveller. But we will suppose the hospitalities of the White Horse achieved, and hasten to the church which immediately adjoins the square.

The Benedictine Abbey of Romsey, like most of the establishments of the order, stood on rising ground, the church being at nearly the highest point of the town; the ground to the west falls away gently to the bank of the Test, and the expanse of flat meadow land beyond. Nothing remains of the establishment except the conventual church; nothing, at least, outwardly visible or conspicuous; and the external appearance of this does not convey much idea of the real interest of the structure. We see a plain, heavy, Norman building, with an Early English west end, Geometrical windows inserted at the east end, and later Gothic insertions on the north side; a broad, heavy, square, centre tower, rising very little above the roofs; we notice that the grey thin-jointed masonry is in admirable preservation, and that modern parapet walls have been added to the nave and aisle roofs, in place of the eaves-gutter, which no doubt existed formerly. Entering through a door by the north transept, we pass through what is in fact an apsidal chapel attached to the east wall of the transept, though now separated from the latter, and through a corresponding doorway in the north choir aisle, and find ourselves in an interior certainly unique in this country, and which is in some points one of the most remarkable and perhaps one of the most puzzling monuments of Early Gothic architecture that could be seen anywhere.

At first sight, we seem to be in an almost pure Norman church, of considerable scale, and of the massive proportions and severe simple detail proper to the style. But as we look round we become conscious of remarkable peculiarities, some of which have before this, of course, been adequately described, though others have not; but some comprehensive notes of the aspect of the whole and the relation of its parts may not be without interest. The first thing we notice is the unusual aspect of the square east end,—the aisle carried round behind the present position of the altar; the east side of the choir divided into two bays with a pier in the centre, and arches ranging with the main arcade opening into the east aisle; and opposite these two similar deeply recessed arches filled with fine windows of Early Geometrical date. A lady chapel has been either built or intended beyond this point; the foundations of it have, in fact, we were assured, been discovered during the investigations accompanying the restoration of the choir; but no evidence on this point has been left visible by those who may have made the investigation. Let us look at the outside of the present east wall. What we see there is curious enough, but the tale does not seem difficult to read. We have, first, the exterior of the geometrical traceried windows. Above them are seen, built up in the masonry, two larger circular arches, of the Norman period; not, however, central with the pointed windows, their centres being

somewhat closer. Outside these, again, are two pointed wall-arches, or wall ribs, again out of centre with both the other arches beneath them, having their centres wider apart than either. These wall-arches spring from a wall shaft in the centre, and from similar shafts in the angle formed by a buttress, of apparently the same date, at each side. The round arches preserved in the wall seem to infer the existence of an opening through to a building further east, in the Norman period; they are too large for windows, and appear, as far as the eye can judge, to coincide with the interior arches of the east aisle. This building has been removed, with the intention of building a new lady-chapel in the Early English or Early Geometrical period. The larger wall arches are the wall ribs of the intended vault of this chapel; and over each shaft from which they spring, both in the centre and in the angles formed by the buttresses, may be observed the breaking up of the face of the masonry where the springing stones of the vaulting-ribs have been, but which have either been broken down or worn away. But between the removal of the Norman Chapel and the fair commencement of the new one, something occurred to stop the progress of the latter, and it then became necessary to fill up the east arches and make windows of them, by partly building up the round arches and in them placing the windows with Geometrical tracery which are now seen. That these windows are quite apart from the scheme to which the pointed vaulting-ribs belong, is evident from the fact of their centres not coinciding. The buttresses would seem to have been built, or a portion of the wall of the new building, just commenced, finished as a buttress at each side, to give some sort of completion to this portion when the carrying-out of the chapel was abandoned. So we read the story of this eastern end. It seems impossible to suppose that the Early English lady chapel was built, and subsequently removed, with no attempt to put anything in its place; nor is it easy to account for the geometrical windows, except on the supposition that the work was interrupted or abandoned, and the east end had to be closed up as they best could. As it now stands, the plan of the east end has some resemblance to those plans of square-ended buildings in England and Germany, with eastern aisle and chapels, given in Mr. Sharpe's last number of his work on Cistercian Architecture, which we noticed the other day (p. 628, ante). The resemblance, however, is apparent or accidental, rather than real, owing to the now incomplete state of the plan; but it is suggested the rather by the apsidal chapels opposite the eastern extremities of the choir-aisles, in which the apse form appears internally only, being formed almost in the thickness of the wall, while the east wall externally is in one plane right across.

Turning to the interior of the chancel again, we notice that lofty Early Geometrical windows have also been inserted in the main wall, over the lady-chapel roof that was to be. The main arcade has the usual characteristics of Late Norman architecture in its bases, the plan of the pier, the zigzag archivolt decoration. The capitals are mostly also pure Norman, only interspersed here and there with a carved capital,—in one or two instances of considerable elaboration, showing the impending new spirit of the Transitional period; and some of the capitals in the east aisle show a double row of "scallop" ornament of a V section, quite different from the big round rolls of the pure Norman capital which occur in the same part of the structure and in the same arcade as these more advanced specimens, making it almost impossible to say whether the advanced or the conservative spirit predominates. The former appears again in the hood-mould ornament to the main arcade, a series of sunk circles, containing each a little diamond-shaped panel with convex sides, and each two of which are separated by a little extra spacing from the next two, instead of being continuous. It is in the triforium and clearstory, however, that we first come upon the more remarkable peculiarities of the building. Each triforium arch has a couple of sub-arches on a centre shaft, standing quite free, and with an open spandrel; and from the junction of the two sub-arches over their shaft rises a second little shaft to the soffit of the main triforium arch, as if to carry the keystone of the latter. A more extraordinary ornament, and one more contradictory of all our ordinary notions as to the principles and practice of arcuated building, could hardly be conceived. Then we carry the

eye further up to the clearstory, and another surprise awaits us. Here there are three-light windows with angle shafts, the centre light greatly stilted; but on the shafts of this light stand, on either side, two small shafts rising to the springing of this stilted arch, and which, if we wanted a name for them, we might call "stilted-shafts." There is something so unlike the spirit of English architecture in the look of these two shafts standing on the capital of the lower one, and so strongly reminding us of French Romanesque, that one is tempted to think that some special connexion with France, either on the part of the masons who worked, or the abbot who ordered the work, must have existed to draw closer than usual in this instance the connexion of Anglo-Norman architecture with the land of its origin. Something special of Continental influence we seem to see, too, in the broad flat rib which divides the bays of the aisle vaulting throughout the whole of the earlier work, except in one instance.

Coming west to the crossing and transepts, we find no less to command our interest. The great crossing arches are simpler in treatment than almost any others in the building, being merely three square recessed soffits, with neither moulding nor chamfer of any kind; above them runs a low massively-treated arcade round the four walls, and immediately below the ringing-loft floor. The effect of the crossing, with its massive piers at the angles, is very grand; and perhaps the effect of the angle piers is enhanced by the fact that the inner members of the east and west arches are stopped at the level of the triforium string, leaving a mass of plain walling beneath. The double arrangement which we notice at the east end is again carried out in the north and south transept walls, which are vertically divided into two by great roof-shafts running their full height; shafts which could not, as far as one can see, have had any proper architectural function at all in reference to the roof. They are now abruptly stopped, the one by a small window cut in the gable of the north transept, the other by the low-pitched post-Gothic roof, which has been placed over the south transept. Roof-shafts cut off square at the ceiling level, and having no real constructive function, are, of course, common enough at the side of a building; but these rise under the ridge, and not under the bearing or springing of the roof. It would almost seem as if the Norman builders, in this and one or two other instances, carried the "order" of the side arcade round the end wall, vaulting-shaft, and all, from mere thoughtlessness or a notion of symmetry, without considering the suitability of the treatment to the position. The builders who added the Geometrical windows in the main east wall have repeated the same idea, and a vaulting-shaft of that period has been hung on to the wall, on a corbel, between the windows, for no earthly purpose that one can conjecture. The anomalous character of the building is again forcibly illustrated by the extraordinary triforium arch in the south transept, over the return of the nave aisle, where the two sub-arches are carried by a thick stumpy column, rather than shaft, unlike anything else in the building in this position, and which carries on its face, above the level of its proper capital, a clumsy projecting bracket to take the outer member of the sub-arches. If any ancient building could be picked out to justify the "inspired workman" theory, this corner of Romsey Abbey would be the one, for it literally seems to be the result of different men working independently of each other, and each man doing what was right in his own eyes. This confusion of purpose is still more marked when we advance to the adjoining bay of the nave aisle. We will pause one moment to remark the small wall arcade in the west wall of this transept, where some of the capitals are of most unusual design, one form being finished under the abacus by a series of small inverted interlacing arches, which have their springing downwards from the under side of the abacus; and the heavily-moulded arches of this arcade are pointed, though they are moulded in quite an early transitional style, and are arches of decoration only, such as in transitional work of this class are usually circular; but in Romsey nothing goes by rule, and here we see decorative pointed arches along with constructional circular arches, reversing the usual arrangement. This wall-arcading, we may observe, is much hidden and obscured by the staircase to the hidden gallery, which still deforms both transepts.

But now turn round into the south aisle of the nave, where the plot thickens still more. It is

impossible to tell what the builders have been driving at here, or what special genius of eccentricity could have presided over this portion. The heavy transverse rib of the vaulting, which, over all the rest of the transitional church, is square in section, has, at the end of the first bay, a heavy roll moulding. This bay, it may be noticed, contains the only doorway belonging to the Norman church; in the rest doorways of Late Gothic period have been inserted. In the second bay of the aisle is a wall arcade of interesting round arches of most singular character, the caps and bases of the arcade appearing in profile only, and the arch-mould formed by making a square sinking in the face of the archivolt first, and then digging a moulding out; the whole thing being like an arcade of the usual detail squeezed flat, or with all the projections cut off. The second transverse arch springs from a respond considerably east of the corresponding pier of the nave, so that the arch is skew. The responds of both these two bays are formed of three shafts, the centre the larger, of which the two side ones have the square capitals turned diagonally to meet the line of the diagonal vaulting ribs which spring from them; an arrangement which obtains nowhere else in the church; in the rest of the responds of north and south aisles (as far as the Transitional church extends) the diagonals spring from small angle shafts rising from a string-course running under the windows between the responds. The whole of this piece, the first two bays of the south aisle, seems as if it were a portion of the structure commenced on a completely different plan from the rest. This would, of course, be quite comprehensible if the dates were manifestly different, but the whole of the adjoining portions are, to all appearance, so completely of similar date, and so intimately connected constructively with this abnormal corner, that they would seem almost to have been carried on simultaneously; and it is this which makes this corner such a piece of puzzle-work.

But it is time to look at the general design of the nave, which presents other points sufficiently remarkable. The nave contains seven bays, of which the first four (counting from the crossing westward, the direction in which the work evidently proceeded) are Transitional Norman, the last three of later date. Uncertainty and change of plan are again plainly evident here, together with a remarkable grandeur of style and conception, as if the church had been laid hold of at this point by an original genius with a great idea in his mind. What gives the peculiar dignity to this part of the edifice is the unusual treatment of the arcade, which is carried up through the triforium string, the outer members of the triforium arch over-riding those of the ground-story arcade, which thus becomes, in fact, a secondary order or sub-arch beneath the great arch which springs on a level with the triforium impost, and the supports of which run through two stories. The first conception of the method of carrying this out is seen in the first piers on each side west of the crossing. These are plain cylindrical piers carried up through the ground-story arcade, and with their caps at the triforium impost line; but as the ground-story arcade must have something to spring from, there is a subsidiary capital formed at its impost level; only, as the pier of course projects beyond the plane of the ground-story arch, which is a sub-arch, the lower cap does not form a ring round the column, but is broken off short at the line of impact of the outer member of the ground-story arch, on the side next the centre aisle. On the other side the cap goes round, in one pier, to take the transverse rib of the aisle vault; but even in this point there was a difference of opinion, and the circular column on the south side has a special arrangement of shafts tacked on to it to receive the transverse rib of the aisle vault. Apart from this, however, it seems to have been felt that the circular column met the case in a very clumsy manner, though it was evidently deliberately adopted with the view of producing a fine effect. However, it evidently would not "work," and in pier No. 2 we are back to the compound pier again, the same form of which is repeated up to the end of the fourth bay. An advantage of the compound pier, besides adjusting itself to the two sets of arches above and below, is that we get a separate roof-shaft from the ground, whereas with the circular column there is only a short roof-shaft springing from a corbel above the triforium. It is noticeable that the arch immediately west of

the circular column, and those which follow it, are much wider than the first bay. This sudden change in the design perhaps accounts for the discrepancy between the second pier and its respond on the south side, and the skew arch in the aisle, as it may have been determined on after that part of the aisle wall was built. In the triforium the same design is preserved as in the choir; the two sub-arches and the little shaft rising to the soffit of the main arch; but the treatment of the sub-arches here varies oddly. In the first bay they have a zig-zag ornament, as in the choir; in the second bay they form a mere bar, square in section; in the third bay an almost classic cornice is turned over them, a quarter roll and an ovolo of considerable projection; in the fourth bay the sub-arches have more distinctly Transitional Gothic mouldings, the spandrel over them is filled up solid, and the little shaft before-mentioned accordingly disappears. The clearstory we will have a word about just now. But before quitting this portion of the church we will just notice that the fourth bay of the ground-story on the north side suddenly varies from the others in having a zig-zag ornament on the main arch, betraying, however, the progress of the style, in that the ornament in question zig-zags horizontally and not vertically; and there is a late form of zig-zag embroidering the diagonals of the aisle vault of this compartment. This decorated compartment was not improbably the baptistery of the original church. What is most remarkable about it architecturally is the carved capital of the fourth pier on this side, which presents a mixture of reminiscence of the Classic capital with prophecy of the Gothic in a manner seldom found combined in one and the same detail.

At this point we come upon the end of the Norman Transitional church, and reach the portion added in very nearly the full Early English period. But we have not done with anomalies. The west end, with its fine triple lancet, is pure Early English; so also are the caps and arch mouldings of the ground-story; and so still more emphatically is the triforium, with its richly-moulded trefoil-headed sub-arches which have replaced the plain round ones of the other bays. But below and above this Early English work we find distinctly Transitional details. The mouldings of the bases approach very nearly to Early English in character, but are not quite; in fact, they mostly resemble in profile a base mould, which subsequently became common in the Decorated period, and of which the present base, a kind of corruption of the Classic base, might seem to be the forerunner. But the angles of the bases are occupied by ornamental foliage carving, which in style and feeling is distinctly Transitional, and is here seen in remarkably fine form, the leaves in many cases rising in a bold relief unusual in this ornamental feature, which is more commonly kept rather flat. These angle carvings of the bases clash most curiously with the style of the upper part of the arcade and the triforium, and suggest the idea that the progress of this new portion of the building must have been very slow. But a still more odd and incongruous effect is produced when we run the eye up to the clearstory, and find there, above the pure Early English triforium, arch-moulds and caps of a thoroughly Transitional character. This would be inexplicable but for the fact, which at first sight seems perhaps only a farther complexity, that the same detail is continued along the whole of the clearstory, above the Norman Transitional portion, with which it has as little affinity as with the Early English substructure in the west bays, forming, in point of style, in fact, a kind of connecting link between the two. But this fact of the continuation of the clearstory on the same design (except one feature) all the way along, tells the tale at once. There was a distinct interval between the completion of the Transitional Norman triforium and the commencement of the clearstory, during which the Pointed arch had been thoroughly adopted, and accordingly appears in the clearstory with that degree of richness and breaking up of the mouldings which verges towards the Early English treatment, though still retaining the predominant squareness of outline of the Transitional arch-mould. The caps present that mingling of free foliated carving with a flat leafy-looking ornament which is the last remnant of the Norman "scallop," which occurs in such features as the arcade inside the west wall of Peterborough (which might be exactly contemporaneous with this triforium); the abacus is square. When, not long after this

was completed, the lengthening of the church was carried out, the builders were seized with the unwonted idea, for Mediæval builders, of preserving a uniformity between the old and new portions of the clearstory, the first part of which is of admirable workmanship, and was probably a good deal admired in the district. So they continued the design of the Late Transitional clearstory over the Early English triforium, with one little alteration; they changed the abacus of the shafts from square to round. The square abacus was now utterly doomed and condemned as an awkward thing; but the rest of the Transitional details they followed for the sake of uniformity. That seems to be the history of it, and a curious little bit of history it is. Among other peculiarities illustrating the uncertainty of purpose which is so prevalent throughout Romsey, we may notice that while on the south side the double billet ornament of the triforium string stops dead against the outer member of the fourth pier, on the north side it is carried round this part of the pier, and a foot or two on the other side (a little job which must have been done by an "Early English" mason), and then stopped abruptly by a little knop of Early English foliage placed to intercept and form a finish to it. One can fancy the master-mind of the works coming round some morning, and finding John of Somewhere-or-other continuing the billet ornament, and telling him not to go on with that old-fashioned concern; and then John considering how he could make a neat finish of it, and cutting out this little knop of foliage in the latest style to do the trick. Among other little points it may be noted, too, that while the roof shafts of the earlier portion are stopped off short, those of the Early English portion have a moulding round them which shows just below the present nave-roof.

This said roof is not a satisfactory feature. The interior has had two restorers, the nave and crossing having been in the hands of Mr. Ferrey, and the choir, coming under different ownership or responsibility, in those of Mr. Christian. Both restorations seem in the main to have been eminently conservative, and to have consisted mainly in cleaning the stonework and repairing it where necessary, which apparently was not very much. But the restoring architect of the nave has placed upon it a high-pitched roof with a wooden ceiling forming a barrel-vault in cants, ribbed and panelled, and coloured a sort of dark slaty tone, with gilding at the intersection of the ribs. The colour effect (if it can be called colour) is disagreeable and heavy, and the design very weak-looking in comparison with the massive character of the principal portion of the edifice. Mr. Christian has put a solid-looking open-timber roof, also preserving something of the general section of a barrel-vault, over the choir roof, with better effect. The north aisle has a new roof designed, we were told, by the present vicar, with tolerably heavy curved principals slightly decorated in colour, and with good effect. The south transept, as mentioned, has a flat-pitched roof of modern style, though old enough and somewhat gone now. The other woodwork of the church needs renewal in a better style. The seating is very ugly and flimsy; the old pew style, in fact. The two galleries are anything but ornaments to the interior, and the organ, by Walker, which stands in one of them, will be none the worse for a new case. Mr. Butterfield, we believe, has made designs for the reseating, which is at present in abeyance. It is understood also that the same gentleman is desirous to "treat" the interior in colour in the same style as that in which he has treated St. Cross at Winchester. We should be sorry to oppose any scheme of Mr. Butterfield's, but we must express an earnest hope that no such performance as that at St. Cross will be permitted at Romsey.

Looking round the outside, though there is nothing of the interest which the interior presents, we cannot but be struck with the noble simplicity of the design of the west front, with its two great buttresses and its triplet of tall and large windows, without a suspicion of "ornament" anywhere, or anything to mar the unity of character of the whole. We may also note the fine work of the clearstory, and that it presents exactly the same characteristics we noticed in the interior. The present vicar has restored a portion of the north aisle, re-roofing it with an eaves cornice instead of the parapet which had been added, and replacing the late Gothic windows with windows in the style of those in the south aisle, which are those of the old church. We should be very glad to see the parapets removed from the whole of the roofs;

and if the late windows that have been removed were as bad and "debased" in style as one or two others in different parts of the church, they need not be missed. But this sort of restoration, which really falsifies the history of a building, should only be resorted to in extreme cases; and we hope there is no idea of continuing the same process in the next two bays of the north aisle, as one at least of the late windows inserted there is a good one of its kind, and ought not to be removed. The boldness and variety of design, and the fine workmanship of the corbels beneath the gutter-table, in the choir portion especially, cannot escape observation. Both in detail and in general design there is an extraordinary impress of power at Romsey; power of a somewhat rude and untutored description, but not the less remarkable. The square tower, with its one stair turret, is impressive solely from its mass and the almost unbroken expanse of grey stone which it presents. Climbing to the summit (no very arduous task), we find the bells hung in frames above the level of the tower walls, though of course the bearing is a good deal lower. An octagon wooden turret, of the plainest and most meagre appearance, a kind of shed in fact, has been built over them on the tower roof; this is a point which is susceptible of improvement, and might very well be improved away altogether, and something more in keeping with the character and expression of the structure substituted, at the same time when the interior woodwork and fittings shall be improved. The bells are an old peal, formerly of eight, and were hung in an adjoining tower, very likely that of the church often found in the vicinity of Benedictine monasteries, for the use of the laity in connexion with the establishment as workmen, &c. About 1790 the bells were re-cast, by the firm of Mears, as a peal of six, and hung in their present position, and the tower in which they hung has disappeared. They look like a fine peal, of considerable size and weight; we did not hear them. Romsey tower, though by no means lofty, from its raised position commands a fine prospect, and from it we look southward across Hampshire and the New Forest, and can see, beyond, the outlines of that remarkable heap of chalk hills which is known all about here as "The Island," looking faint and blue in the extreme distance. And so farewell, for the present, to Romsey Abbey Church, an architectural monument remarkable not more for its stern grandeur of style than for its individuality of treatment, and in which some of the most cherished convictions of the modern architectural student seem to be called in question.

#### IRRIGATION AND WATER SUPPLY.

THE Society of the Union Castellana (with its headquarters at Valladolid), established for the purpose of developing the industrial interests and general prosperity of the Province of Old Castile, and its chief city, Valladolid, the ancient capital of Spain, obtained, on the 21st of April last, a Royal decree for a perpetual concession, authorising them to throw a dam across the River Douro, and construct a canal of thirty-one miles, with a view of fertilising thousands of acres of the richest land in Old Castile, and supplying the city of Valladolid with drinkable water. The quantity of water to be taken from the river and thus distributed exceeds 80,000,000 gallons daily, which is entirely distributed by gravitation. The Society Castellana have assigned their concession to Mr. George E. Peters, of London, without any payment beyond a share of the net profits which it is believed will be very large, water being in Spain such a necessity, and particularly to the "burning plains of Old Castile." Spanish water companies have the power of selling a certain quantity of water in perpetuity for a certain sum of money, and the Corporation of Valladolid have already bought 40,000*l.* worth of water for public services, to be paid for in annual instalments, commencing at once.

**The Somersetshire Archaeological and Natural History Society.**—The twenty-eighth annual meeting will be held at Bath, on Tuesday, July 18th, under the presidency of Mr. Jerom Murch. An opening address will be delivered by the president. The Abbey Church will be visited, and the Society will visit various points of interest in the city, under the guidance of the Rev. H. H. Winwood. On Wednesday the Society will leave for Bathampton; and on Thursday for Englishcombe.

## REFINEMENT AND BUILDING.

It ought to be some consolation to those who, amidst the remains of historical edifices in different parts of the world, in museums and similar places, entertain a secret wish to admire, and a half-formed, latent intention to learn how to do so, that the priests of the art-divinities have long been very much divided upon the question which perplexes laymen. Thackeray's Colonel Newcome was not more vexed and puzzled when young Templars told him that Dr. Johnson did not write English, and that Addison was a shallow trifler who merely expressed himself with elegance, than is many a worthy scholar and gentleman who, at the present day, attempts to penetrate the morality of architectural principle. That doctors of every profession should differ, and agree to differ, is acceptable up to a certain point; but that technical opinion should be apparently irreconcilable, both in spirit and practice, increases the confusion of style which now reigns in all kinds of buildings. So anomalous is the artistic composition of a London street that the British representative of Nemesis doubtless looks contentedly aside; yet the disagreeable old goddess of Rhamnus, who may be called the patron-saint of archaeologists and modern architects, has so often turned her envious glance upon the world's stage—whenever artistic felicity has been reached, or, to her mind, has endured long enough—that the various forms of ancient architecture are a ready subject of professional dispute, and the so-called architect of to-day one of amateur derision.

According to the Socratic dictum, men differ as to what is fleeting, and agree as to what is eternal. It would be well if in architecture they differed only as regards form and details which are fleeting, and agreed about principles which are eternally true. But it does not seem that a principle of construction is yet acknowledged to be inviolable, nor, indeed, that any such thing as a principle is generally recognised. Nevertheless, after a protracted dallying with the beauties of every known method of structure and decoration, there is springing up an inclination, amongst architects at least, to reform the present mode of ornamental building upon a basis of common-sense rules. But, we take it, people must be first brought to understand what these rules are, and, before all, to define the real meaning of that hackneyed compound word, common-sense, when it is technically applied. Nothing can be more indisputable than the repeated assertion that true architecture combines the useful and the beautiful; but how and to what extent beauty is to be added to utility is a fruitful theme of discussion, and one to which the usual resort to natural evidence or example brings little aid. Fitness, according to Barke, is not only not always the cause of beauty, but, in nature, experience shows use and beauty to be in no way dependent on each other. "The idea," said he, "which mankind most commonly conceive of proportion is the suitability of means to certain ends. . . . Therefore it was necessary for this theory to insist that not only artificial, but natural objects took their beauty from the fitness of the parts for their several purposes. But . . . on that principle the wedge-like snout of a swine, with its tough cartilage at the end, the little sunk eyes, and the whole make of the head, so well adapted to its offices of digging and rooting, would be extremely beautiful."

Nature in this instance has attained her aim in the speediest and readiest fashion, whether by the law of survival or any other law is immaterial to the argument; and it would be absurd to ask her to add what might be ornament in the modern sense of the term, but certainly not beauty, to her work. Yet many excellent critics say that art must go further than this. They maintain that no building, however commonplace, is artistically perfect unless the attainment of the end is accompanied with beautiful results; and they are backed by the unsupported theory that in ancient and mediæval cities all buildings were beautiful. But these enthusiasts surely forget that it is only the higher order of artistic creation which has been preserved to the world.

To argue that, because the Parthenon is an example of utility and beauty inseparably blended in one incomparable whole, therefore all the smaller Athenian buildings, houses, and huts, of the Periclean epoch, were models of artistic excellence, is to say that, because there have been found statues which were executed more than two thousand years ago, and which show the human form in the highest bodily perfection, therefore there were no ugly men of intellect in those days; and that then even so useful a scavenger as the pig was an object of beauty and refinement.

In the leading article of our last number we related from a French source how Ingres, with his classical brush, had painted a vase destined only for the decoration of a servants' hall. Again, the tourist of the Loire may have visited a certain chateau built partly on a bridge which spans that river, and he may remember that all the kitchen accessories are preserved—unused—in the state of perfection which belonged to them in the sixteenth century. To be able to see and admire in even the commonest domestic utensils something quaint or otherwise remarkable, to touch nothing that is artistically or aesthetically unclean—in fine, to be surrounded with the beautiful, is the bright aspiration of many at the present day. Cultivated ladies and gentlemen who, with great trouble and at a vast expense, succeed in making the insides of their houses totally distinct from the outsides, adorn the walls of their rooms with objects foreign alike to the private connexions of family, and the common traditions of national history, with the idea that such ornaments are bizarre, uncommon, or unique. But neither Ingres at work upon the vase for John's and Mary's edification, nor the painfully clean kitchen-furniture at Chenonceau, nor all the purple and fine linen of the artistic Pharisees, nor all the broken china and spurious curiosities of the bric-à-brac hunter, shows a healthy state of education, or even comprehension, of artistic culture. There is a touch of priggishness and affectation about all of them. It would have been better that the domestics of fifty households had possessed in each of their halls a vase containing a creditable delineation of some national custom or native story than that one should be favoured with an object which Ingres had affectingly enriched with his own hand. Those plates and dishes which elegant ladies now cause to be hung upon wires in their boudoirs and drawing-rooms were meant to hold slices of bread and meat, cheeses, and pats of butter; and in an age of refined feeling for art their place would be the pantry or the hall. The effective hanging of such things for purposes of "ornament" alone in incongruous corners no more proves that their owners possess a love for art than that an ill-conditioned man, who keeps in his library a copy of the Ten Commandments, will hesitate to sell adulterated goods, or covet what belongs to his neighbour.

The streets and squares of a city may be eminently beautiful, and yet contain a majority of commonplace, strictly utilitarian buildings. The known archaeology of the world proves it. Travellers may say that the native city of Agra is a direct proof to the contrary; that there, balconies, kiosks, and hooded windows adorn every petty house in the principal street, which is brilliant with carving and decoration. It must be remembered, however, that in India, marble, stone, and similar durable materials are reserved for two only of the three classes of humanity in general, and that the poor and uneducated have not, and never have had, any solid shelter except,—and then not always,—as the slaves or dependents of their betters. In Calcutta and similar Indian cities native servants may be seen every night rolled up in white coverings upon the pavements, and sometimes on bedsteads placed in the open street. It is not by any means likely that the lower orders of the Athenians, under Pericles, were better cared for than are those of India under English rule. In England itself a totally opposite state of things, due partly to custom, partly to climate, exists; for to rest at night, even for a few minutes, in a London street results in a peremptory order to move on, or in forcible removal to the lock-up. It is consequently an inevitable necessity for every one, even the poorest, to find some sort of absolute shelter, if not by day at least by night; and the obvious question arises, admitting, as reasonable men do, that there must always be poor people, are such shelters in the millennium yet to come to be specimens of artistic excellence and æsthetic beauty? A lesser wit than Sydney

Smith might have answered it with equal force. In his time somebody had been talking or writing about ornamental architecture at Botany Bay, then a favourite penal settlement, and he inquired how in such a place a sane person could aim at any other architectural effort than the exclusion of wind and rain. "A man," said he, "who thinks of pillars and pilasters when half the colony are wet through for want of any covering at all, cannot be a wise or prudent person."

Amongst ancient communities little heed was paid to the wants of the many; but modern laws forbid the masses to starve either with cold or hunger. It would be absurd to build for them, putting the question of economy on one side, anything else than what, analysed, is a useful and an honest piece of construction; but because it is mere utilitarian building it is by no means likely that ordinary workmen can do it without refined superintendence. It has, however, been recently urged that workmen should be encouraged to form themselves into co-operative clubs, for the purpose of erecting blocks of dwellings for themselves, and to their own liking; but we can conceive no more suicidal mode of procedure. The first thing the vulgar mind is seized with is a combination of pilasters, vases, and a backless pediment; or one of useless buttresses, false arches, and crocketed pinnacles. Much cultivation is required to know when the really useful has been attained, and, above all things, in an honest fashion. A mere utilitarian building may contain every principle of architecture. It is by the existence, or the contrary, of principle in such buildings that the true critic judges, and upon which, very often, not only the durability of the work, but the comfort or discomfort of the inmates, and the general internal and external aspect of the entire home, depend.

The gradual recognition of the theory that architecture is building refined affords an argument to those Englishmen who, knowing the difficulty of rivalling the Greeks, urge that native mediæval example is as worthy of modern emulation as it is capable of being adapted to actual habits of life. A cheap utilitarian building shaped into Gothic outlines, say they, may be picturesque in spite of any baldness of appearance. You have but to ornament or decorate its constructive parts and you reach—architecture. That, however, is to go too far or not far enough. We will suppose that in a workman's dwelling we have a window-opening 8 ft. high and 4 ft. wide. It is perfectly easy and traditionally correct to cover an opening of such a size with a flat or a slightly-segmented arch. To put over it a pointed arch of any description, or a rounded arch with a pointed extrados, simply to impart a picturesque effect, is not to refine building, but to burlesque architecture. And for whom, pray, is the sentiment contained therein introduced? Surely for the passers-by rather than the inmates; and if, for the former's sake, the modern architect is to make poor dwellings picturesque, the modern tailor must also be invoked. It must be much more painful to the refined appreciation of the Londoner in his short cut-away coat and tall chimney-pot hat to meet face to face British workmen in their unpicturesque garments, than to pass a street lined with their dwellings.

That characteristic of old architecture, which has come to be prized so much of late years, has induced a certain love or rage for irregularity-at-any-price, which is a reaction, as it were, upon the symmetry-at-any-price of our grandfathers. Certain comparatively old families had inherited houses which had been altered, enlarged, or repaired by their ancestors, as one died and another succeeded. But these were few; and more numerous families newly ennobled or newly enriched coveted similar houses. The architect, with his archaeological bible in hand, was equal to the occasion; and aspirants, if they had money enough, had but to ask and have in three years the exact counterpart of towers, gables, and cloisters which formed the amended patchwork of three centuries.

Time is the great master whose work attracted the public in their search after the picturesque. But men live so fast nowadays that they cannot wait for time. Their manufacture of churches, castles, and mansees is now arrived at such completeness that, on mediæval hunting-ground, even the professional archaeologist sometimes loses the scent. That, however, was not the way in which, in the Middle Ages, buildings were designed and constructed. Like the Greek masterpieces, most of the French and English cathedrals were erected within an

\* This quotation, from the celebrated "Essay on the Sublime and Beautiful," is admirably balanced by one from the sixth *Œuvres* of M. Viollet-le-Duc:—"Animals possess 'style,' from the insect to the noblest among quadrupeds. With them there is never a gesture or a movement which does not indicate distinctly a want or a defined intention, a desire or a fear; animals are never affected, pretentious, or vulgar. Handsome or ugly, they possess style, because their sentiments are simple, and they seek the ends they have in view by simple and direct means."

incredibly short space of time, and, what is more, they were generally symmetrical in plan and section. Subsequent and repeated alteration, to say nothing of fire and fury, have imparted the irregularity which now distinguishes them. But that the strikingly picturesque effect of the Athenian Propylæa was obtained in the same manner, or that the Greek grouped his buildings in regard to their surroundings with an intention of obtaining that effect, cannot possibly be admitted. It is the Teuton who mentally suggests, not the Greek who practically invented the picturesqueness which clings to the gates of the Acropolis. Romance and sentiment came southwards, with the wild hordes who subdued the Roman Empire, and ultimately destroyed the strict traditions of classical art. Lord Aberdeen, writing in 1822, on the principles of beauty, said:—"The ancients never possessed any perception of those qualities of external objects which are called picturesque. At least, in the Greek writers, there are no descriptions to be met with of scenes viewed merely as pictures, or as delighting the eye through the imagination alone." That is to say, there was no scenic architecture in Greece, for in ordinary works it was strictly utilitarian, and in extraordinary ones it was aesthetically refined into beauty. We take it that, in the time of Pericles, the Greek architect was a highly cultivated, matter-of-fact person, deeply versed in mathematical science, and secretly proud of the power he had acquired, through inheritance and study, of counteracting optical illusions in the perspective of his buildings. Essentially a constructor, he would no more have strained after a picturesque effect than have been guilty of word-painting; he might have delivered some of M. Viollet-le-Duc's lectures, but never any of those of Mr. Ruskin.

If it is absurd to build up, or, to use the appropriate phrase of the theatre, to "build out," the picturesque, it is still more absurd to suppose that refinement, in the Greek acceptance of the technicality, ought to be applied to any and every description of modern building. To imagine such a thing is to imply that poetical inspiration is the appanage of all men, and philosophical argument their habitual recreation. Now that the snare of mediæval picturesqueness is beginning to be found out, it may be opportune to add that the pursuit of Greek refinement is worse than a snare. Its attainment, except in a few cases out of thousands, is as impossible as it is unnecessary. Every salient line in the stones of the Parthenon was the subject of minute calculation and laborious study. Human happiness, according to Swift, in the "Tale of a Tub," is a perpetual possession of being well deceived; and to satisfy the cultivated mind and humour the equally cultivated eye was the aim which the Greek attained. Those who, for 300 years, have been sticking or hanging columns and pilasters to stone and brick walls; crowning them with pediments; and heaping, in laboured caricature, fragmental imitations of antiquity one over and against another, did not know how the Greek master finessed in order to insure observers of his own and future times a perpetual possession of artistic happiness. They believed that classical architecture could be revived by the symmetrical distribution of certain columns and cornices of certain shapes; and that symmetry meant similarity of arrangement and preciseness of dimension. It was only during the early years of this century that the truth was discovered; and, as we have already shown, principally by the labours of Englishmen,—at least as far as Greece is concerned. The lesson now to be learnt is that the Greek architect was not governed, as Mr. Penrose has well said, by "fixed formulae which he could not modify." Like his less cultivated successor of the Middle Ages, he cut his coat according to his cloth; and, as an instance, having obtained with much difficulty the requisite number of lintel-stones—whose collective length was sufficient to cover his colonnade—he cared little whether the inter-columniation was exactly regular. Witness the flanks of the Parthenon, where some of the lintels are rather more, some rather less, than a certain uniform length. All that he seems to have insisted upon was, that the joint of the lintels should fall exactly over the centre of the column, and that the centre of the triglyph, which was the vertical continuation of the column or point of support, should fall exactly over the joint of the lintels.

Of course, all sorts of hypotheses have been made to account for the irregularity which has been discovered in parts of the arrangement, and in some of the details, of the Parthenon,—an

irregularity which would have been allowed to escape comment had not the rest of the building evinced the minutest mathematical exactness—and that those which attribute it to the dictates of necessity, utility, and common-sense now obtain the largest number of adherents is a favourable sign of the times. Indeed, many who have carefully measured ancient and mediæval works will not be indisposed to agree with Mr. Burges. In his recent thoughtful paper upon "Greek Art,"—to our mind a valuable and significant addition to the technical literature of the day,—he ventured to doubt whether the delicate curves obtained by the Greeks resulted from the geometrical means described by Mr. Penrose; and he suggested that they were due "to some simple mechanical instrument such as a bent lath in the case of the lines, or to free-hand drawing in that of the mouldings." It is quite useless to discuss how such curves were obtained; suffice it that they exist; and those who have seen, in the north-west of India, native draughtsmen squatted upon their haunches and drawing complicated curves upon loose paper laid on the knee, may perhaps incline to Mr. Burges's suggestion regarding the free-hand tracing of the moulding and enrichment of a Greek cornice. That an analysis of its component parts reveals a series of delicate and subtle observations on the part of the architect has been admirably shown to the student by M. Viollet-le-Duc. If the Greek enriched the face of his marble or terra-cotta gutter, it was not for mere love of ornament, but because the face of such a gutter must inevitably get spotted and disfigured with rain and dust, the effect of which was concealed or counteracted by the lights and shadows of the enrichment. As long as he remained a cultivated utilitarian he put no base to his columns for people to knock their sandals against; and even when he did begin to put bases they followed the contour of the column. He increased the diameter of an angle column in deference to a desire for strength, and in defiance of what is now called symmetry. If a projection here and there upon his best works extant yet remains unexplained, it probably held a piece of scaffolding, of which he was as sparing as the builders of to-day are lavish. He never altered the profile of a cornice, or even of a moulding by the ornaments with which he enriched it. Indeed, the form and the structure were with him so much one and the same thing that no mental effort or embarrassment takes place in the attempt to grasp or understand his intentions.

But although the Greek architect expended the wealth of his intellect upon the public works of his country, there is sufficient evidence to show that in private buildings he was as hostile to ostentation as the English gentleman is or was reputed to be. In Athens, in the best times, when the temples were magnificent, the private dwellings, according to Demosthenes, were invariably simple and modest. Even the residences of Aristides and Miltiades could not be distinguished from those of their neighbours. It was when attempts were made to emulate in smaller public buildings and in domestic habitations the grandeur and refinement which had been dedicated to the Gods that the subtlety of Greek art disappeared. Ridicule, at least in art matters, then killed in Athens as surely as it does, or lately did, in Paris. If it does not kill in more fortunate countries, it is perhaps because, there, the bathos is neither felt nor perceived. Our grandfathers piled full-sized models of the "Lantern of Demosthenes" and the "Temple of the Winds" one over another in the form of a Gothic steeple, which they set astride a classical portico. In our own time we have warehouses and taverns with traceried and stained glass windows; and as in human so in artistic morality, too much familiarity breeds contempt.

That a disposition to sobriety in architecture is gradually spreading amongst all classes of educated people is evident. So much is known now that it is absolute labour for one man to make a complete display of his antiquarian lore. He cannot now bear down upon friends and clients with all his archaeological learning at one fell swoop. The best works of antiquity and of the Middle Ages are like "funeral baked meats" served cold at the marriage-feast of modern eclecticism; and the gourmand scorns a *réchauffé*. The other day an architect, who has been engaged for a quarter of a century on the practical work of his profession, wrote:—"For myself, as I get older, I begin, for all ordinary work, to believe in the 'no style,'—something very plain, simple, and genuine." Such an ad-

mission betrays, perhaps, satiety; but it certainly implies intellectual ripening. It requires intellect to put together a plain, simple, and genuine edifice; whereas, mere artistic superficiality can accomplish with ease what is picturesque, pretty, and pretentious. Simplicity and genuineness mean refinement as Englishmen understand,—ay, as the ancient Greeks understood,—the term. They mean something which is the natural enemy of burlesque and masquerade. They mean work for gentlemen and men of intellect; and unless this class of the community chooses to interest itself seriously in architectural matters, the progress and improvement of modern cities is impossible; for, although regeneration in national policy may sometimes spring from inferior popular strata, regeneration in national art must descend from the cultivated classes of society.

#### PROGRESS AT SALISBURY CATHEDRAL.

The work of restoration which has been going on for twelve or thirteen years at Salisbury is now not very far from completion. The eastern arch of the nave is still blocked up by the very unsightly boarding which has for a good while past stopped the view at that point, where, considering the length of time that the obstruction had to remain, it might be thought that something a little more decorative might have been contrived as the background to the temporary choir. However, there seems now no reason why the work should not be completed at least at an early period in next year, if not within the present year.

The scraping and revivifying of the surface of the masonry in the choir and north transept has been accomplished, and the repairing of the numerous portions of the Purbeck marble shafts which had decayed past making good, except by the excision of the decayed portion and the replacing of it with new material. This cutting and repairing of the Purbeck marble, an operation requiring great care, has been one of the most costly items in the work of restoration. At present the south-west transept is a forest of scaffold-poles, and the same work of scraping the stone and repairing the marble is being carried on there. In the choir the floor is in process of being re-formed at its original level, as it had undergone the process of raising which the restorers of another epoch were so fond of indulging in; and some of the marble inlay which, together with tiling, is to form the floor design (in the manner already carried out in the floor of the presbytery), is in readiness for laying. The last discovery during the restoration was that of a stone screen of Late Perpendicular work, containing a series of niches, between the piers of the arch in the south arcade of the choir which coincides with the eastern transept. This screen had been built over by a plain wall, within the masonry of which it was enclosed, and which has been removed and the screen restored in its original form. The piers of the arcade, by the way, between this point and the crossing, lean away towards the east, under the pressure of the tower, to an extent which is painful to the eye, though probably not now of special consequence in other respects, since the abutment was built into the eastern transept arch. Had this abutment arch been part of the original scheme, in place of the lofty east transept arch going up through the triforium stage, and leaving a great void at the level of the springing of the main arcade, there would probably have been no movement of the piers of the latter worth speaking of. As it is, the abutment arch was a kind of shutting of the stable-door after the steed was stolen; it prevented the possible total overthrow of the structure, but could not ameliorate, of course, the work of displacement already done. One can only wonder, in looking at such an incident, at the extraordinary contradiction between the boldness, enterprise, and genius of the builders who could plan and execute such a structure as this, and the want either of almost ordinary common-sense and foresight, or of statical knowledge, which could render them blind to the necessary consequence of such a discrepancy between the vertical pressure of the centre tower and its longitudinal abutment.

So much of the scheme of decoration of the choir is completed as may enable one to form an idea of the result of the whole, which seems likely to be good; rich in effect without being too heavy or pronounced. The surfaces of the vaulting are decorated by figures nearly white, and merely lined in, in circles and on grounds of blue or ochre. These are painted in the centre of

each compartment on the white surface of the vaulting, the remainder of which is painted a brick pattern, and the mouldings of the ribs coloured. The design is on the basis of remains of the original coloured design discovered on the vault, and has been executed by Messrs. Clayton & Bell. The mouldings of the arches in the main arcade, triforium, and clearstory, are relieved in colour, of which the most prominent lines are formed by colouring the roll mouldings red and green; the red, subdued in tone, being the more largely employed; the hollows are coloured in more receding tones, and in some cases picked out with a simple decoration in white. A similar decoration is continued in the vaulting ribs; the bosses of the vault are gilded, and the fillets of the Purbeck marble caps in the upper and lower arcades are also relieved with gilding. The spandrels over the arches are covered with a conventional scroll ornament on a large scale, of symmetrical design, and following in its disposition the shape of the spaces to be covered: the main part of the design being carried out in line with portions of positive colour, of low tones, introduced at the emphatic points of the scroll-work.

The new reredos is in process of execution at the hands of Messrs. Farmer & Brindley, and a new organ by Willis is in hand; both these, we understand, being the gifts of individuals. We may mention that about 6,000*l.* or 7,000*l.* are wanted to complete the work, which is paid for, or nearly so, up to the present point; subscriptions towards the completion will be welcomed.

It seems a pity, as the restoration and the decorative schemes of the choir are being very completely carried out, that some of the stained glass offers so little for satisfaction. The east windows of the presbytery are filled with very questionable glass, by a firm which had more reputation at the outset of the Gothic revival than it now possesses. The windows are weak in design, and heavy and inharmonious in colour. Over the arch which separates the choir from the presbytery is a truly dreadful window of some two centuries ago, which, being a family memorial, must, we suppose, be considered sacred, and which, in fact, has been lately repaired and made to shine with added lustre. Under the circumstances, we presume, its retention in its original position is unavoidable; but it is a terrible eyesore, not only in style and design, but in the crudity and harshness of its colour, which injures the aerial perspective of the choir, and will clash seriously with the scheme of colour decoration on the walls. Then there is the south window of the east transept, which has been filled with the debris of old glass in a most marvellous manner. In the east window of the south aisle some of the old glass has been put together very successfully, at each side of the window, as a framework to a modern stained-glass design; but in the transept window some hundreds of odd bits of glass are promiscuously leaded-up without the slightest attempt at systematic arrangement, with a result which suggests nothing so much as looking into a kaleidoscope at the wrong end. Seriously, the effect of this is exceedingly bad, and it is absurd to say that every morsel of old glass is so precious that it is to be stuck together in this way to disfigure one of the principal windows of the cathedral. Let this glass be taken out, and the pieces which will work together rearranged into something like a design, and the remainder made out with modern glass. Some other use might, no doubt, be found for the parts of the old glass which will not work into any shape; but it would be better even to throw it away than to disfigure the five lancet windows, as they are now disfigured, by this piece of archaeological hodge-podge.

Readers need hardly be reminded that the restoration has been carried out under the direction of Sir Gilbert Scott, who has also just completed another small piece of restoration, in the shape of a very picturesque residence overlooking the cloister, a quiet bit of late domestic Gothic, which harmonises very happily with the peaceful aspect of the broad, level lawn, surrounded with trees, from which the cathedral rises, and which affords such a beautiful base for its aspiring vertical lines and pyramidal composition. On this particular day, however (one of unusual brightness), the best thing we saw was the view of the building from the west walk of the cloister, with the tower and spire, white and glittering in the strong sunlight, soaring into the blue of a cloudless sky, above the cool green of the cloister court and the two cedars,—a picture worth remembering.

#### HEALTHY HABITATIONS.\*

I HAVE often been called to a residence where a dank and unpleasant smell was prevalent, and traced it to nothing but rot. I do not allude to the wet rot which seizes wood alternately wet and dry, as between wind and weather of a fence-post, but the dry rot which is due to the placing of unseasoned wood, or, indeed, any wood in close contiguity to the surface mould and the gases evolved in its decay, and in situations where there are no ventilating air-bricks, and consequently no change of air. Floor joists which have been long surrounded by dead air will weigh light as a feather when taken up, all due to fungous growths and the like. The worst of it, too, is, that by a catalytic action the decaying wood infects the sound, and the mischief never ceases until that whole level of floors is destroyed. If on inspection the attack has been found a moderate one, and the space between the joists and the ground sufficient, the infected places may be cut out and the space ventilated. A pipe may also be laid underneath the fire-grate for a time, to ensure thorough drying. But if the joists rest on the bare ground, the only remedy is to take them up, dig out the earth, laying down some concrete if necessary, and refix fresh and seasoned timbers. I would not depend even upon sulphate of copper or chlorine. Many architects specify the joists to be treated with various solutions, under pressure or otherwise; but it is really not necessary if good ventilation amid joists be provided. With greater reason should we seek to preserve our wood-carvings from the ravages of those three species of beetles which require plenty of light and open air, and would seem to look upon a rich chasing as does a gourmand upon a sumptuous restaurant. One wonders, nevertheless, how our fathers escaped these pests, and why we do not find the powdering rot or the shell-lined burrows in the time-honoured timbers of our many abbeys. I carefully examined an Egyptian coffin the other day at Dresden, and it showed decay of no kind. My own impression is that we build far too quickly, and out of undesiccated materials.

Pass we to the walls of the house. Bad walls may be constructed of too porous materials, which will allow the beating wet to pass through them. Here the advantage of hollow walls is manifest, down the interior space of which the moisture may trickle and be carried away. It has been suggested that walls should be built of impermeable materials, to prevent the intrusion of water; and at one ironworks alone in this country some 120,000 bricks formed out of blast furnace slag, are turned out weekly. But in a house built in Bavaria with this very material, it was found that, although dry at first, it proved unbearably damp in the end; the reason being that the vapours given off in cooking, washing, and breathing simply condensed upon the inner surface and remained there. The truth is a wall must breathe; and even with the doors, windows, and registers shut, a sensible supply of air should pass in and out of the room through the wall substance. This is supplying fresh air without draught, and as was intended by Nature. For this reason also it is wrong to paint the walls either inside or outside, to cover them with varnished papers, or, in fact, to do aught but distemper them with water-colour which cannot close up the pores. For so surely as we do prove treasonable to Nature in this matter, so certainly shall we suffer. In halls and in corridors where ventilation is constant, and where one merely passes and repasses, we may indulge to the long length of our purses in marbles, casings, tiled dados, and oil-painted spaces; but in our living-rooms and dormitories let us beware of such innovations.

The walls of a room may, however, be properly enough built and yet act prejudicially, owing to the papering bestowed upon them. I need say nothing, however, of the arsenical papers and the poisonous flock papers, for householders are now mainly alert to the mischief which they work, and are even demanding that Government paternal should forbid their importation or manufacture amongst us. That arsenic is sometimes poisonous, even when present upon smooth substances, was proved the other day at Bonn, where a professor and two students were seized with violent headaches, and where the mischief was traced to the green shade over the lamp, which was coloured by the poison, and which the heat of the lamp had set free. In like manner the dust falling from the poisonous

wall-papers is dangerous when breathed by the inmates of a room. Such dust is even conveyed to other rooms by our senseless habit of dusting with dry cloths upon the floor. Nor does the evil of paper-hanging end here; for coat upon coat of paper and paste, size and paper, may sometimes be found on the walls of a house just got up for an incoming tenant. I have seen seven different paperings, embodying apparently every taste under the sun, taken from the walls of a single room, and the difference to the occupant afterwards was something wonderful.

Ventilation and heating I treat as kindred subjects, and as dependent upon each other as are the boiler and firebox of the engine upon the coal and water of the tender. I have examined in many countries some hundreds of patents, and seen generally, I believe, all that has been most lauded in the way of ventilating houses, and I have found that the best systems have always been the simplest. First of all, decide whether you will adopt the common firegrate or the ventilating fireplace. If you adopt the ordinary firegrate in the living-rooms,—and choose you the old Rumbold pattern,—supply it with air from without, and it will then cease to draw cold air from the passages and chill your feet as you sit by the fire. Then provide an inlet of cold air, broken up by passing it through a grating, such inlet to be from the floor line as high as one can conveniently reach. As for the outlet, if you have a separate foul air-flue running up alongside the chimney-flue, insert an Arnot's or a Boyle's mica-valved ventilator into that just below the cornice; and if you have no separate shaft, then insert the ventilator into the smoke-flue. I would further recommend a shallow ventilator over the head of each door, the whole width of the door, and with the means of closing it in winter. In summer, when all these are open, the effect is congratulatory. But be sure that the kitchen is well shut off, or well ventilated of itself, with separate inlets and a strongly withdrawing foul air-shaft.

In the case of bedrooms, where common grates are to be used, I would equip the doors with the same ventilating panel overhead. But I would furthermore raise the lower sash of the window 3 in., filling up the gap below by a piece of wood stretched across the opening. Provide, also, the means of lowering the top sash. The lower sash being lifted up, a never-ceasing air-current from outside is directed between the meeting bars and driven upward towards the ceiling, being, moreover, sensibly warmed in its passage. The outlets will be found at the registers of the grates or at the valves in the chimney-breasts. Mr. R. Rawlinson, who kindly showed me, at his own residence, windows fitted up upon this system, has expressed himself to the effect that this plan of Dr. Bird's is the best possible arrangement. The living and bed rooms thus ventilated, there remains the staircase, which should be provided with an outlet. Mr. Rawlinson lifts up the flat ceiling-light a little; and where there is none I would make an opening into the outer air at the highest point, with a protection-box to prevent an inward current.

If the owner makes choice of ventilating grates behind or around which a chamber is formed, in which air from without is warmed and allowed to enter the room at about mantelpiece level, and if the architect has built separate foul-air flues alongside the smoke-flues, I would still provide the valvular ventilators in the chimney-breast, because I have seen them act beneficially. But if no such separate flues exist, these should not be inserted in the smoke-flue, as might be done with impunity with a common fire. The behaviour of the hot air, as it issues from the warm-air chamber, is to mount to the ceiling, adown the wall, dispersing itself pretty equally throughout the room, and then across the floor to the fire. But although this is so, I would nevertheless introduce some inlets for fresh air during the summer, and, moreover, retain the power of withdrawing the respired air by means of the foul-air flue in the chimney-breast.

When building a house I would always provide the panel over the door, and separate air-flues to supply the fires with air for combustion. Between the smoke-flues I also invariably provide a foul-air shaft, terminating a few inches above the ridge on the sheltered side of the chimney-stack. In the case of a cottage, one such foul-air flue will serve several rooms, but in larger mansions I always make a separate air-withdrawing flue to each room. In the reception-rooms and other large rooms I cause on each wall, during the process of building the walls, a

\* By Mr. Eassie. See p. 629, ante.

4-in. shaft to be built from the ground-line to the eaves, and these can be made to act as inlets or outlets, according to the weather. In the depth of winter, also, they are readily utilised for gas calorogens.

I need not, I think, describe the whole-house system of ventilation, although I warmly approve of it, because it must be studied in detail. Here a single inlet of warm or cold air is provided for the whole house, and also one common abstraction shaft as an outlet, with controllable valves and other requisites. It has proved a great success where it has been tried by Drs. Drysdale and Hayward, and if properly attended to will change the air in every room of the house every twenty minutes. I am afraid, however, that the system would be too costly for general use.

I have only one word more to say on this part of the subject, and that is that, whenever possible, a vestibule should be constructed in the hall, and the air warmed for the hall use, and for the use of all the passages. The advantage of the ventilating panels over the doors will then also be felt. But the stove or calorigen should be fed with a tube-conveyed stream of pure air to be warmed within it, for delivery into the room. If hot-water pipes or coils are used, bring in all the same the stream of cold air to the under side of the pipes or coils, and save the churning and burning of the air over and over again. Moreover, if there be a oil-case, see that it runs on castors, and enables the servant to dust the pipes,—burnt dust being very offensive.

Ventilation should be so perfect as to permit even of the withdrawal of any lighting gas which may have escaped, or at least for a sufficient dilution of the gas to prevent the recurrence of such disasters as the late one at Arbroath, where three people perished by suffocation. The results of gas poisoning have been carefully noted, and the reports of the necropsies given by Dr. Lockie, of Sunderland, in which city a youth of eighteen years was poisoned, and by Dr. Sueddon, of Beith, where a man aged thirty and a cat perished together. Within the past two years leaks from gas-pipes have also caused explosions, which resulted in the loss of three lives at Southgate and two at North Durham, and London has but lately to lament the loss of Dr. Foster by a similar calamity. Serious explosions have also occurred at Sheffield, Wirs-worth, Rochester, Ashbourn, and doubtless at an endless number of unreported places. Sometimes gas has escaped into the house from leaks in the main outside, and gas will creep along underground for an astonishing distance. It has been traced for 30 ft., and even across a road-way on one occasion. The only cure for this evil is to compel the companies to insert stop-valves in their mains, so that the flow of gas from a fractured pipe can be prevented pending its restoration.

But I would recommend more than this, and nothing less than the compulsory testing by the gas companies of the house-pipes before their commodity was allowed to pass through them. And I would insist upon the pipes being tested every time the reading of the meter was taken. With our system of working, the gas companies are independent of the leakage going on in the house-pipes.

Now, in America, before the gas companies will make the connexion with the meter, they satisfy themselves that the pipes are intact. The contrivance used for testing is a force-pump of simple construction, and connected by a tube with the only one of the burgers which has not been plugged up. If, after forcing the air into the pipes, the mercury rises in the gauge and remains steadily at the one height after the stop-cock has been shut off, the pipes are sound. But I have often seen the mercury dance up the pipe and disappear when the pumping ceases, in which case either there is a leak at the joint or a split at the weld, or may be there is a plug left out behind the papering, as happened to be the case the other day, or peradventure something has happened to the composition piping. It would not matter very much certainly whether the gasfitter were bound to test the pipes before the gas company laid on the gas, or whether the gas company are compelled to test the gas before they connected to the main, so that the pipes were tested. I have seen here in London the most disgraceful jobs in the way of gasfitting which nothing but a systematic testing would have discovered. Another improvement which should be encouraged is the use of a gas-regulator. The best one I know can be seen in use at Judkins's, of Fleet-street.

As we perambulate through our ideal mansion, the next thing we would likely take notice of would be the water-pipes and the cisterns. In no house, whether the water supplied be hard or soft, should the water for culinary or drinking purposes be conveyed in leaden pipes. I will not insult my hearers by recapitulating the reasons for this precaution. Of late years the lead-encased block-tin pipe has been found to obviate very many of the evils complained of in lead pipes, and it will always have good work to perform for the community. But a still better pipe is used in America, and steps are just now being taken to introduce it into this country. I refer to the glass-lined water and gas pipe, in which the water comes into contact with glass only, and in which there can be neither oxidation nor corrosion. The interior being smooth also, there is less friction, and consequently the flow of water can be carried upwards with less pressure. Fortunately, too, the resisting power is very much greater than lead, and the cost is very little more than lead pipe. Those who have used it in America say that they would rather pay for this pipe than have any other fixed for them free of charge. It is constructed of an iron exterior casing, and between that and the glass is a compressible plastic substance, which is both a non-conductor of heat and cold. It is certainly a great advance upon everything that has yet appeared as a water or gas conveying medium, and deserves universal patronage.

One thing is quite certain, and that is, leaden cisterns should be abolished altogether, or confined simply to the supply cistern over the closets. I do not think either that galvanised iron cisterns are fit for the storage of water, inasmuch as zinc is a coarse metal easily oxidised. Poisoning by the oxide of zinc deposited in the cheaply galvanised iron cisterns and along the zinked pipes have been somewhat frequent. Thus, too, we have been obliged to discontinue the use of zinc-lined kitchen utensils. Paper collars also, when they were covered with zinc white, caused eruptions around the neck whenever the perspiration dissolved the zinc coating. I believe the best and handiest materials for cisterns will be found to be slate, enamelled inside. I always specify them, if used for drinking-water, in order that the least dust within will be discoverable at a glance.

When a house is supplied with well water only, it is wise to periodically analyse it. Seventy-five per cent. of waters sent from the country has proved on analysis to be unfit for use. I have a client at the present time residing in London who has fled a magnificent country seat simply because not a well on the house premises can be found to yield good water. When sickness first seized the establishment, the drainage was suspected, and certainly some serious evils were laid bare and remedied, but nevertheless the unhealthiness continued, and at last the water proved to be the delinquent; and the strangest part of the matter was, that the water which had been considered best on the estate, and which had not long ago been brought into the house at great cost by a neighbouring plumber, proved to be the very worst sample of the lot. Wells are more often than otherwise poisoned by the infiltration of sewage matter, but not unfrequently are they made unwholesome by the introduction of lead suction-pipe. When a well has been found impure, and it becomes incumbent to sink another, I make a trial of the most likely spot with the aid of a tube well, and if the discovered water proves to be good on analysis, I sink a well there. Several of these tube wells are now, however, driven at intervals apart, and, united by longitudinal pipes, are brought to one spot where a pump is fixed. This is often found to be cheaper and even better than sinking a well.

Many residences in the country are entirely short of water, taken either direct from the river, or raised from the water-bearing rocks. There is, therefore, nothing remaining for them but the utilisation of the rain-water. But in such cases I carefully exclude the supplies from lead flats, and use them in the soil-drains for flushing. In every case, however, where rain-water is used for drinking and cooking purposes, it should be well filtered. Sometimes I use a simple filter of one chamber, the water rising through sand and gravel, and in a general way this is sufficient. But cases do occur when it becomes necessary to interpose a depositing-tank previously to the water finding its way into the cistern, and when one must also use a more compound filtering media, as, for instance, chalk and charcoal, and shingle or sand. And when the sole supply of the house

is derived from the rain-water collection tank, especial care should be taken to keep the gutters and downspouts in a cleanly state. It is perfectly astounding what impurities will collect there in a few months, what a load of faecal matter, and what dead atomies of winged life. And not only should an overflow be provided for the tank, but a drain from the bottom, fitted with a plug and spindle, so as to facilitate cleaning. These drains should not, however, lead into the soil-drains. For the rest, a large ventilating pipe should be led up out of the tank to the open air.

I am surprised, considering how long the cylinder system of hot-water heating has been known, to see how persistently our best engineering firms continue in the use of the huge boiler at the back of the fire, and all its liabilities to explosion and other drawbacks. So thorough a case has been made out against the system, that I am sure every one is acquainted with its demerits. Indeed, the very method of its supply—from the often filthy small supply cistern in the corner, or in the dark cupboard, or even in the wall, is enough to prove that there is too much of the hole-and-corner business in it to guarantee perfect cleanliness. On one occasion, in Wimpole-street, London, I saw the small cistern mud thick with the remains of dead beetles and cockroaches, nor would the defilement have been discovered had not the decoction in time discoloured the water, and induced a search.

In the cylinder system of hot-water supply—and I never in any case recommend any other for washing up, or for bath water—I use the Dyer patent. The cold water is at the top of the house, and the hot-water cylinder near the fire. There is no need of a circulating hot-water cistern upstairs, neither of any small-feed cisterns downstairs. The cold water from the upstairs cistern enters near the bottom of the cylinder, and the boiler of the apparatus is of the smallest possible size. Should frost set in, and no water flow from the upper cold-water cistern to the cylinder, so as to force the hot water up, there will simply be a stop to the supply of the hot water for a time, but as the cylinder will be nearly full of water all the time, the small boiler will always be kept charged, and remain so until the frost surrenders. It is impossible to empty the cylinder from any of the taps, although it is in the power of the master or mistress to open a sluice-cock and empty it when it requires to be cleansed out. It may occur, of course, that a small boiler in connexion with the nursery or still-room fires would prove a great boon, and there is no objection to these. But there is to the large coffin-sized boiler at the back of the kitchen and scullery fires, it being a perpetual menace to the lives of the household, and worse than the sword of Damocles. With the cylinder system it is also possible to heat a few coils for warming the rooms and passages; but the coils should be galvanised if the water is wanted free from discolouration.

People are now so tired of being lectured upon drainage, of the danger of laying pipes under houses, of using bad drain pipes, and not truly turned ones like Stanford's; of the propriety of a good fall for the pipes; of good joints free from stuck-up shirt collars of cement inside; and have so often been told how a coating of tar round the outside of the pipe will prevent the entry of roots at any joint, that they smile simply, and hazard an opinion as to their entire acquaintance with all that could possibly be said upon the subject. This boast would, however, be a fallacious one, for with an engineer in good practice nearly every week brings him a fresh fact to startle him as to what evils may be silently working, mole-like, underground, and sapping the health of the too trustful ones. Too much can scarcely ever be said regarding the danger of permitting old cesspools and brick drains to remain inside a house, and of the propriety of even searching for them, if the house be an old one, the very moment that the first smell is manifest, or when the first rat crosses the Rubicon. I look upon the sewer rat as really a beneficent animal, sent by Providence to warn us of the possibility of sewer-gas eruptions. He is to cleanliness in the drain what the *Cimex lectularius* is to cleanliness in the bed, a sort of moral *gârdarme* flying in the face of danger even to bid you be wise in time. And just as I would search for old cesspools and brick drains, and abolish them, so would I get rid of all the filthy places in and about the stable-yard, the garden, and even the kitchen offices, and replace them with earth contrivances of automatic action.

I never look upon the word trap in a book, or see one, but I am reminded of the deceptive character of the article. We must have traps, I know very well, but we do not require many save in the streets, at the gullies, or just before the house-drain enters the main-drain, the sewer, or the cesspool. We try to cut off all connexion with the sealed drain by the insertion of an article not much larger than an old-fashioned watch, and with a water seal hardly thicker than its silver back, and believe we can resist the influence of gases generated in about, say, ten miles of sewer, and seeking an entrance into the rarefied atmosphere of the house. The idea is monstrous, and ought to have needed no Dr. Fergus to have laboriously ridiculed it. The best trap is the syphon-trap, when it is a syphon, but I have seen so very many imperfect syphons, both in earthenware and lead, that I would almost insist upon having a worshipful order of syphons, in order to obtain a hall-mark upon them, and so be certain that they really trapped. I took out of a mansion the other day in Lincolnshire a leaden bend supposed to trap, and which a plumber had not long put in, and I characterise its condition and beauty of shape sufficiently when I say that it is now in the museum of the establishment, and duly labelled.

I am almost forgetting our imaginary house, but we will see the state of our waste deliveries. Does the cistern overflow deliver into the soil-pipe?—cut it. Does the bath waste so deliver? cut that off. So do the sinks of the housemaids', butler's, and housekeeper's rooms so deliver, cut them off also. Let nothing go into the drain direct, and disconnect in every direction. But what is disconnection? Well, if you take the cistern waste-pipe out of the soil-pipe, or out of the rainwater-pipe connected with the drain, and allow the cistern waste to deliver in the face of day upon the roof, or the pavement below, that is disconnection. If you find that the waste-pipe of the lead safe under the water-closet goes into the soil-pipe, and thousands do, or into the D trap, and if you make a simple hole in the wall, and put the lead waste-pipe through it, you have disconnected such lead closet safe. In like manner, if the kitchen or scullery sink runs direct into the drain, trapped or otherwise, and if you lead the waste out through the wall, and cause it to deliver in the open air over a grease-trap, or just under a ventilating grid, that kitchen waste has been disconnected. Formerly it was deemed sufficient to interpose a small body of water between the inside of the house and the drain, but now, in place of this, we interpose an open-air space between the trapping water in the drain and the ends of the wastes outside the house. The rule is now to allow a current of fresh air freely to travel from the disconnecting tanks up the soil-pipes, and so out at the roof, the constant action being maintained by the adoption of a foul-air withdrawing cowl. Instead of the house-drains containing pent-up gases and foul air, they are now made into highways for fresh air, and the difference in favour of health is self-evident. No matter what pattern of closet be used,—hopper, pan, or valve, the latter with or without D traps, if this disconnection be carried out with the soil-pipe,—and Mr. Field was, I believe, the first to venture upon so bold a course,—if there be a momentary exposure of the wastes, from that moment of exposure the house is safe. Between the foot or two of exposure and the larger drain, the sewer or the cesspool, can be put a syphon, and nothing will force that, or if gas does so on any one occasion, it will simply rise out of the disconnecting chamber, up through the grating, and be harmlessly dispersed in the open air.

Lord Byron bade his readers of "Childe Harold" farewell on the banks of the ocean, and the idea was in keeping with the high sustained character of the poem. In like manner I will bid my hearers adieu at the edge of the dust-bin, that microcosm of good and macrocosm of evil. How many fevers have been traced to that sarcophagus-looking box, to that mausoleum-looking tomb under the area steps, or in the vault of the close back yard? I think the only cure is for the authorities to forbid the mixing together of the kitchen refuse,—and this may mean anything, from the lungs of a hare to the stalk of a lettuce,—and the dust proper, that is, the ashes and house sweepings. I would also forbid the placing of the dust-bin below the floor level. Your time will not permit me to say more at present, but I have indicated, I hope, some of the chief reasons why houses prove unhealthy, and with your leave will revert to others on some future occasion.

#### A NEW VESTRY HALL FOR PENGE.

THE Vestry of Penge have hitherto been without a public hall or offices, and up to the present time the business of the vestry has been conducted in a private house. This unsatisfactory state of things has led to much inconvenience, which is about to be remedied. At their meeting last week, the Vestry decided upon the erection of a new vestry-hall within the parish, and the preliminary steps for effecting this object were taken. The Vestry resolved, with the sanction of the Local Government Board, to put in force the Act passed to prevent the holding of vestry meetings in churches or private places, and the erection of a new vestry-hall having also been agreed upon, a committee was appointed to further the undertaking by purchasing land; and it was further determined that an application should be made to the Local Government Board for permission to borrow a sufficient sum of money for carrying out the undertaking. The question of appointing an architect was next considered, the name of Mr. Elkington, a member of the vestry, and the gentleman who designed the Lewisham vestry-hall, being mentioned. It appeared that Mr. Elkington had tendered his resignation as a member of the board, which the Vestry having accepted, the chairman observed that it was necessary to have the advice of an able architect to assist in the first as well as in the more advanced steps of action in the matter, and suggested the name of Mr. Elkington as that of a gentleman on whom they could fully rely for judgment and ability to advise them on the subject, and by whose assistance they would be sure to have erected a handsome and commodious vestry-hall. Mr. Elkington, after some discussion, was appointed the architect. The estimated cost of the intended new building is 5,500*l*.

#### THE THAMES TOLL BRIDGES BILL.

THE Bill for freeing the bridges across the Thames came before a second committee of the House of Commons last week, the House having referred its further consideration to another committee, other than that before whom evidence had already been taken. The petitioners (who appeared by their counsel or agents) against the Bill were the Corporation of London, the Metropolitan Board of Works, the Board of Works for the Greenwich district, the South-Eastern Railway Company, and the Vauxhall Bridge Company. Mr. Blyth, the solicitor in favour of the Bill; Mr. Fowler, Mr. Mitchell, Mr. Gunn, and other gentlemen who gave evidence in favour of the Bill before the select committee, were in attendance for further examination, if required. Sir Edmund Beckett, who appeared for the Corporation, asked the committee not to proceed with the Bill, inasmuch as it had been altered since its introduction to the House, but this objection was overruled by the chairman, and the committee decided to hear evidence and the arguments of counsel, the Corporation having withdrawn their opposition for the present, in consequence of the decision of the committee. After considerable discussion, and the arguments of the several counsel, together with some additional evidence, not given before the former committee, the committee unanimously passed the preamble of the Bill, and at a further sitting the clauses were agreed upon.

**The Government Prison Bill.**—The Howard Association have passed a resolution that "The committee of the Howard Association regard with much satisfaction the new Prison Bill introduced into Parliament by the Home Secretary, as tending to effect, or facilitate, some important improvements which this Association has for years been actively advocating. In particular, they hope that its provision for a large reduction in the number of unnecessary gaols will receive the cordial and early support of both Houses of the Legislature. They would desire that the undue restrictions placed by the Prison Act of 1835 upon varied and profitable gaol industry (limiting prisoners' occupation too much to the treadmill and similar 'work') should be definitely repealed." The daily average of prisoners in England and Wales is 18,500 in the county and borough gaols, and 8,500 in the convict prisons; a total of 27,000 to a population of 24 millions. Hence there is only about one prisoner to every 1,000 free men. Consequently the competition of prison industry with free labour is, and must be, almost infinitesimal, with any moderate distribution of trades amongst the prisoners.

#### CHOIR OF EXETER CATHEDRAL.

THE restored choir of the Cathedral Church of St. Peter, Exeter, has been opened. The work has been in progress between four and five years. Now that the choir has been finished, the nave will have its turn. The cost of the restoration of the choir is estimated at about 25,000*l*. When the nave is completed, the cost of the restoration of the whole interior will probably amount to 40,000*l*., the extent to which funds are at present forthcoming.

The whole series of stalls is new, excepting the ancient misereres, whose quaint style and excellent workmanship marked them out as worthy of embodiment in the new design. Of these new stalls we gave an illustration in our volume for last year.\* When an opportunity occurs, we will go through the cathedral.

It may be as well to mention, in a few words, the general work of the restoration, and those who have been instrumental in carrying it out. The whole of the restoration, as our readers are well aware, has been carried out from the designs and under the instructions of Sir Gilbert Scott. Under Sir Gilbert, for a considerable period, Mr. Snellgrove superintended the work; but for some time past Mr. E. G. S. Luscombe has had the charge. The whole of the restoration work generally, the new pulpit, the restoring of the bishop's throne, and a portion of the new wood-work, have been done by Mr. Edwin Luscombe, of Exeter. The new stalls erected have been provided by Messrs. Farmer & Brindley, of London. The painting and stained-glass windows have been done by Messrs. Clayton & Bell; the lighting arrangements and altar-rails by Messrs. Hart & Peard, of London; the brass choir-deaks, pulpit-railing, metal gates, and grilles, by Mr. Leaver, of Maidenhead; and the organ by Mr. Henry Speechley, of London.

#### HASTINGS BATHS.

AT the suggestion of Mr. Alderman Howell, plans were prepared for Public Baths and Aquarium adjacent to the sea-wall, Hastings. The design by Messrs. Jeffery & Skiller and Cross & Wells, local firms of architects, was selected, and here for a time the matter stopped. Then the Mayor called a public meeting, and the result was that the Public Baths and Aquarium Company was formed. Eventually the White Rock site was secured, the company undertaking to erect a sea-wall, and to give up the roof of the building as a public parade, in return for which the Council were to pay them 1,500*l*. Another delay was caused through the usual routine of red tapeism in connexion with the office of Woods and Forests, but everything being at length settled satisfactorily, tenders were issued for the erection of the building, and the contract of Mr. Adcock, of Dover, at 27,000*l*., was accepted. Some misunderstanding seems to have arisen between Mr. Adcock and the directors of the company as to his liability, and failing to arrive at an amicable settlement, he threw the contract up. The directors,—not wishing to delay the works,—held a meeting at which it was decided that they should carry out the work themselves under the direction of the architects, and that decision was approved of. Another question which arose was whether the aquarium could be carried out on a remunerative scale; all admitted the necessity of the baths, but there were many who did not see the need of an aquarium. The decision arrived at, therefore, to proceed with the baths and leave the aquarium an open question for the present was universally admitted to be a wise one. The designs now consequently embrace the baths only, though, of course, the sea-wall must be completed. The baths will be placed on the western portion of the site, and the entrance from the parade will be by a double flight of steps leading to an open portico. Right and left of the ticket-office will be the entrances to the ladies' and gentlemen's swimming-baths, and on the other side of the large open area will be placed the first-class private baths,—eight in number,—for ladies and gentlemen, each consisting of a bath-room with dressing-room and water-closet attached. A spacious corridor forms the approach to the gentlemen's swimming-baths, which has an area of water 100 ft. by 40 ft. The dimensions of the bath used by the ladies are 56 ft. by 26 ft. A cold fresh and salt water shower-bath will be provided at the end of each bath. To make the bathing establishment complete, a small Turkish

bath will be attached. A large room, 65 ft. by 30 ft., with refreshment department, will be placed beyond the baths, and this would admirably answer the purpose of a reading or concert room.

Already the works are in operation. Mr. L. Dillon, a gentleman who has experience in hydraulic works, is superintending the erection. His foreman is Mr. Gambling, who was for a long time employed in the construction of the concrete blocks at Rye Harbour, and in laying them in the wall which forms Dover Harbour. Concrete will be the chief material employed in the construction of the building. During favourable weather the foundation blocks will be formed on the exact site of the wall. The smaller blocks will be moulded on the platform prepared for the purpose in the enclosure, and when they have to be fixed in position in the wall they will be bedded and bonded in Medina cement. On Wednesday in last week the first block of the building was laid by Mr. Brassey. A massive block of concrete, 21 yards cube, was placed in position on the rock 5 ft. below the surface of the beach, and above this the memorial block, weighing six tons, was suspended.

#### SURVEYORSHIP ITEMS.

**Caerleon.**—Mr. William Harris has resigned his office as surveyor to the Caerleon Highway Board. He concludes a letter to the *Hereford Times* by saying,—"I leave it to the public to judge whether a surveyor of over eleven years' standing, who has always given general satisfaction, should be called upon (in the absence of any complaint) to render a monthly account to each waywarden of the district, of how and where his whole time is spent each day. I feel confident that the course I have taken in resigning rather than carry out such a motion will meet with general approval."

**Gillingham.**—Mr. W. Tozer has been appointed surveyor and inspector of nuisances to the Gillingham Urban Sanitary Authority.

**Hove.**—At a special meeting of the Hove Commissioners, on the 1st inst., Mr. E. B. Ellice-Clark (now of Derby, and late of Ramsgate) was elected surveyor for the town and district of Hove, at a salary of 400*l.* per annum, subject to his devoting the whole of his time to the duties of his office. There were 100 candidates, the final choice being confined to three, viz., Mr. A. M. Hiscocks, Mr. Clement Dunscombe, and Mr. Ellice-Clark, the successful candidate.

**Lincoln.**—For the office of city surveyor of Lincoln there were forty applicants, and at a recent meeting of the Town Council six were selected, and requested to personally attend another meeting of the council, held on the 27th ult. At this meeting Mr. J. J. Henderson, of Leeds, was elected by a large majority.

**Long Eaton.**—Mr. W. B. Redgway has been appointed surveyor and inspector of nuisances to the Long Eaton Urban Sanitary Authority, vice Whittaker, resigned.

**Newcastle-under-Lyme.**—Mr. J. T. Eayers has been appointed surveyor to the Newcastle-under-Lyme Urban Sanitary Authority.

**Newcastle-on-Tyne.**—Mr. Lamb, the property surveyor of the Newcastle Town Council, having resigned, the Town Council has accepted the following recommendations of the Finance and Town Improvement Committees, viz.,—"That the whole management of the duties attached to the offices of property surveyor and borough engineer and town surveyor be placed under one competent person as the head; and that the salary be fixed at 1,000*l.* per annum, and that eventually such officer shall have power, subject to the consent of the respective committees, to engage and discharge subordinate officers and clerks. That the proposed arrangements do not apply to the present borough engineer and town surveyor [Mr. Fulton], whose continuance in office shall remain with the council."

**Reigate.**—At a recent meeting of the Reigate Town Council, Alderman Field, in the absence of Mr. Alderman Thornton, who had placed the motion on the agenda, moved,—"That in consideration of the extraordinary services rendered by the surveyor this year, and the great zeal and efficiency shown by him, by which the corporation has been materially benefited, his salary for the year be increased by a prompt payment of 100 guineas." A general feeling was expressed that the surveyor had well earned this gratuity, and the resolution on being put was carried.

**Salisbury.**—At the last meeting of the Salisbury District Highway Board, a discussion took place

on the conduct of the surveyor, Mr. Whinnerah. It was alleged he had expended a sum exceeding 5*l.* in materials without the consent of the Board. A vote of want of confidence in him was, however, lost by a majority of twenty votes to sixteen. Then arose the question whether Mr. Whinnerah should be censured for expending more than 5*l.* at one time without the order of the Board. Mr. Read moved an affirmative resolution, which was seconded by Mr. Marsh. Mr. Crook, who spoke strongly in Mr. Whinnerah's favour, moved a direct negative, and was seconded by Mr. Street. On a division, Mr. Read's motion was carried by a majority of twenty to nine.

**Warrington.**—The Warrington Town Council have, on the recommendation of the General Purposes Committee, resolved to increase the salary of Mr. R. Vawser, the borough surveyor, by 100*l.* per annum, i.e., from 330*l.* to 430*l.* In addition to his salary Mr. Vawser is allowed two per cent. on "quantities" taken out for works under his direction. He is also provided with an office, and is allowed private practice beyond the limits of the borough.

**Warwick.**—Mr. G. Lewis, assistant surveyor to the vestry of St. Pancras, has been appointed surveyor to the borough of Warwick, vice Pritchard, resigned.

**Wednesbury.**—At the fortnightly meeting of the Wednesbury Local Board, held on the 26th ult., it was resolved,—"That, in view of the increased size and importance of the town, it is expedient that a committee of the whole Board should take into consideration the present administration of the office of surveyor, in order to make such arrangements as shall enable the gentleman filling that office to devote his whole time to the duties thereof."

**Weymouth.**—Mr. Seaman, the late borough surveyor of Weymouth, has received a letter from the clerk of the Local Board of Health, informing him that at a recent meeting of the Board it was resolved,—"That Mr. Seaman, having sent in his resignation as surveyor to this Board after a service of many years, this Board, desiring to express to him their great satisfaction at the admirable way and faithful and honest manner in which he always discharged the onerous duties of his office whilst in their employ, and wish him every happiness in his retirement into private life."

#### ARCHITECTURAL ASSOCIATION.

The last meeting of this Association for the present session was held on Friday, the 30th ult., the president, Mr. John S. Quilter, in the chair.

Mr. John Douglas, of Chester, was elected a member. Mr. Pownall, the librarian, announced that Mr. Bedford Lomere had presented the Association with a series of photographs of specimens in the Architectural Museum. The best thanks of the Association were accorded to the donor.

Messrs. Francis and Maclachlan, jun., the scrutineers appointed to examine the voting-papers, reported that the following gentlemen had been elected office-bearers in the Association for session 1876-77, viz.:

**President.**—Mr. Henry Cowell Boyes.

**Vice-Presidents.**—Messrs. S. Flint Clarkson and W. W. Robertson.

**Members of Committee.**—Messrs. T. W. Cutler, E. B. Ferrey, H. L. Florence, R. M. Marnock, B. A. Paice, J. S. Quilter, W. L. Spiers, H. H. Stannus, J. Sulman, and C. G. Vinall.

**Treasurer.**—Mr. J. Douglass Mathews.

**Librarian.**—Mr. R. E. Pownall.

**Secretaries.**—Messrs. Edward G. Hayes and Aston Webb.

**Solicitor.**—Mr. Francis Truefitt.

**Assistant Librarians.**—Messrs. H. W. Pratt and V. Trubshawe.

**Auditors.**—Messrs. A. Conder and R. C. James.

**Registrar.**—Mr. T. H. Watson.

**Collector.**—Mr. Alfred Hill.

Thanks were given to the president and secretaries for the past year.

Mr. Thomas Blashill read a paper on "The Architect and the Pupil," and this we print *in extenso* on p. 667.

**Divergent Estimates.**—The *Metropolitan* states that a survey of the borough of Oldham being required, the Town Council prepared a specification, and asked for tenders. Several were sent in accordingly, and they varied from 750*l.* to 12,450. No tender was accepted.

#### THE VOTIVE CHURCH, VIENNA.

THE Church of the "Messiah," more commonly known as the "Votiv Kirche," erected by public subscription to commemorate the marvellous escape of the Emperor of Austria from assassination on the 18th of February, 1853, will, when completed, be one of the most beautiful specimens of Gothic architecture executed in modern times. The plan after which it has been built was designed by Herrn H. Ferstel, architect, of Vienna, in 1854, and chosen out of seventy-two designs, sent in answer to an invitation from the general committee; but it was not until 1856 that the work was actually commenced. As will be seen from the ground-plan, which we shall give on another occasion, the building consists of a nave and two side aisles, the latter continued round the chancel as choir gallery, communicating with seven small chapels, and of a transept, with four corner chapels abutting on it.

The principal façade, facing the Ringstrasse, is crowned by two elegant octagonal spires. Underneath is the main entrance to the nave, with separate portals to the two side aisles. A smaller spire, constructed in iron and sheeted with lead, marks the point of intersection of the nave and transept. Projecting portals form the entrances to the transept at both ends, leading through vestibules into the body of the church. The polygonal chancel forms seven sides of a regular dodecagon, and above it is an oratorium in form of a triforium, which, together with the choir gallery, attains the same height as the roof of the side aisles.

The best ecclesiastical Gothic of the period, between the thirteenth and the middle of the fourteenth centuries, was chosen as the standard by which to work, and has been adhered to as strictly as the small dimensions of the building permitted. The minute elaborations of a more florid style have been obliged to give place to simpler details for want of space; but so thoroughly has the original conception been carried out, that the statuary adornment of the exterior is founded on the same typological sculptural period as that of the architecture of the rest of the building. The principal front contains a representation, carved in marble, of the "Mystery of the Redemption," while the "Creation" and "Sanctification" severally adorn the right and left façades. But it is on the interior that the greatest amount of time and adornment has been spent. The carvings and mouldings of the pillars and capitals are studied from those of the cathedral at Cologne, and the elaborations of the altar-piece and pulpit, which promise to be richer than anything of their sort yet accomplished, will probably delay the opening of the church until 1877.

The leading dimensions are as follow:—Greatest length, 292 ft. English; greatest span, 94 ft. 6 in.; span of nave, 37 ft. 6 in.; height to ceiling of nave, 93 ft. 3 in.; height of spires, 325 ft. The building was commenced in 1856, and the whole completed to the height of the ceiling of the side aisles in 1862. The two spires and nave to its full height in 1864. The former to the height of the main roof in 1865, and the last stone of both spires in 1868. The nave, transept, and chancel were not finished until 1871, nor the roofing until 1872. Since then the entire energy has been concentrated on the internal decorations, and the erection of statues in the niches of the exterior of the building. The stone is throughout hard sandstone; the roof, of iron construction, that of the nave being covered with slates of two colours, and those of the aisles with lead. The total cost when completed will amount to 374,850*l.*, and the result will be a grand monument to commemorate a national thanksgiving for the preservation of a sovereign. Some years ago we gave some particulars of the undertaking, and a small view, but the importance of the building justifies us in publishing a more complete representation of it.

**Alcester Water Supply.**—On the 21st ult. Mr. Samuel Smith, C.E., inspector under the Local Government Board, held an inquiry at the Town-hall Alcester, into the proposal of the Alcester Rural Sanitary Authority to constitute a portion of the parish of Alcester a special drainage district, under the Public Health Act, 1875, for the purpose of constructing works of water supply, at a cost of 3,035*l.*, in accordance with plans prepared by Mr. Edward Pritchard, C.E., of Warwick. The inquiry was somewhat stormy.

# THE ARCHITECT AND THE PUPIL. ARCHITECTURAL ASSOCIATION.\*

IN the many discussions that have arisen in recent years on the question of architectural education, the system of pupilage, which lies at the very root of the matter, seems to have received less attention than it deserves. Very much has been said upon "the arts accessory to architecture," and it seems to be assumed that, while a certain class of subjects, all more or less useful to the architect, and all pleasant to know, can be taught to the pupil, he must pick up as much of the art of architecture as he can, mainly by his own observation and industry. Starting from the idea that this art cannot be taught, it is but one step to the idea that the system of pupilage ought to be discontinued, and that, contrary to the rule which obtains in other departments of industry, from the humblest trade upwards, the young architect of the future will prepare himself for practice without the preliminary training which an architect's office can give. But besides this theoretical notion, there is a solid basis of dissatisfaction with the actual working of the pupilage system. The architect complains that he gets no useful work from his pupils, and that they expect to be taught like schoolboys,—a duty which he cannot undertake. The pupil complains that he is turned down in the office, in an anomalous position, to pick up what he can. The paid assistant just tolerates him, at the best. If not actually jealous of him, he finds it easier to get through his work alone than to have the help of one on whom he can never depend. Perhaps all parties are best satisfied, for the time, if the architect is so unselfish as to place his pupils quite apart, and occupy them solely with copying old examples and model drawings of buildings specially prepared for their use. But whatever mode may be adopted, there is certainly a growing opinion amongst persons of experience that, as a rule, the pupil in architecture leaves his office at the end of his term less finished in training, less mature as to his powers, less useful to others, and therefore less able to get a living, than the pupils of other professions. If this view is correct, as I think it is to some extent, it is clear that it points to something wrong in the system of training; for the profession of architecture, however difficult it may be to acquire and to practise, it is certainly not more so than other professions. Pupils come to it with the same powers of mind, with the same objects, and I think with even more desire towards it on their own parts, for it is not one which a youth is likely to be urged to adopt against his will. Finally, I believe the articles by which the pupil is bound are not materially different from those in general use. I propose, therefore, with the view of introducing this subject to the serious attention of all whom it may concern, to notice the relationship created by articles between the several parties to them, the duties of the architect and the pupil, and a few other matters bearing upon this subject.

The question, "What is an architect?" may seem too simple for us to consider here; but, as it is sometimes thought to involve a great deal of debatable matter, it may be well to come to an understanding about it. Practically, at the present day, an architect is one who designs buildings in all their detail upon the instructions of his clients, and generally with certain limits as to cost; he makes arrangements with builders for the execution of the work by contract or otherwise; he is entrusted with the supervision of the works and of the accounts, and with certain powers of arbitration between client and contractor. It is sometimes said,—as if we were in an exceptional position,—that anybody may call himself an architect. You will, perhaps, be surprised to find that we are in a position not materially different, in that respect, from the members of other professions. Any one can call himself a doctor, or a lawyer, or a clergyman, or anything else, and, except in a very few points, specially provided for, he may do work and receive pay in all those capacities. What he cannot do with impunity, unless authorised, is to call himself a fellow or a member of certain societies, a solicitor, or the holder of certain positions in the Church of England. Besides this, he may, by particular enactments, be unable to recover his fees or charges if not paid when his services were rendered. People in general go to the "regular practitioner," not because they are

compelled to choose him by any exclusive privileges, but because they see reason to place confidence in persons of his class, and not in persons outside that class. What is enough protection for persons belonging to the professions that have become more "close" than ours is probably enough for us. You will, therefore, understand that if I advocate the system of architectural privilege it is not from any idea that it ought to be compulsory, but because I believe it to be the best, and, indeed, the only means generally available for the education of the young architect. The system involves three distinct parties, all of whom have their special views and interests,—the parent or guardian, the pupil, and the architect in practice.

Of these the architect appears to me to have the least interest in the continuance of a system by which he becomes bound, for a consideration usually very moderate, to train for five years a youth who may be troublesome to him, and, unless exceptionally intelligent, docile, and industrious, will not be of very great use. Indeed, the more seriously the architect thinks of his responsibilities, the less he will be inclined to enter into them. If at all selfish he may reckon, amongst other contingencies, the possibility of the pupil becoming in a few years his rival, and, on the whole, I do not see that one in active practice can be compensated for his trouble, unless he gains the intelligent, energetic, and confidential help of the pupil during the later years of the term.

As to the object which the youth has in becoming a pupil, we may believe that, in general, he has acquired a liking for the art (or what he supposes to be the art) of architecture, and is favourably disposed to fall in with any system that appeals to his good sense, and is not too irksome. But there is a third party to the bargain, whose views and objects are entitled to a good deal more attention than they often receive,—the "parent or guardian," who pays the premium, and consents that the youth shall up to, and perhaps beyond, the age of manhood, be clothed and maintained while he earns nothing for himself. His object is not that the youth should become a clever sketcher, nor a sound archaeologist, nor that he should pick up a little of everything, and get into a gentlemanly profession, but that he shall in due time acquire a profession by which he can live. No doubt he assumes that it is to be a very honourable calling, worthy the highest powers of the mind; but still neither the parent, nor, indeed, the youth himself, would enter into the arrangement, if it were put to them that on arriving at the age when other men are getting on comfortably, the pupil would, probably, be still poor and dependent. Such being the views of the several parties, let us look at the document which expresses the contract between them, and which they are all supposed to read. In consideration of certain payments (though if there were no payment to the architect, or even if the payment went the other way, I see no difference in the obligation), the architect covenants to take and accept the youth as his clerk and pupil, and by the best means he may or can, and to the utmost of his skill and knowledge, teach and instruct him, or cause him to be taught and instructed, in the practice and profession of an architect, "in such manner as the said architect now doth, or at any time hereafter during the said term, shall use and practise the same." Observe the distinct way in which the mode of teaching is laid down. He is not to be taught any number of things "accessorial," but he is to be taught the thing itself, as his master uses and practises it. This, in fact, does but describe the essential principle of the teaching that has prevailed in all ordinary kinds of business in all times. There are countries in which a man's trade or "caste" is fixed for him by the accident of his birth. In this country the profession of agriculture is almost exclusively confined to those who are themselves the sons of farmers, and have been all their lives daily working in the business, and very few besides these persons succeed in it. Where the choice of a calling is free, the first thing a parent thinks of is to place his son, who has chosen his life of life, with some person who "himself uses and practises the same." The practitioner himself is inclined to look with some distrust on any man who enters his profession without serving some sort of apprenticeship to it, and this not merely from the vulgar selfishness of trade-unionism, but from the common idea that a man cannot be competent unless he has been apprenticed. In fact, it is only in recent times that a

man could ever make a decent show of belonging to any particular trade unless he had passed this routine. The trade secrets were locked up in the trade, and it was not only the practice of it, but the knowledge of every detail belonging to it, that the apprentice had to acquire. From various causes, of which the arts of printing and engraving are the chief, there is hardly any trade now with which any man may not acquire acquaintance enough to enable him to make a show of understanding it, and a man of acuteness may even get to know enough about it to puzzle in conversation the ordinary practitioner of it. This brings us to a question which it is worth while to consider at some length, because it is of importance to distinguish between the class of subjects which can be learned in this way, and subjects of another class which cannot be so learned. I am going to ask you to distinguish them in your own minds as *matters of science and matters of art*.

In ordinary dictionaries the word "art" is said to mean—amongst other things—"science," and science is put down as meaning "art." This shows that there is a loose way of using the two words. Science, as we find the word used by persons who wish to attach a distinct meaning to it, represents "knowledge reduced to a system," not that the system can make much difference to the thing, but because it is often convenient to be able to distinguish between the knowledge possessed by persons who have been systematically taught, or have investigated special matters that are obscure, from the common knowledge picked up by ordinary people. Still science is knowledge, of whatever kind, and however acquired, much of that which is possessed only by the trained and learned man of one generation becoming in the next the common property of all. Now art must be understood as meaning something quite distinct from this. It is "skill" in the employment of one's powers, and in the application of one's knowledge to whatever matters we have in hand. It is of no consequence that many "artists" have their own special way of using the word, reserving it perhaps exclusively for their own kind of work, calling their art "high" to distinguish it from all others, perhaps contemptuous of other folk who are using similar powers of mind and body in the application of other branches of science to other objects. Doing a thing artistically, as I understand it, means doing it with clear insight and with skill, whether the thing to be done involves labour mainly physical or mainly intellectual, and to whatever objects the mind and hand are applied.

One would have thought that these things were tolerably clear; yet if we ask some of our friends for a short distinction between the two professions of engineering and architecture, they will say the first is a "science" and the second is an "art." Now the truth is that one requires the possession of a large amount of a peculiar class of knowledge carefully systematised, while the other requires rather less of this kind of knowledge or science. But the possession of all the engineering science in the world would not make a man an engineer without practical skill, nor would all the fancy and all the readiness with the pencil that are possible make a man an architect without the possession of such knowledge, systematic and common, as belongs to his branch of human industry.

In a paper read lately on engineering, the very able and thoughtful writer began by saying that his subject was entirely practical and utilitarian, and he would not go into questions of "art." I should have thought it impossible to make such a division; for either part must involve the other, and that the writer's distinction of the beautification of building construction from construction itself, was one the justification of which we had better leave to folks who attempt to carry out one without the other. It is, however, impossible to go further into this question now; it is one with which other professions have to deal for themselves. The medical profession has settled it by dropping the use of the word art. They distinguish the two departments of knowledge and skill as the "scientific" and "practical," and if we call them the "scientific" and the "artistic," we shall be able to distinguish between things which can only be acquired by something of the nature of pupilage, and those things which can be better acquired in other ways.

Anciently, all kinds of instruction were acquired in the workshop or office, because they could be acquired in no other place. The science was got by some little teaching, but more by

\* By Mr. Thomas Blashill. Read at a meeting on June 30.

daily conversation over the work and by experience acquired in the work,—perhaps, also by some old book; the art was, of course, acquired by daily practice at the work. Now a very large part of the science-teaching can be got a great deal better elsewhere. It is taught in special schools, in classes, and by books, illustrated, where the subject demands it. As to such matters as geometry, arithmetic, and the higher mathematics, if the pupil has not got them at school, he makes up his deficiencies later in life, out of office hours. Draughtsmanship, beyond the plain outline and distinctive colouring required for plans, sections, and elevations, can be much better taught in classes than in the office. Even as to the art of perspective, remembering that it was never found necessary in the best periods of architecture, still it is easy of acquisition, and any youth must be dull who cannot make himself tolerably proficient without troubling the architect or the assistants in his office to teach it to him. Then there is the great subject of archæology, which circumstances have forced into such prominence in modern days in architectural education and practice. I say that the whole subject, from "the five orders" to the latest developments of Mediæval architecture, can be best studied in classes, by joining societies, by books and otherwise, independently of office training. By privately studying this subject the young architect may get a full knowledge of it, and not that partial acquaintance with it which prejudices him in favour of one or another style; so that the same person becomes an enthusiastic admirer of Greek or Gothic, not from any merits of these styles, nor from any taste of his own, but from the accident of his position in one kind of office or another. With regard to such matters as the chemical constitution of building materials, the effects of their combination, their strength and durability, the question of ventilation and warming of buildings, and their drainage, all these matters are best acquired from books or by classes, and cannot be regularly or fully taught in the ordinary routine of an office. But as to all these, and many more which I might mention, if you were to acquire them perfectly, though they would be useful in many positions of life,—though there is hardly any person, however high, whom such knowledge would not adorn,—there is no particular reason why a man should call himself an architect because he has pursued such studies. At the best he is but just ready to begin to apply himself to that or some other useful calling.

The only thing that can make a man so trained into an architect—the thing that is wanting to him—is the practical performance of architectural work. That is the only reason why a youth goes into an architect's office, and the need for his going there arises from the fact that it is the only place where such work can really be seen and done. It is there only that there are real clients to satisfy, real builders to deal with, real difficulties to contend with and to overcome. The reason why the medical profession has practically abandoned the pupilage system, and has substituted teaching in hospitals and medical schools, is the same reason why we shall retain the old system and not adopt a new one. The medical pupil could only study and practise his art imperfectly in the surgery, and it was found that when not only books, but actual subjects for study and practice were accumulated within the walls of a hospital, the pupil naturally went after them, and there he will remain. For it is only at the hospital that the pupil can see accidents and diseases in all their varieties; can see how they are treated, and watch their progress from day to day. It is there that he has opportunities, by dissection and otherwise, to acquire skill of hand in performing operations on the body, and ultimately he has the more responsible duty of watching cases, and using considerable judgment and discretion, according to the changes in the patient's condition. Now all these things differ from the parallel teaching in the best school or college that might attempt to teach the art of architecture. They are no fancy subjects set for the exercise of the pupil's mind; they are the very things which he will have to deal with in after life. The young architect can find no such chances of study and practice except in the routine of an architect's office; and this brings us to the closer consideration of the relation between architect and pupil which the articles create.

I have said that the more the architect considers the responsibility of taking a pupil the less he will be inclined to incur it. But if he does

undertake it, he is bound to fulfil his duty by teaching his pupil the art of architecture as he practises it himself. With the greatest possible respect for those who most unselfishly attempt to train their pupils by such work as copying ancient examples, I submit that the thing which brought them into the office was that they might help to work out modern examples; and it seems to me neither difficult to induce them to do this, nor improper for the architect to benefit by what they do. With regard to those architects who put the pupil into the office without much personal supervision, it appears to me that a very little consideration and pains would make of their system all anybody could expect or desire. Some of my good friends who have had experience talk of the difficulty of making anything of such youths as are met with nowadays. It strikes me that this is the very difficulty that they have undertaken and must grapple with, but one which will be found less as it is fairly encountered. Let us try to remember what we and our companions were at 15, 16, or 17 years of age. There might not be the quickness of perception which belongs to children, nor the anxiety of children to look at people who are working, and to help anybody and everybody, but there was a great deal of youthful energy and quickness left. The severest critic would perhaps wish that such a youth was half as fond of work as he is of play. If he is not, it must be because work is made less interesting than play, and a very great deal less interesting than it might be, for work, or at least *our* work, is not reckoned by grown men as by any means uninteresting. If we consider that the person whom we have undertaken to train is not an overgrown boy, but a young man, we should treat him as such, by giving him work which he will feel to be of some consequence, which he will see can be done well or badly, and which he will be held strictly responsible to do well. The work would, no doubt, be very humble at first; but if a pupil can see the use of it,—how needful it is in the office routine,—how he is gaining facility in handling the ordinary implements,—acquiring confidence, and holding a respectable position,—there are very few youths who will not take a proper interest in their work. My own experience leads me to place very little value on work done merely "for practice"; there is seldom any proper test of its quality. The pupil should, as soon as possible, be put to work—such as tracing,—that will actually remain as an office record, or go out of the office to be worked from; and if his master will occasionally look at it, and insist on such points as exactness in copying, clearness of line, distinct legibility of lettering and figuring, and general neatness, he will be appealing to the common sense of the pupil, and forming habits which will be of the greatest utility to both alike.

As soon as possible the pupil should go on works, even if no one has time to tell him anything while there; but a youth of any sharpness can be well utilised in writing down notes from dictation, or in taking messages: if he is merely sent to look on without any particular object, he will look on and come back just as wise as he went. He ought to copy the business documents of the office, and a few questions will show whether he understands them. On suitable occasions he ought to be present at business interviews, and be encouraged to form his own opinion of matters in dispute. As he grows up he will have to make out drawings from rough sketches, and if the architect's sketches are sometimes very rough, it will be a good opportunity for seeing whether he puts down windows and fireplaces in reasonable positions when they are indistinctly shown or forgotten in the sketch. He will, of course, have learnt duodecimals at school: he will occasionally have to take dimensions from drawings or on works; enter them properly, and square them up. He ought very soon to be able to go on works, see what kind of materials are being used, and be a fair judge of ordinary foundations, bricks, sand, and workmanship; and, before his pupilage is over, he ought certainly to be able to write a common specification,—a thing that several men of twenty-five years of age have told me they never did in their lives. I say nothing of the "arts accessorial to architecture"; they are not what the pupil came to the office for; but he should have advice as to these matters, and facilities for studying them at fixed times, so that when at work on the office business he may be quite depended on,—as much so, in fact, as a paid assistant,—for I contend that the only way to properly train a pupil is to make him

work—while he is at work—as steadily as he will have to work later in life. If the office is one where there is not much work going on, it has probably been chosen because of some other advantage that presented itself; and in that case the pupil will probably get some amount of careful teaching to make up for the lack of practical work; but he ought, at any rate, to see all the work that really comes into the office.

Now, as to the pupil. If he has any enterprise, he is probably rather glad to get away from school, and see what the world is like. He has come to the profession of his choice. I need not insist on this point, that it is work for men, and quite worth all the attention he can give to it. There may be certain kinds of rough and uninteresting work. The best thing is to get through that work in the early days, for whether as training for the hand or for the mind, it cannot safely be shirked; and the most selfish of architects will hardly keep a clever youth doing the work of an office-boy when he can make much better use of him. He should not despise such work as tracing, for there is no other way of learning how to draw properly at a time when his knowledge of the details of construction is very small. He should, if possible, read every letter that comes in and goes out, and become thoroughly acquainted with the whole of the office business. One of the most useful acquisitions for a young architect is shorthand, not only for his own use, but because, if in the office of a gentleman of eminence, he may at times act as his secretary, and get into the presence of persons whose ways of transacting business are a very interesting and useful study. Not to make these details too wearisome, I will only mention this most essential thing for a pupil to do. He ought, while in articles, to thoroughly interest himself in the office business; to form the best opinion he can as to the way in which designs will come out in the execution; how certain lines of conduct in business matters will succeed. He will feel glad when the work is successful; personally sorry when there is a want of success, as if it had happened to himself.

When his articles are at an end, he will naturally consider that he is entitled to call himself an architect, whatever other people may be able to do. He will be a young architect, with a great deal more to learn, but so far as he goes, he should be a whole architect, and not a bit of one,—not merely a draughtsman, who can draw ornament or perspective, and nothing else, or merely a surveyor,—unless he finds, as he may very likely do, that this is really his forte. And as a comfort to men who find themselves only adapted to one kind of thing, I may mention that one meets very successful men, in many departments, such as surveyors, engravers, engineers, who were trained as architects, and have drifted off in the direction in which their taste or their chance of employment lay.

If the pupil becomes an architectural assistant, as is likely, he will find that, as a rule, he will be put to whatever kind of work best suits his employer. He will have little chance of seeing a variety, of trying his hand on new kinds of work, or in getting out on buildings. It is the more important, therefore, that he should have acquired habits and powers of working well in all the departments of his profession while he has the opportunity of practising himself as a pupil, and the right of getting the chance of such practice.

My subject being limited to matters relating to pupilage, I shall say little upon matters that are common to the pupil and the more advanced student. I need hardly mention the many opportunities which the Association presents for supplementing the duties of the office in the education of the young architect. Our annual volume will tell more of the advantages which have recently been placed at the disposal of students by the Royal Academy, under the superintendence of our good friend Mr. Spiers. For draughtsmanship of a kind, and applied to purposes which are not often met with in ordinary office work, this class offers very great advantages. My own recollection of Royal Academy lectures, many years since, and the reports we now see of them, lead me to think that they most usefully supplement office routine in their sound archæological teaching, while the student has the great advantage of learning from the professors of other branches of art. Of University College, which in my time had the great advantage of Professor Donaldson's labours, and where the work is still carried on

with undiminished usefulness, I would make one observation which may be a hint to students, young and old. Not having travelled in the countries where remains of classical architecture exist, it was not till I came to hear the careful and lifelike descriptions of Professor Donaldson that I formed any idea of the beauty and the reasonableness of the styles on which he was so competent to discourse. Dry descriptions in books are nothing beside the words of one who has seen the remains which he describes and can impress them upon the mind by his vivid description.

Having ventured on a hint or two such as these, I may just give one hint on matters which it may be best to avoid. Many young architects are vastly attracted towards anything that involves minute workmanship, small prettiness, vivid colouring, such as furniture, metal utensils, and crockery. Let me suggest that the art of architecture, though quite within the scope of ordinary men, is rather a large matter to learn in the years devoted to pupillage. It is worth all your attention during that time, while you have many distractions of a social character that cannot be put aside. It is hardly possible that a man who habituates himself to such studies as these can thoroughly master the larger matters of construction, or can fail to be influenced in his architectural designs by the taste acquired by work in these smaller matters. I should think it best for an architect to be content to know rather more of these things than the ordinary public; but as his duties must finish somewhere, to draw the line at the limits of his profession, and leave matters of furnishing to those who are better able to study them.

There really is no time to waste on trivialities, however enticing. The world wants us, if it can get us, with all our mind and all our energy concentrated on the service that we profess to render. If it cannot get these, it will try to do without us, and we may go on making pretty pictures of architectural subjects—castles in the air. It is our business to design and to carry out in every detail all the great works of the world which do not involve those special questions which, by common consent, are handed over to the engineer. I want to urge that we should stick more closely to this work from our earliest youth, even if we have to read less, to sketch less, and generally to lead a less pleasant life, if, indeed, that which I have distinguished as man's work can be otherwise than pleasant to men.

If we may for a moment consider the future of the art of architecture in connexion with this question of pupillage, I may repeat a remark often made by persons of good general culture. They ask,—How is it that while the men of other professions are generally acknowledged to be making advances, and satisfying themselves at least in the progress of their art, the architect is always grumbling, always acknowledging his inability to satisfy himself, or to rival the works of his predecessors? I know nothing that bears the semblance of a reason for this, unless it be that the architect is often so strongly impressed with the importance of everything that bears at all on his work, that he gives himself too little opportunity to study the central—the real—business of his life. When men of fair ability set themselves to do anything, they generally succeed pretty well if they employ suitable means. One feels disheartened to hear, after twenty or thirty years' experience, the same complaints,—the old story of our own deficiencies. By way of beginning at the beginning, I have ventured to make these few suggestions on a subject which, as I have said, is at the very root of the question of architectural progress, whether as respects the individual, the profession, or the art.

#### ARCHÆOLOGY AT BANBURY AND NEIGHBOURHOOD.

THE Archæological section of the Birmingham and Midland Institute visited Banbury on the 21st ult. The drive through Banbury, past the historic "cross," and past the last century church, which replaced one of the finest churches of Mediaeval England, and which required restoration so little that its walls had to be blasted to shake them down, soon led into the pleasant leafy lanes and among the well-tilled fertile fields which cover the great table land where Oxfordshire extends to the Edge-hill range. A pleasant hour was spent at Hanwell. The interior of the church well repaid minute examina-

tion: and then the party wandered down a picturesque lane to admire the massive brick tower, now almost the only relic of the great hall of the Spencer family, who occupied Wormleighton and Claverdon in the reign of Henry VII. Another drive along the shady lanes brought the party to Shotswell Church, where a dozen architectural details were eagerly discussed, and where a great wall-painting of St. Christopher, of the fourteenth century, remaining untouched by time and uninjured by whitewash, attracted great attention as one of the finest examples of the painted walls of our churches five centuries ago. In the absence of the vicar (the Rev. Mr. Pinwell), Mr. J. R. Holliday read a short paper sent by the vicar, who takes a deep interest in the history and condition of his church, describing not only what remained of interest, but the old wall-paintings which had been destroyed, with two exceptions, only a few years ago. Great regret was expressed generally by the visitors that so fine an example as the St. Christopher should be the only relic of the history of purely English art in church decoration, and that the hand of the restorer should have removed so much that could never really be "restored." Taking to the carriages again, the party proceeded to Harley. Here nearly an hour was spent in examining the curious old epitaphs on the gravestones and the details of the architecture of the church. Then Harbon Church, scarcely less interesting, was visited, and at one o'clock the carriages pulled up at the Round House, at Ratley, where Oxfordshire slopes suddenly down into Warwickshire, on the long line of the Edge Hills. Here luncheon was provided. After luncheon, the visitors proceeded along the edge of the cliff, with passing glimpses through the trees and the sunlit plain below, to the finely-placed Warmington Church. Another long drive among some lovely scenery brought the party to Burton Dassett Church, where the vicar explained the most interesting remains of the church. At Fenny Compton tea was provided. After tea the carriages proceeded to Wormleighton, where the grand old house of the Spencers and the richly-carved screen of the church were greatly admired; and soon after eight p.m. the party reached the Fenny Compton station, and left for Birmingham.

#### LINCOLN DIOCESAN ARCHITECTURAL SOCIETY.

THIS society has just held its annual meeting at Horncastle. The meeting extended over two days, and included excursions to many places of interest in the neighbourhood.

Horncastle Church was described by the Ven. Archdeacon Stow. The church consists of a tower, nave, north and south aisles, north porch, chancel, south aisle, and a chantry chapel and vestry beyond it serving as a north aisle to the chancel. Formerly, its exterior was so much patched with brickwork as to vie in extent with the original stone surface of the fabric, through the decay of the soft sandstone of which it is built; but this has now been substantially restored. The oldest portions are the lower stage of the tower and a small part of the east wall of the chancel, showing that the present church is precisely as long now as it was at first, and that this was of the Early English period. The north and south aisles are decorated, but almost entirely new; above is a Perpendicular clear-story. The chancel is also of that style, together with its aisles. The chantry chapel, forming a part of the north aisle, is of a slightly higher elevation than the rest, and its embattled parapet is enriched with panelled work; eastward of this the work is entirely modern, and a vestry there now takes the place of an older structure. The remarkable change that has taken place in the exterior of this church since the Society's last visit to Horncastle is most striking. Then the fine old Perpendicular roof of the nave was concealed by a plaster ceiling. There was a gallery at the west end, a gallery over the north aisle, a gallery over the south aisle, and a considerable portion of the remaining space was occupied by a high quadrangular structure, leaving very little room indeed for the accommodation of the parishioners in general. Now all these obstructions are removed. The aisles of the chancel are separated from it by well-carved oak screens, partly of ancient work and partly modern. The east window is modern, and of a Flamboyant character, which neither agrees with the older base mouldings below it without, nor with the Perpendicular work around

it, but it has a good effect. It is filled with painted glass, by Heaton, Butler, & Bayne, as a memorial to the late Rev. H. Milner, vicar of Horncastle. In the north, between what was formerly a chantry chapel and the chancel, is a small square ironed aperture, concerning the use of which there has been some doubt, but most probably it only served as a hagioscope. Holles mentions that he saw in the east window of the south aisle of this church, in his day, figures of a saint with a lock and chain, St. Crispin and St. Crispinian with their trade tools, whence it is assumed that this glass was provided by a shoemakers' guild. Besides the east window there are other specimens of painted glass in this church serving as memorials. In the west window of the north aisle is some glass by Preedy, commemorating the late Vicar, the Rev. Robert Giles, and in the corresponding one of the south aisle is another specimen of Messrs. Heaton, Butler, & Bayne's work, and other glass of theirs in the tower lancets. The centre window of the north aisle is by Messrs. Clayton & Bell, commemorating the late Mr. Fred Harwood.

Leaving the church, the party drove by the pretty village of Thornton, through the park of Mr. A. Floyer, on to Martin. The church here occupied the attention of the party for a few minutes. Dedicated to St. Michael, it is celebrated as the church in which Scott, the Bible commentator, was ordained. The Tower on the Moor was driven past, and formed the subject of much comment, and the next halt was made at Kirkstead Abbey, where the Rev. J. Conway Walter gave a short history of the ruin, and the party then moved on to the chapel. After the little building was crowded, the comforting announcement was made that the building was in such a condition that it might possibly fall; the walls were rent in many places, and the roof having but frail support it was liable at any time to come down on the heads of the worshippers. No effort had been made at restoration, and a sum of 1,500*l.* would be required for the purpose. Tattershall church was next reached. The Rev. G. T. Harvey read the Archdeacon's notes on the building. Created by Lord President Cromwell a Collegiate Chapel, it passed at length under the ban of Henry VIII. It is much too large for the population in its neighbourhood, and the chancel, which has been restored, is now used as the parish church. The castle close by it was one of the most interesting objects on the route. Although called a castle, and provided with means of defence, it was probably only built for the purposes of baronial grandeur. It is a fine specimen of rough brickwork. Mr. G. T. Clark delivered an address descriptive of the building. A halt was made here for luncheon, after which a short drive brought the party to Coningsby, where the church, dedicated to St. Michael, was the only object of interest. The fabric, all but the roof, has been restored. An hour's ride from Coningsby, and Haltham was reached. The church contains as objects of interest some ancient screen work, probably intended to separate the chantry chapel. Wood Enderby Church was next reached. Restored about fifteen years since, it now presents but a stone coffin of the thirteenth or fourteenth century, and some minor architectural items, to interest visitors. Scrivelsby was next visited. The church has been restored since the last visit of the Society. It is rich in monuments of the Dymoke family, the hereditary champions of England. A good specimen of ancient screen work stretches across the chancel, and many of the architectural features are of a thoroughly definite character. A short drive brought the party back to Horncastle. The route had ranged over about twenty-three miles.

The evening meeting was held in the Corn Exchange at 8 p.m., the Right Rev. the Lord Bishop of Lincoln presiding. An address of welcome from the inhabitants of Horncastle was read by the vicar, and responded to on behalf of the Society by the Bishop. Mr. W. J. Clarke then read a paper on "Lincoln Castle," and the vicar of Horncastle followed with one on "Horncastle Fair." This brought the first day's proceedings to a close.

The second day's proceedings commenced with a visit to Hameringham. The church, dedicated to All Saints, is of the Early English period, and possesses a good arcade. An iron frame, originally used by the Presbyterian incumbent to regulate the length of his discourses, is now fixed on one side of the pulpit. The building is much dilapidated, and the Bishop expressed the hope that the churchwardens would do all in

their power to make the church more worthy the purpose for which it is intended. Winceby was next reached. The church is new, and dedicated to St. Margaret. Standing at the east end of the church, the party had a view of a portion of the battlefield of Winceby, fought in 1643, between the Royal and Parliamentary armies. After a pleasant drive, the next stop was made at Lusby. The church is Norman, and the exterior presents a Norman tower, and a Norman loop window. It is dedicated to St. Margaret. Hagworthingham welcomed the party with a merry peal. The church is dedicated to the Holy Trinity, and is of the Early English style. The building was restored in 1859. The route next lay past Stopford Mill and Harrington Hall on to Bag Enderby. The church here is dedicated to St. Margaret, and is of the Perpendicular style. It possesses a curiously carved font, and several brasses, among which is one to the memory of Albini de Enderby, who died in 1407. In a window on the south side are the flagellum and knives, arms of Croyland Abbey. Somersby Church is a building of the Perpendicular period, but possessing few objects of interest. There is a good specimen of a churchyard cross on the south side, which towers gracefully from the base. Tetford Church, dedicated to St. Mary, was the next halting-place. It is of the Perpendicular period, and possesses north and south aisles and chancel. Leland says that the Britons fought with the Saxons at Tetford in Lindsey, in the time of Vortimer, the son of Vortigern, and there are, close by, the remains of an earth-work that may have been thrown up by the Saxons on that occasion. Plans for the restoration of the church were exhibited. The architect's estimate is 1,200l. After luncheon the visitors proceeded on to Salmonby. The church, dedicated to St. Margaret, is of the Perpendicular period, and has recently been restored. It possesses a memorial window by Clayton & Bell. High Tooton was the last place in the route. The church is dedicated to St. Margaret. A short drive brought the party back to Horn-castle again, where the two days' meeting was brought to a conclusion by the annual dinner, which was served at the Bull Hotel.

#### THE NATIONAL GALLERY.

IN reply to questions by Sir J. Leslie, in the House of Commons, Lord H. Lennox said: As soon as I saw the question of my hon. friend on the Orders of the House, I communicated with Mr. Burton, the Director of the National Gallery, who has furnished me with categorical answers to the questions of my hon. friend. I propose now to read those answers to the House:—

1. The Director's letter was not written to cause delay in the re-opening of the National Gallery, as no avoidable delay was occurring; but to explain some statements in an article of the *Times* of the 3rd of June, as was distinctly stated in the letter.
2. It is one of the duties of the Director of the National Gallery to go abroad to inspect pictures which he has reason to believe would be eligible for the Gallery, and are for sale, and it was on such an unavoidable mission he was called away towards the end of May last.
3. It may be easily conceived that the problem of arranging on given spaces upwards of 700 pictures of the highest excellence, and by masters of distinction, in such a manner as to do justice to all, to properly fill the spaces, and to produce a satisfactory architectonic effect, is one that requires thought, experiment, and time, and cannot be executed lightly.
4. The obstacle to the successful and immediate prosecution of the work of placing the pictures was the glare of sunshine from parts of the glass roofs. This impediment is now being removed, and no delay whatever has occurred in the hanging.

Sir J. Leslie thereupon gave notice that, as soon as the business of the House would permit, he would move a resolution,—"That, in the opinion of this House, it is not desirable that the National Collection of Pictures should be closed during the months of May, June, and July."

#### COMPETITIONS.

**Wednesbury Free Library.**—At the last meeting of the Wednesbury Local Board of Health, the Free Library Committee reported that at their last meeting the plans of Mr. Newman were selected; and it was also agreed that the first premium of 25l. be awarded to Mr. Newman, the second of 12l. 10s. to Messrs. Townshend & Horton, and the third of 5l. to Mr. Charles W. Tombs, of Wednesbury.

**The Shakespeare Memorial, Stratford-on-Avon.**—A meeting of the Council of the Shakespeare Memorial Association was held at the Town-hall, Stratford-on-Avon, on the 1st inst., when it was announced that the Council had finally decided

upon the appointment of an architect. The result arrived at is the unanimous choice of the design bearing the motto, "But to the purpose, and so to the venture," and which proved to be the work of Messrs. Dodgohun & Unaworth, of Buckingham-street, Strand, London.

**Kensington Vestry-hall.**—At the last meeting of the Kensington Vestry, it was resolved to issue advertisements inviting architects to send in competitive plans and designs for this proposed new building. Premiums of 100 guineas, 50 guineas, and 30 guineas are to be given to the authors of designs selected 1st, 2nd, and 3rd, respectively, in point of merit.

**Free Library and Art Gallery, Southport.**—Premium for best design, 50l.; 2nd, 25l. Premiered plan, "Classic," Messrs. Wm. Waddington & Son, Barnley, who have received instructions to carry out the work. Second best, "Haut et Bon," Mr. John, Stephens, of Manchester. The other designs were "Labor Omnia Vincit," "As you like it," "Thorough," "Claremont," "1876," "Salus Populi, A & B," "Art," "Science," "Art and Science," "Education," "Arch," "A dot in a square," "Pro Bono Publico," "Hal," "Audeo," "Chaucer," "Let there be light."

**Auction Hall, &c., Penrith.**—The competition for the new auction hall, &c., for the Farmer's Auction Company (Limited), at Penrith, has resulted in favour of plans sent in by Mr. J. Mawson, architect, Lowther and Penrith.

#### YANWATH HALL.

DINING IN YE HALL IN YE FOURTEENTH CENTURY.

ON the occasion of the outing of the Cleveland Literary and Philosophical Society to Ullswater, Yanwath Hall was visited. The party assembled in the courtyard, and Dr. Taylor gave an interesting and minute description of the ancient feudal fortress, in order that the visitors might see for themselves in what manner their ancestors lived four hundred years ago. The doctor concluded his remarks as follows:—Let our fancy carry us back to some of the scenes which may have been enacted here. At the far end of the hall, opposite the screens, was the dais, or raised platform of two steps, with its high table, or 'high-borde,' for the lord and his principal guests; down the hall in front were ranged the boards on trestles, and the benches for retainers, and those of inferior degree. No carpet covered the floor, but it was strewn with sweet rush, lavender, and sweet plants. The lower part of the walls was wainscoted in the Gothic style, or that same quaint linen-pattern that you still see on the outer door leading into the court-yard, and of which there is some beautiful work shown at Brougham Hall. From the stag antlers on the walls hung the furniture of war—shields and targets, lances and pennons, broadsword and battle-axe, and the long-bow and cross-bow—'together with the engines and trophies of the chase. Here hung also the beautiful burnished armour (which at this period had attained its zenith of perfection), which might be donned hastily any night, on the alarm note of the warden's bugle on the tower signalling the firing of the Beacon of Penrith. Under the benches lay the dozing but quick-scented bloodhounds, kept and provided by the lord, both for the chase, and, if need were, for the pursuit with *hot trod* of the red hand moss-trooper over the border. Over the chimney-piece, on heraldic escutcheons, were blazoned the armorial bearings of the Threlkelds, and the quarterings of their alliances,—the Clifford and Vesey. On the wall behind the dais there was a hanging of arras tapestry, representing within its embroidered border some famous incident in chivalry, the work of the fair ladies of the house,—an art but lately introduced into England. The period, let us say, was at the end of the long reign of Edward III., or the close of the fourteenth century, the most glorious in the annals of English architecture, and the most brilliant for prowess in the whole history of England. The great North of England barons, Roger de Clifford, of Appleby, and Ralph de Dacre, commissioners on the Border marches, and all gentlemen of inferior array, were ordered by Royal mandate to repair to their northern estates, and there keep residence, and arm their followers, to defend the country against the Scots. The lord of the beautiful domain of Yanwath of that day was William de Threlkeld. Let us people the whole with his immediate friends and neighbours. There were Thomas de Lancaster, of Sockbridge, and his

kinsman, Sir William de Lancaster, of Howgill, knight, both branches of the family of the powerful barons of Kendal. There was William de Wybergh, of St. Bees, who had just succeeded to the manor of Clifton Hall, by his marriage with Eleanor, the only daughter of the last of the d'Engaynes, of Clifton, besides John de Carleton, of Carleton; Edmund Sandford, of Askham; and many others; and lastly came the Knight of the Shire, Sir Hugh Lowther, whose office it was to marshal the array of vassals and men at arms that might presently be wanted for the Scottish border; and to swell the lordly possessions of whose successors it was destined the manors of most present were to pass. Nor was the Church unrepresented, for the white and black garb of the monk and the cleric rustled softly amid the clang of the half-mailed knights; and the grace was said by the abbot of the neighbouring monastery of Hefpe, and after the feast the pax was offered, and the alms-dish presented by my lord's "aumonier," or private chaplain.

The hour is half-past ten; on the upper table the white cloth is spread, and the trumpet has sounded the call to dinner—for our forefathers of the fourteenth century rose at five. The pages bring in the ponderous dishes for the banquet,—a beautiful and varied fare. Salmon from the Poke Dab, the pool in the river below, the great grey lake trout from Ullswater, eels from the Stanke at Pooley; the head of a wild boar speared in Grisdale; venison from a "stag of ten," shot with the quarrel-bolt of the bowman in Martindale, or from a noble hart, a veritable "hart o' grease," run by the "sleuth dogges" from the park of Whinfell, in the manner of Oglebird, and bristled at Tarn Wadlyn, in the forest of Inglewood. Nor do the men-at-arms below the salt fail to help themselves with their fingers (for there were no forks in those days) to huge slices of beef from the baron of one of the knowted kine, a reprisal in an *outrode* against the Elliots of Liddleisdale, or on the braes of Annandale. Nor does the "high table" lack in the more refined samples of culinary art: the highly-flavoured pasties, and the poignant ragouts, mortreux and stews, hotly-seasoned with spicery, and coloured with saffron; for our ancestors were *bon vivants* and epicures in their way. The mead and sack, the Malmsey and Rhenish, and the flagons of highly-spiced claret cup, and ippocrase—and the wassail and the mazer bowl pass freely from hand to hand; and the "celerarius, with his black-jack stoups, makes many a trip to the buttery hatch, for the nut-brown ale, to fill up the horns of the thirsty comrades at the lower tables.

And, 'twas merry in the hall,  
And the beards wagged all.

And during the while, the fool, in his motley, cracks his widest jokes, and the band of jongleurs or wandering minstrels in the music gallery, in their fanciful dresses, strum their merriest airs to divert the company, and sing their ballads and roundels, or narrate in their jingling rhymes how the Scots fell at Halidon Hill, or how some border knight won his spurs on the field of Cressy or Poitiers."

#### GENERAL CODE OF BUILDING REGULATIONS.\*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—The subject of a general code of building regulations for the United Kingdom having been discussed at the recent Conference of Architects (as reported in your journal), the council of this Institute have appointed a committee to communicate with the provincial architectural societies and the Local Government Board, and to report to our council on the subject.

Meanwhile, this committee would be glad to receive from architects practising in the provinces any communications relating to this matter, especially with reference to the defects of building bye-laws at present in force, and such other details as their experience leads them to consider it desirable to embody in a general code of the kind proposed.

The council hope that the great importance of this subject to the profession and the public at large will induce those who have considered it to give our committee all the information in their power.

Communications should be addressed to me before the 31st of July.

CHARLES L. EASTLAKE, Sec.

**London Trees.**—A motion was made in the St. Marylebone Vestry to plant trees in the Edgware-road in front of twenty houses where the footway is about eight yards wide, and a memorial was sent by the shopkeepers highly in favour of the proposal, but it has been negatived,—bricks and mortar are too much in the ascendant.

\* Received last week too late for insertion.

## THE POLLUTION OF RIVERS BILL.

THE Bill introduced by Mr. Solater-Booth "for making further provision for the prevention of the pollution of rivers" contains prohibitions against putting solid matters into streams, and against the drainage into them of sewers and of poisonous and polluting liquids from manufactories or from mines. Persons are not, however, to be deemed to have committed an offence against the Act if they can show, to the satisfaction of the Court having cognisance of the cases, that they are using the best practicable and available means to render harmless the polluting matter. It is also provided that no proceedings are to be taken against owners of factories or mines under the Act, save by a sanitary authority, nor without the consent of the Local Government Board, "which Board, in giving or withholding their consent, shall have regard to the industrial interests involved in the case and to the circumstances and requirements of the locality." Other provisions are that the sanitary authority is to afford facilities for factories draining into sewers, and that the Local Government Board may authorise sanitary authorities to make bye-laws for the protection of streams.

The following is the full text of the clauses relating to sewage pollutions and to manufacturing and mining pollutions:—

Every person who causes to fall or flow, or knowingly permits to fall or flow, or to be carried into any stream, any solid or liquid sewage matter, shall (subject as in this Act mentioned) be deemed to have committed an offence against this Act. Where any sewage matter falls or flows, or is carried into any stream, along a channel used, or in process of construction at the date of the passing of this Act, for the purpose of conveying such sewage matter, the person causing, or knowingly permitting the sewage matter so to fall or flow, or to be carried, shall not be deemed to have committed an offence against this Act if he shows to the satisfaction of the Court having cognisance of the case that he is using the best practicable and available means to render harmless the sewage matter so falling or flowing or carried into the stream. Where the Local Government Board are satisfied that further time ought to be granted to any Sanitary Authority which at the date of the passing of this Act is discharging sewage matter into any stream by any such channel as aforesaid, for the purpose of enabling such Authority to adopt the best practicable and available means for rendering harmless such sewage matter, the Local Government Board may by order declare that this section shall not, as far as regards the discharge of sewage matter by such channel, be in operation within the district of such Authority until the expiration of a period to be limited in the order. Any order made under this section may be from time to time renewed by the Local Government Board, subject to such conditions, if any, as they may deem fit. A person shall not be guilty of an offence under this section in respect of the passing of sewage into a stream along a channel over which he has no control.

Every person who causes to fall or flow or knowingly permits to fall or flow or to be carried into any stream any poisonous, noxious, or polluting liquid proceeding from any factory or manufacturing process shall (subject as in this Act mentioned) be deemed to have committed an offence against this Act. Where any such poisonous, noxious, or polluting liquid as aforesaid falls or flows or is carried into any stream along a channel used or in process of construction at the date of the passing of this Act for the purpose of conveying such liquid, the person causing or knowingly permitting the poisonous, noxious, or polluting liquid so to fall or flow or to be carried shall not be deemed to have committed an offence against this Act if he shows, to the satisfaction of the Court having cognisance of the case, that he is using the best practicable and available means to render harmless the poisonous, noxious, or polluting liquid so falling or flowing or carried into the stream.

Every person who causes to fall or flow or knowingly permits to fall or flow, or to be carried into any stream any poisonous, noxious, or polluting liquid proceeding from any mine, other than water which has been drained or raised from such mine, and has not been subsequently used for washing or cleansing ore, shall be deemed to have committed an offence against this Act, unless he shows, to the satisfaction of the Court having cognisance of the case, that he is using the best practicable and available means to render harmless the poisonous, noxious, or polluting liquid so falling or flowing or carried into the stream. Unless and until Parliament otherwise provides, proceedings shall not be taken against any person under this part of this Act, save by a Sanitary Authority; nor shall any such proceedings be taken without the consent of the Local Government Board, which Board, in giving or withholding their consent, shall have regard to the industrial interests involved in the case, and to the circumstances and requirements of the locality.

**An Arbitration Case Settled.**—The arbitrator, Mr. James Edmeston, of London, has made his award in the case of *Bays v. Farren*, the hearing of which took place several weeks ago. The plaintiff claimed of the defendant the sum of 69l. 18s. 6d., for preparing plans and specifications for a house at the corner of Market-Street, Cambridge, and for other services connected therewith, and the defendant resisted the claim on the ground that the plaintiff's plans were practically useless to him. The arbitrator has awarded the plaintiff the sum of 10l. 10s., and has directed that each party shall bear his own costs of the litigation.

## STATUES.

**King Alfred.**—It has been generally known for some time past that Count Gleichen has been entrusted with a commission from Colonel Loyd Lindsay, V.C., M.P., to execute a statue of King Alfred the Great, with a view to its erection in the town of Wantage, the birthplace of the illustrious king. The statue is being sculptured in marble, and will be placed upon a granite pedestal. The cost will be over 2,000 guineas. The king is represented holding a roll of parchment in one hand. The offer of the statue having been duly made to the town by Colonel Lindsay through the Commissioners, and formally accepted by that body, the next point was to choose a fitting site whereon to erect the monument. For some time past the present structure in the centre of the Market-place, known as the Town-hall, has been an eye-sore to the inhabitants, and it has been resolved that the building be pulled down, and the site utilised for the erection of the statue.

**Prince Consort Memorial, Edinburgh.**—Preparations are in progress for the fixing of the bronze statuary and bas-reliefs of the Prince Consort Memorial in Charlotte-square. Mr. Steell, the sculptor, has (says the *Scotsman*) undertaken to have the memorial ready for inauguration by the middle of August. When the memorial was first projected, competitive designs were invited, and, out of a large number sent in, seven were selected to be submitted to the Queen, with the view of obtaining an expression of her Majesty's opinion. Before indicating any preference, the Queen requested the late Sir Charles Eastlake, president of the Royal Academy, to examine the models, and on comparing notes, it was found that Sir Charles concurred with her Majesty in selecting the design by Mr. Steell, in which the Prince was represented on horseback, with subsidiary groups round the pedestal to suggest the homage paid to his Royal Highness by a grateful people. While reserving to himself the execution of the equestrian statue, as also four bas-reliefs intended to illustrate the Prince Consort's career, Mr. Steell invited the co-operation of other Scottish sculptors in the modelling of the subordinate groups; and these have accordingly been carried out, from his designs, by Messrs. W. Brodie, Clark Stanton, and D. W. Stevenson, the work in each case being cast at Mr. Steell's foundry.

**The Orleans Family.**—Several statues in white marble are to be placed in the crypt of the tomb for the Orleans family at Dreux. The first, ordered by the Count de Paris, represents Mme. Adelaide lying on a bed, the head and breast surrounded by a lace veil. The three others have been commanded by the Duke de Montpensier, who will place them on the sepulchres of his daughter and two sons. All four are the work of the sculptor Millet.

## MASTERS AND MEN.

**Carnarvon.**—The men at the Mens? Moel Tryfan slate quarry struck on the 30th ult., in consequence of the manager refusing the Saturday half-holiday.

**Brighouse.**—On the 25th ult. the Brighouse painters made a demand upon their employers for an advance of wages at the rate of ½d. per hour. Nearly all the masters agreed to this, except one firm, whose men were offered ¼d. advance, but refused this, and turned out.

**Rugby.**—At a large representative meeting of joiners and carpenters of North Warwickshire, held at Rugby on the 24th ult., it was unanimously agreed to strike work, because of the masters refusing to increase the rate per hour from 7d. to 8d., and it was agreed by the men to fetch their tools away on Monday morning. The masters refuse because the men had an advance from 6½d. to 7d. only so short a time back as September last. The executive of the Carpenters' and Joiners' Society approve of the step taken, and will support the men.

**Ayr.**—The strike of the operative joiners of Ayr, which has lasted more than a month, is now at an end. The men demanded an advance from 7½d. to 8d. per hour, 1s. advance on the rate extra while working in the country, and the masters to sign the bye-laws. On the 22nd ult. the men agreed to the following terms:—7½d. per hour and the masters to sign the bye-laws.

**Worcester.**—Mr. J. D. Prior, Secretary of the Amalgamated Society of Carpenters and Joiners, lately lectured at Worcester on "Trade Unions

and their Influence on the Relations between Capital and Labour." At the close of the lecture the following resolution was agreed to:—"That this meeting, recognising the great benefits to be derived from trade unions when wisely conducted, earnestly recommends all working men to avail themselves of the advantages which these societies confer upon their members in the time of need."

**Glasgow.**—At a meeting, on the 27th ult., of the operative joiners on strike at Glasgow, it was stated that six additional employers had acceded to the demands of the men. At a subsequent meeting a communication was submitted from the Trades' Council suggesting that a committee of twelve, representing the men, and a similar number representing the employers, should be appointed, with a neutral person as chairman, to consider bye-law 10, which binds the men to an agreement for twelve months. The meeting would not entertain the proposal, however. A similar communication has been forwarded to the Master Wrights' Association. A motion was agreed to that the men employed do not work over-time until the dispute is at an end, as it would have a prejudicial effect both on the employed and the unemployed. The strike has now lasted for about six weeks, and those yet out seem determined to return to work only on condition that their demands are conceded. The employers, on the other hand, are as determined as ever not to give in, and allege that the reported additions to the number of masters who have signed the bye-laws do not mean much. A meeting of the operatives was held on the 28th ult., when the chairman, Mr. Grant, stated that the deputations appointed to wait on the men working on the old terms had not been so successful as could have been wished. Those on strike were still determined to remain out until their demands were granted, and it was reported that an extra allowance would be given to the non-society men during the fair holidays.

**Willenhall.**—On Monday last, the 3rd inst., about 400 of the rim and mortise lock and key smiths of Willenhall struck work, in consequence of the refusal of the employers to give them an advance of ten per cent. on their wages, in addition to the ten per cent. advanced to them last autumn, about which time the Wolverhampton smiths received a twenty per cent. increase. Negotiations have been going on for some time past between employers and employed, and a fortnight ago the men gave formal notice for an advance, which expired on Saturday last. The masters refused to grant the advance, for the following reasons:—1. That the general trade of the country is now in a very depressed state, and prices of almost every article of manufacture have a downward tendency. 2. That the demand for locks has much fallen off for the last three months. 3. That the amount of foreign competition is greatly on the increase. It is stated that large quantities of door-locks are now being imported into this country and the colonies from America, at prices very much below those of English make.

**Southport.**—The joiners of Southport have made an offer to the masters to resume work at 8½d. per hour, and 9d. from the first week in August. This, however, the employers have refused, as they have nearly filled their shops with men from other towns.

**Sheffield.**—Five months ago the masons in Sheffield gave notice of a demand to be paid a halfpenny per hour beyond their present rate of remuneration; in other words, an advance of 2s. per week. The notice expired on the 3rd inst. Several interviews have taken place between deputations representing the men and representatives of the Master Builders' Association, the result being that the masters offered an advance of a farthing an hour, equal to a rise of 1s. per week. This offer the men have rejected. On the 23th ult. the Master Builders' Association held a meeting at the King's Head Hotel, under the presidency of Mr. Rodley, for the purpose of discussing the position of affairs, when a resolution was unanimously passed in favour of submitting the dispute to arbitration. A general meeting of the operative masons was held on the 30th ult., when the master builders' proposal to refer the question to arbitration was fully considered, and the following resolution was unanimously carried:—"That we, the masons of Sheffield, adhere to our original notice for 8½d. per hour, and consider the master builders' proposition to refer the wage question to arbitration so ill-timed that we cannot at the last moment our notice is about to expire accept it."

## CHURCH-BUILDING NEWS.

**Tranmere.**—St. Catherine's Church, Tranmere, Liverpool, has been reopened, after being closed twelve months for renovation and enlargement. The alterations carried out have effected a complete change in the character of the building. The whole of the east end has been replaced by a new chancel and transepts, erected in stone; stone facings have been added to the old portion of the church; and stone doorways have taken the place of the former means of ingress. For the flat ceiling which existed, an open-timbered roof has been substituted at an increased altitude of 14 ft., and the gallery located in the west end has disappeared altogether. Gothic windows of geometrical glass are introduced throughout. The stained-glass window in the chancel at the east end,—the gift of the vicar, the Rev. M. L. J. Mortimer and family,—contains the figures of Christ, the four Evangelists, and St. Catherine. The chancel is paved with encaustic tiles, and is furnished with a new pulpit of Caen stone. Additional space has been gained by the removal to the east end of a vestry formerly located in the west extremity of the church. The structural alterations have had the effect of providing 300 additional sittings. The cost, inclusive of special gifts from friends and members of the congregation, has been over 3,300*l.*, exclusive of a contemplated tower and spire. The whole of the work has been executed by Mr. W. H. Forde, of Cloughton-road, Birkenhead, in accordance with designs furnished by Mr. J. F. Doyle, architect, Liverpool.

**Boughton.**—St. Paul's Church, Boughton, Cheshire, has been reopened, after restoration to an extent almost tantamount to rebuilding. The old building was in the Classic style, but in the alterations this has been lost, the walls and foundations only being retained in the new building, which is Early Gothic in style. Externally the walls are cased with red bricks, relieved with stone bands. The roofs are slated with dark-coloured slates, and the bell-turret, which forms a conspicuous feature, is covered with oak shingles, with an iron cross as a terminal. Internally the wide span of the former church is divided into a nave and two aisles by a timber arcade consisting of pitch pine pillars with arched openings and framing above, forming panels, which are filled in with cement, the white colour of the panels presenting a pleasing contrast to the dark stained timber work. The high pitched roof covers the nave and aisles in one span, and is plastered between the timbers internally, the latter being exposed to view and stained. The benches or open pews are of pitch pine, stained and varnished. Messrs. Farrimond & Co., of Chester, were the contractors for the whole of the work, which has been carried out by them at a cost of about 3,300*l.* The architect is Mr. John Douglas, of Chester.

**Polmont.**—Polmont parish church has been re-opened, after restoration. The condition of the church has been much improved, one noticeable feature being that behind the pulpit the ten commandments are set up in gilt letters on a blue ground, surmounted by a scroll, with another running underneath, bearing the inscription:—"The Law was given by Moses: Grace and Truth came by Jesus Christ." This, as well as the whole painting of the church, has been done by Messrs. Fergusson & Bell, Falkirk. The old pulpit, with sounding-board and the precentor's desk, has been removed, and an oak pulpit and a Communion-table, with three chairs behind it, have been substituted. In front of the Communion-table stands a Caen-stone baptismal font. All these articles have been supplied by Mr. Gilbert J. French, Bolton.

**Ipswich.**—The Vestry of St. Lawrence's, Ipswich, have approved of the plans prepared by Messrs. Barnes & Bisshopp for the restoration of the parish church. They provide for the erection of an organ-chamber and vestry on the north side of the chancel, so that the organ and the choir will be brought closer together. The organ-chamber will be divided from the chancel by a perforated arch, springing from granite shafts, with moulded stone capitals and carved bases. The gallery at the west end of the church upon which the organ now stands will be altered so as to extend across the entire width of the nave, and will be utilised for benches, so as to afford about fifty additional sittings.

**Drighlington.**—It is proposed to build a new church at Drighlington, in place of the present edifice, which has become too small for the

increasing population of the neighbourhood. The proposed site is an extension of the existing churchyard. The plans have been prepared by Mr. Swindon Barber, and the design includes a square tower, 20 ft. clear inside measure, with walls of a corresponding thickness, and is arranged to accommodate seventy people, every one having a complete view eastward, through an arch 18 ft. wide, opening into the nave. In the tower is a five-light window, and the ceiling forms the floor of the ringers' chamber, which is supported on heavy beams and moulded joists. Very slightly projecting piers support the chancel arch, which is 22 ft. wide and correspondingly lofty. The principal entrance to the church is by a low-roofed porch, 10 ft. deep. The aisles are 12 ft. wide and of equal length with the nave, divided from it by an arcade of four arches. Above the arcade is a clearstory wall pierced by three-light windows, which supports a heavily-timbered roof. The chancel is 36 ft. long, and to the north are arranged an organ-chamber and vestries, and to the south a corresponding aisle of two bays of equal height with those in the nave. The east window is of seven lights, the tracery being enclosed by a four-centred arch, according in outline to the hammer-beam roof, which is strengthened by upright posts and traceried heads. Little or no ornamental carved work is employed throughout the church.

**Newcastle (Staffordshire).**—St. Giles's Church, Newcastle, Staffordshire, has been consecrated. Sir Gilbert Scott is the architect, and the cost has been 13,000*l.* or 14,000*l.* The following is a statement of the principal dimensions:—Extreme length, 150 ft.; width, 75 ft.; height from the nave floor to the top of the ridge tree, 64 ft. 6 in.; height of the chancel arch, 40 ft. 6 in.; width, 24 ft. 6 in. The east window is seven light wide, and the head is filled in with elegant tracery. There are no galleries, and the church will accommodate upwards of 1,000 persons.

**Stowmarket.**—It is proposed to restore the tower of Stowmarket parish church, at a cost estimated at 500*l.* It is stated that the tower is in a dangerous condition, and requires prompt attention.

**Hagley.**—The inhabitants of Hagley intend to erect, by subscriptions amongst themselves, in memory of the late Lord Lyttelton, a lych-gate to their parish church, which was recently partly rebuilt and restored from the designs of Mr. Street.

**Salisbury.**—The enlargement of St. Paul's Church, Fisherton, by the erection of a new north aisle, is about to be proceeded with. The work is to be done by Messrs. Hale & Sons, of Salisbury, whose tender (1,567*l.*) has been accepted. The galleries in St. Thomas's Church, Salisbury, having been removed, the present lofty pulpit is no longer needed, and it has, therefore, been decided to have a new one of stone. It is to be designed by Mr. G. E. Street, R.A., and will cost about 150*l.*

**Taunton.**—At a vestry meeting recently held at Kingston, near Taunton, it was unanimously resolved to restore and repair the ancient parish church. Mr. Spencer, of Taunton, has been appointed the architect. The Ecclesiastical Commissioners have promised a portion of the amount of money required.

**Netherhampton.**—At a meeting of the parishioners to consider what steps should be taken as regards the proposed improvements of the church, the plans prepared by Mr. Butterfield, architect, were approved.

## DISSENTING CHURCH BUILDING NEWS.

**Moreton Corbett.**—A new Wesleyan chapel has been opened at Moreton Corbett, near Shawbury. It has been erected by Messrs. Paterson, of Wellington, at a cost of 650*l.*, and contains 250 sittings.

**New Swindon.**—A new chapel for the Primitive Methodists of New Swindon has been completed and opened. The building is of red brick, with Bath stone dressings, and is in the Italian style. The principal entrance is in the centre of the Regent-street front, with additional entrances at each end. There are galleries at each side and at each end, supported upon light iron columns, the front panels being filled in with ornamental iron work. The seats are executed in best red deal, stained and varnished. In the rear of the building there are three large class-rooms and other necessary offices, and underneath the chapel a large schoolroom, 38 ft. long, 32 ft. wide, and 9 ft. high in the clear. The architect was Mr. Orlando Baker, of New Swindon; and the con-

tractor, Mr. George Wiltshire, of Swindon. The total cost is about 2,000*l.*

**Dorking.**—The memorial-stone of the new Baptist Chapel in course of erection in the Junction-road, Dorking, was laid on Whit-Monday. The chapel has been designed by Messrs. Searle, Son, & Hayes, architects, of London, and is being built by Messrs. Colls & Sons, of London and Dorking. It will seat 230 persons, while provision will be made for the erection of galleries to seat 100 more when required. There will also be a vestry and school-room attached. The total cost will be about 1,600*l.*

**Seacombe.**—The memorial stone of the Welsh Calvinistic Methodist Chapel, Liscard-road, Seacombe, has been laid by Mr. David Davies, M.P. The building will be cruciform, and consist of a nave, transept, and vestry. There will be a roomy porch at the north-east angle, and tower porch on the north-east side. The style of architecture will be Gothic of the Early English period. The roof will be partly open, following the curve of principals, which will rest on detached columns of marble with foliated caps. The nave will be divided by means of the principals into three bays with cross principals at the intersection of the transept. The pews, which will all be open, will be constructed of pitch pine with framed bench ends, while the pulpit and Communion seat will be made of Dantzic oak. The accommodation will be for 270 sittings in the nave, and the intention is to use the transept as schoolrooms. It will be divided from the nave by brick partition walls, which when taken down and thrown into the chapel will give 120 extra sittings. Externally the main gable, which will front Liscard-road, will be flanked by a tower and spire,—which will rise in four stages to a height of 90 ft. from the ground to the top of the vane,—and on the north-east side by a small turret, which will be 40 ft. to the top of the finial. In this gable will be a seven-light tracery-headed window, having three-quarter columns with moulded caps and bases. The whole of the stone used externally in the dressings, ashlar, &c., will be limestone, from Denbigh. The roofs will be covered with blue Bangor slates. At the intersection of the transept with the nave there will be a *flèche*, covered with lead and surmounted by a finial. The total cost, including land and laying out the grounds, will be about 4,000*l.* The contractor for the whole of the works is Mr. William Jones, of Beaumaris; the architect being Mr. R. G. Thomas, of Menai Bridge, whose plans were selected in limited competition.

**Tattingstone.**—The memorial-stone of a new Wesleyan chapel at Tattingstone has been laid by Lord John Hervey. The new buildings are to be in the Decorated Gothic style (the material used being red brick, with white facings), and will comprise chapel, school, two vestries, and offices. The window-heads will be of stone, with quatrefoil openings, in which will be placed ventilators. The chapel, approached by two entrance-lobbies, will be seated with plain stained and varnished deal benches; and the rostrum will be under an arched recess, 3 ft. 6 in. deep. The chapel, including gallery, will seat 320 persons. The school, which is at the back of the chapel, is 25 ft. long, by 20 ft. 6 in. wide. At the junction of the school with the chapel are placed the minister's and steward's vestries, giving a transept appearance. These are so arranged as to be available for large congregations in the chapel on Sundays, or in the school-room on week evenings. The contract, including lighting, warming, and front boundary fence, has been taken by Messrs. Saunders, of Dedham, for 1,094*l.* The architects are Messrs. Cattermole & Eade, of Ipswich.

## Proposed Memorial of Viscount Falk-

**land.**—The poet Southey, many years ago, proposed that a column should be placed on the spot where Lucius Cary, Viscount Falkland, fell in the royal cause, at the first battle of Newbury, on the 18th September, 1643, but no practical efforts have as yet been made to preserve his memory. The proposal has been revived by the Newbury District Field Club. Lord Carnarvon, whom the committee of the club consulted, has expressed a warm interest in the work. The design is intended not only to record the death of Lord Falkland, but of Lords Carnarvon and Sunderland, and many other distinguished Royalist officers who fell in the same battle. The cost of the memorial in Portland stone, and including sculpture, has been estimated at 600*l.*

## SURVEYORS AND LOCAL BOARDS, &amp;c.

SIR,—Is there no appeal against "frivolous objections" to plans passing,—the committee's and their surveyor's? I am told that if I sent rejected plans to the Local Government Board they would only return them and nothing more.

I will give you a brief sketch of my peculiar position, viz., I have been many years trying to work up a practice in a rough district of cotton and woollen manufacturers, &c., and the neighbourhood, gradually increasing, is divided into districts under Local Boards.

Our Board give 150*l.* per annum to their surveyor, and he was not to practise for himself; but I find that he is doing so, and one of his "building committee" is a contractor, and doing work under him. I seldom send a set of plans in without there is the usual "petty objection" which delays the work for a month, and the client says to me, "Your plans have not passed"! I have been now twenty years nearly in constant private practice as an architect and surveyor in every sense of the term. Just imagine this, when your plans have to pass a surveyor of twenty-three or twenty-four years of age, and a building committee of a local board composed of little dealers in all sorts, &c. Again, an individual told me lately, that if he gave the surveyors to Local Boards plans to make for buildings to be erected on his land, he would have no trouble as to their passing, or during erection.

Then it is very easy for a surveyor to a local Board to do work at 50 per cent. less than an architect, who has not this regular income; and yet the architect is saddled with rates to pay the surveyor's salary. Sometimes a change in the members of the Board produces a change in the surveyor. He may be of the wrong creed (*credo mihi*) or colour. Then he sets up for himself in your little district, and gradually begins to get hold of little things that one used to fill up time with to advantage. The same process goes on at intervals, until the little district and its surroundings are full of this sort of thing.

There is another matter, viz., that most of these Local Boards state in their bye-laws that copies of all plans, &c., of buildings shall be left for the surveyor. I once sent copies of a mansion to the surveyor of a seaport town, on tracing paper, but he wanted copies mounted on canvas (he had not the mansion to design), and I was some time before I could get them (the copies) accepted, on the finest patent linen. He knew my client. As to copyright of a design,—is an architect obliged to send anything more than the bare openings of windows and doors on the elevations sent to Local Boards? If a Local Board gets hold of a surveyor, and he answers their purpose, and does their private work for next to nothing, the man in private practice in the district gradually gets under-worked in price, and is often annoyed by people saying that his plans have "not passed."

Will any brother architect in a similar position give me a little of his experience as to what can be done through the Local Government Board? Surely they are only paid servants of the public, and consequently must do something more than return plans without redress! If surveyors to Local Boards are to practise on their own account, what is to stop them from borrowing from original designs deposited with them by architects? Is not an architect's design his copyright? I fully intended being at the "Conference" on the 12th inst., but it takes me all my time to keep my little practice together, or I would have opened up two or three matters of this kind. To depart from the straight line, why cannot there be the "Conference week," and held annually at different provincial towns, and, say, every three years in London? Much good might be done thereby.

ONE OF THE CRAFT  
WHO LOVES HIS PROFESSION.

## SUSSEX MANSIONS.

SIR,—The volumes of the Sussex Archaeological Society contain engravings of notable buildings, besides those mentioned by me in the *Builder* (April 8), viz.:—Vol. v., p. 250, Ruspriory, near Horsham, A.D. 1781, "presenting none of the customary features of conventual structures," by Mr. S. H. Gremin (Burrell MS. Brit. Mus., No. 5,698, fol. 486, and catalogue of MSS. maps, drawings, &c., vol. ii., 1844, p. 246); also, two views, by Mr. John Dunstall, of "A Temple by Chichester," a round church, apparently placed on a hill. This artist (A.D. 1662)

is named in Walpole's Hist. of Engravers. Vol. vi., Gateway of Lewes Castle, N.W. view, p. 126; Michelham Priory, &c., nine woodcuts, p. 129-63; Relics of Lewes Priory, three views, pp. 259-62; Pevensey Castle, east view, and map, pp. 264-74. Vol. vii., Crowhurst Manor House, p. 15, and plan; Brickwork at Laughton Place, six views, pp. 65-72. Vols. viii. and ix., Plan of Sedgwick Castle, view of Dureford Abbey. Vol. ix., views of Bodiam Castle, being three engravings and a lithograph of the south transept of Bayham Abbey, the ancient Begham, "abode encircled with streams as with a garland," the Saxon "beag," or "beg," i.e., chaplet, or crown, built by Sir Robert de Turnham, in the reign of Richard I.; Eastbourne Priory, five views; East Maseall's Timber House, Lindfield; and Southover Priory. Vol. x., two views of Danny, and three of Wakehurst Place, erected A.D. 1590 (see Burrell's Add. MSS., 5,684, f. 151); Slaughman Manor House, and the Staircase, Star Hotel, Lewes, seven views; Benfield and Gravety Houses, A.D. 1611, and A.D. 1598, in Hangleton and West Hoathley parishes; the Crypt, Lamb Inn, Eastbourne. Vol. ii., Lindfield Old House, timber built, 1578; Holmesdale, Chalonsers, and Holland House, in East Hoathley. Vol. xii. contains engravings of Nayland House, of the Elizabethan period; Brede Place, two views. Vol. xiii. contains Old Petworth House, wherein Edward VI. was received A.D. 1552, and ancient houses at Petworth and Hastings; also, Eastbourne Parsonage and Chiddingley old houses. Vol. xviii., Isfield-place (see Horsfield's Lewes, vol. ii., p. 142). Vol. xix., Ote Hall, A.D. 1600, Petworth George Inn and old houses, 1866. Vol. xx., Back Hall, Cowdray, Glynde-place and Gateway, Brambletye Manor House and Gateway (see Horsfield's Sussex, vi., p. 389). Vol. xxi., Mayfield Palace Ruins, Lordington House Staircase (seventeenth century), Holmeshurst, and Bateman's, being "lone manor-like Elizabethan and Caroline houses," in Burwash Grove House, Hollington, A.D. 1804. Vol. xxiii., Hall of Old Racton House, 1782, Hickstead-place and Castle, (sixteenth century). Vol. xxiv., Parham Clock House, Cuckfield Park (A.D. 1681), Street-place, and stone mantelpiece (Elizabethan). Mr. C. Sergison observed, vol. xxv., p. 81, note, "in the reign of Hen. VIII. mansions were built in the form of the letter H. In Elizabeth's time, in the form of E; and in the time of Jas. I. in the form of a figure to represent J—one straight line forming two right angles with another one." Pakyns, at Hurstpierpoint, may be a specimen of this style of domestic architecture.

CHR. COOKE.

## CONTRIBUTIONS FOR ANNUAL OUTINGS.

SIR,—May I enter a protest in your paper against the growing practice, in full play just now, of the workmen employed by builders, &c., writing to manufacturers and others for contributions to their annual outing? I think it a most unjust tax, and quite contrary to the independent spirit which these same men exhibit, about annually, when they strike for higher wages, &c. So much is the practice growing, and becoming a recognised institution, that we are now receiving regular printed forms, with the name of the employer, &c.

Being considerable employers ourselves, we never allow our workpeople to accept fees, nor do they at all look for it; and will venture to hope that your artisan readers, who work for employers and clients, will see the injustice of receiving "something for nothing." A. S.

## CANTERBURY CATHEDRAL.

SIR,—I was present, and watched with great interest some trials of Messrs. Merryweather's steam fire-engine at Canterbury, on Monday and Tuesday last; and when we think of the many narrow escapes the cathedral has had from the ravages of fire,—one so recently as five weeks ago, another in 1872,—the significance of the present attention the Dean and Chapter pay to the important trusts committed to their charge becomes only too manifest. As a national monument it will be conceded that Canterbury Cathedral stands unique; and connecting as it does the Saxon Heptarchy with the nineteenth century of the Christian era, it possesses claims upon our attention second to none in the kingdom. Your readers will remember the circumstance, before alluded to, as occurring some five weeks ago, of Mr. Trimnell, jun., of Canterbury, being fatally injured by an explosion of benzoline in the clock-room of the cathedral. By the kind permission of Mr. H. G. Austin, the surveyor to the fabric, I saw the effects of the explosion in the clock-room itself; these are not of very serious actual moment, but if attention had not been immediately directed to it, the probabilities of serious injury accruing to the south-west tower would have been materially increased; it was, therefore, with

satisfaction that I observed the very great interest taken by the Very Rev. the Dean, the Bishop of Dover, Archdeacon Harrison, and in fact all the cathedral authorities, in the experiments made with the steam fire-engine, Mr. Austin taking a most enthusiastic part. By these it is demonstrated that with the assistance of this powerful engine it is quite possible to cope with a fire situated in any part of the cathedral, not excepting the Bell Harry Tower, which is 235 ft. in height; for not only was the water forced up through 320 ft. of hose, but a jet was projected to a further height of 30 ft. above the pinnacles,—themselves 75 ft. higher than the tower. This is the severest test I have ever seen a steam fire-engine put to, the back pressure in the pump-valves being enormous, but the slow, steady stroke of these well-known engines was equal to the occasion, and its performance was greeted with genuine enthusiasm by a large number of spectators. Another interesting experiment was made on Tuesday from the top of the Arundel Tower, the height of which from the ground is 130 ft. The hose was carried up outside the building; steam was raised in eleven minutes to 125 lb. pressure on the square inch, and at 140 lb. steam pressure and 130 lb. water pressure, a 1-in. jet of water was projected to the Bell Harry Tower, a distance horizontally of 170 ft.

The significance of these trials is apparent, and through the medium of your columns I venture to direct the attention of other cathedral authorities to these feats of hydraulic engineering, so that they may emulate the good example set them by the Dean and Chapter of Canterbury, and make provision beforehand for a calamity which attacks some of the grandest of our national monuments before we are well aware of it. The Very Rev. the Dean of Lincoln, late a Canon of Canterbury, is particularly impressed with the importance of an efficient service in case of fire, and since his promotion, has, I understand, devoted his attention to his cathedral in this respect, and adopts a practical rendering of the old Latin motto, *Semper paratus*.

CHARLES B. KING, C.E.

## SALT IN SAND.

WHAT is the best method of detecting the presence of salt in sand used for building purposes? I. O. U.

## CLAIM FOR ARCHITECTS' COMMISSION ON "EXTRAS."

HADFIELD V. GAINSFORD.

At the Sheffield County Court, on the 28th ult., before Mr. T. Ellison, judge, Messrs. Hadfield & Son, architects, Sheffield, sued Mr. T. E. Gainsford, colliery proprietor, for commission for services in connexion with the erection of a house at Whiteley Wood.

Mr. Barker, in opening the case, stated that in the year 1872 Mr. Gainsford purchased an estate at Whiteley Wood Hall, near Sheffield, with a large mansion-house upon it. Mr. Gainsford was about to make considerable alterations in the house, and he applied to the plaintiffs to provide him with plans, &c. The plans were duly prepared, and afterwards working plans and specifications for the contractor to work by, and finally the work was contracted for by Mr. Corrie, who was a plumber. He undertook the whole of the work for 1,523*l.* 10*s.* The alterations were proceeded with, and Mr. Charles Hadfield superintended the work. After a time, however, Mr. Gainsford did what was almost invariable in such cases; he wanted some deviations to be made from the contract, which meant adding more work than was contained in the original contract. These extras were done and added to Mr. Corrie's bill, so that the total sum paid to him amounted to 1,677*l.* 15*s.* 6*d.*, and Messrs. Hadfield, the plaintiffs, claimed to be entitled to their commission on these extras as well as on the amount of the original contract. The amount on 8*l.* 13*s.* 6*d.* had been paid to the plaintiffs, and whether or not the commission was due on the extras would no doubt depend upon the custom of the profession. Another smaller item in dispute was the commission claimed on a contract entered into by a man named Tomlinson, for panelling the drawing-room, which amounted to 177*l.* Mr. Gainsford declined to pay that, on the ground that he had done the work himself, and Mr. Hadfield had nothing to do with it.

Mr. Gould admitted that Messrs. Hadfield were entitled to the usual commission, but urged that a number of things had been done with which, as he was instructed, Mr. Hadfield had nothing to do.

Mr. Charles Hadfield, partner in the firm of Messrs. Hadfield & Son, architects, having given evidence in support of Mr. Barker's opening statement, the case was adjourned to a day to be arranged by the advocates.

## VARIORUM.

LET us view the progress of an English generation. A writer in Cassell's *Family Magazine*, says:—"An English generation on the march from the cradle to the grave is an instructive spectacle, and we have it carefully presented to us in the report by Dr. Farr. Let us trace the physical fortune which any million of us may reasonably expect. The number, to begin with, is made up of 511,745 boys and 488,255 girls, a disproportion which, by-and-by, will be redressed by the undue mortality of the boys, and will be reversed before the close of the strange eventful history. More than a quarter of these children will die before they are five years old,—in exact numbers, 141,387 boys, and 121,795 girls. The two sexes are now nearly on a level. The next five years will be much less fatal. In the succeeding five years,—from ten to fifteen,—the mortality will be still further reduced. Indeed, for both sexes, this is the most healthy period of life; the death-rate, however, is lower

for boys than for girls. There will be some advance in deaths in the next five years, and still more in the five which follow, but 634,045 will certainly enter on their twenty-sixth year. Before the next ten years are at an end, two-thirds of the women will have married. The deaths during that period will be 62,052, and of these no fewer than 27,134 will be caused by consumption. Between thirty-five and forty-five, a still larger "death-toll" will be paid, and little more than half the original band, — in exact number, 502,915, — will enter on their forty-sixth year. Each succeeding decade, up to seventy-five, will now become more fatal, and the numbers will shrink terribly. At seventy-five only 161,124 will remain to be struck down, and of these 122,559 will have perished by the eighty-fifth year of their march. The 38,565 that remain will soon lay down their burdens; but 2,153 of them will struggle on to be ninety-five, and 223 to be 100 years old. Finally, in the 108th year of the course, the last solitary life will flicker out. Such, then, is the average lot of a million English men and women."

—The *Victoria Magazine*, conducted by Miss Emily Faithfull, keeps on its way agreeably, but scarcely gives enough for the money to run successfully against other monthly serials. — *Leisure Hour* has a reasonable word or two on Locks out of Order:—"It is a small house that has not some twenty doors, every one of which ought to be lockable and unlockable at all times. The proper place for the key of a room-door is in the lock, for when lock and key are together both last longest. It is from want of use more than anything else that locks and keys get out of order; 'the used key is always bright,' says the proverb, and the lock that is used fairly will not refuse to open at the touch of the key. Keep your locks easy by occasional oiling with sweet oil. When a lock refuses to work, draw the screws, and take it off; it may want nothing but cleaning, or it may be that one or two of the wards are bent out of position, and may be set right by a touch of a tool. If the case is beyond your cure, take it to the locksmith (do not send for him) and have it repaired at once. If a key is lost, take the lock to a smith and get another made or fitted. Street-door keys should be kept in duplicate or triplicate, so that if one should be lost others may be procured without removing the lock. As regards locks and keys, it may be affirmed that the cheapest are the dearest in the end. Good locks are now so cheap that it is sheer folly to put up with inferior ones. A lock will often go stiff and seem out of repair simply because the screws by which it is held in its place are a little loose, when all that is needed is to tighten them."

### Miscellaneous.

**Street Directories.**—The Street Lamp Committee of the Manchester City Council, at a recent meeting, unanimously authorised the erection in Market-street, by way of experiment, of eight of Messrs. Pearse, Lever, & Co.'s "Public Street Directories." These directories are a novelty in their way. The directory consists of a frame, containing either four, six, or eight name-plates, which can be adjusted to the existing street-lamps. Four directories will be placed at equal distances on each side of the street. At the top will be printed the name of the street; and below, the words "Public Street Directory of —." The name-plates are constructed to slide in the frames, so that they can at any time be corrected without trouble. They will contain:—1. The names of the various firms trading in the street in which they are erected, with the numbers, arranged alphabetically. 2. The names of the various streets and courts leading from the street, with the numbers nearest from which they abut, arranged alphabetically. 3. Information as to the nearest postal and telegraph offices, railway, fire, and police stations, doctors, &c. Each of the directories will accommodate from 300 to 400 names.

**Inspector of Nuisances, Staines.**—The election for this office took place at the last meeting of the Local Board. The district comprises an area of about 22,484 acres, and a population of 16,838. The salary is 100*l.* per annum, which includes travelling and other expenses. There were five candidates for the office, viz., Oswald Jacobs, of Feltham; Stephen King, of Shepperton; R. J. Thorpe, of Feltham; Benjamin Clarke, of Guildford; and Henry Ball, of Stanwell; and the first-named candidate was the successful one.

**Bucks Architectural and Archaeological Society.**—This Society recently had an excursion to Magna Charta Island, which is in the parish of Wraysbury, in the county of Bucks. Having travelled by rail to Bourne End, the party numbering about sixty, embarked in a saloon boat and proceeded down the river. After lunch, the annual meeting of the Society was held on board. The Rev. C. Lowndes then read a paper on the Magna Charta Island, in which he referred to the principal events in connexion with the granting of the great charter by King John. The Rev. J. Wood next read some notes on the ancient Nunnery of Ankerwyke, in Buckinghamshire, which had been prepared by Mr. W. de Grey Birch, F.R.S. The foundation of the house was placed as far back as the time of Henry III., in the twelfth century, the founder being one Sir Gilbert de Montfichet. As the boat passed Eton Mr. W. Lowndes read a paper on Eton College, and in about another hour (the journey having lasted altogether nearly six hours), the party arrived at the Magna Charta Island. Here dinner was served under a magnificent walnut tree. The journey by the river, however, had occupied so much more time than had been anticipated, that there was but little opportunity of making explorations, but the cottage in which the grey stone on which the Charter is said to have been signed was visited. The stone, which is enclosed in a strong frame of oak, bears the inscription:—"Be it remembered that on this island, June 25, 1215, John, King of England, signed Magna Charta; and in the year 1834, this building was erected in commemoration of that great and important event, by George Simon Harcourt, Esq., Lord of this Manor, and then High Sheriff of this County." The walls of this cottage (occupied by the ferryman of the island) are decorated with shields bearing the arms of the barons who were in array at Runnymede when the Charter was obtained.

**New Buildings at Cambridge University.**—The Museums and Lecture Rooms Syndicate of the University of Cambridge have reported to the Senate that in accordance with the Grace of May 4th, 1876, they have obtained tenders for the erection of the proposed new buildings for the Department of Comparative Anatomy and Physiology, according to the plans and specifications of Mr. Fawcett. Tenders have been received from Messrs. Bell & Sons, Messrs. Gray & Sons, Messrs. Horsman & Co., and Mr. Thoday. The lowest tender was that of Messrs. Bell & Sons, amounting to 8,500*l.*, which sum includes 400*l.* to cover unforeseen contingencies. The tenders for laying on gas and water amount to 96*l.* and 330*l.* respectively. A difficulty respecting lights having arisen with an owner of house property in Corn Exchange-street, and his claim for compensation being very greatly in excess of what the Syndicate are advised is reasonable, they have caused the tenders to be divided into two portions, viz., for (A) the western portion of the building, together with the ground floor of the portion facing Corn Exchange-street, including the roofing of the same, and for (B) the upper floors of the portion facing Corn Exchange-street. The amount of Messrs. Bell's tender for (A) is 7,015*l.* for (B) 1,485*l.* The erection of the portion (A) will not interfere with any existing rights of light. The Syndicate therefore recommend that the Vice-Chancellor be authorised to contract with Messrs. Bell for the construction of the portion (A) above described, upon the terms of their tender.

**Mr. Simon's Successor.**—It has been announced that Dr. Edward Cator Seaton is to be the future medical officer of the Local Government Board, in place of Mr. Simon. We learn from a medical contemporary that "Dr. Seaton has for some years held a senior position in the medical department of the Privy Council, and subsequently as assistant medical officer of the Local Government Board. Dr. Seaton is especially well known in connexion with the subject of vaccination, on which he is a great authority, both scientifically and in respect to official organisation."

**Hinderwell and Staithes School Board, Cleveland.**—An adjourned meeting of this Board was held on the 27th ult., for the purpose of considering plans for the erection of Board Schools at Staithes to accommodate 300 children. From the nine designs submitted, the one selected was that by Mr. Alfred J. Martin, architect, of Darlington. The schools will be built of brick, and are estimated to cost, exclusive of fittings, about 1,500*l.*

**How Sewage Farms are sometimes Mismanaged.**—Mr. W. Hope, V.C., of the Romford Sewage Farm, draws the following picture of the manner in which party-spirit occasionally operates to hinder the success of sewage irrigation:—"To begin with, local boards only meet once a month. It is true there is generally a so-called 'farm committee,' which meets once a week or so, but not unfrequently the board is exceedingly jealous of the committee, sometimes on personal, sometimes on political, and sometimes on religious grounds; and at the monthly meetings the board not unfrequently undoes half of what the committee has done or attempted to do. The committee is probably composed of town-bred men, but still at their meetings held on the farm, the bailiff (who is eager and energetic until he loses heart after the first six months or so), by his importunity, succeeds in making them comprehend that he cannot work without tools, and must positively have, for instance, another couple of pairs of horses. But when the committee propound this to the board, several of the more reasonable and impartial members are perhaps absent, and the opportunity is pounced upon by the Baptist clique to veto, in harsh terms, the recommendation of the committee, which is for the moment composed of Anabaptists. The committee, in a rage, resign, and forthwith, at the same meeting, the Baptists instal themselves in place of the Anabaptists, and this not because they know anything whatever about farming, or have been able to find any real fault with their predecessors, or even have any wish to be bothered with the management of the farm, but simply and solely because they wish to spite the Anabaptists, and to see their victory recorded in the columns of the next number of the 'Claypool-cum-Paddleborough Intelligencer.'"

### Carving in the Philadelphian Exhibition.

Mr. Harry Higgs, sculptor, exhibits, among other things an oak cabinet, elaborate in all its details. It measures between 5 ft. and 6 ft. in length, is about 3 ft. wide, and nearly 4 ft. high. Its average thickness is 4 in., and at the angles the wood is doubled. The body of the coffer is panelled, there being four deeply-recessed panels in front and in back, and two panels at each end. These are separated by mountings, the whole being solidly butt-joined, and fastened firmly together, after the old style, by oaken pins. Each panel is filled with carving of curious designs. Around the various panels ornaments of running design are carved, and effective cresting is introduced. At the angles are columns entwined by ornament, and surmounted by carved capitals. The treatment of the back is the same in character as the front, but every item of detail is different. The lid is of roof-like form, panelled with diaper and other ornaments. The inside of the lid is also carved; so that when raised (by means of springs) the interior is in unison with the exterior. This work of art has been made entirely out of beams which, for upwards of 600 years, formed a part of the choir of Salisbury Cathedral. The various hinges, lock-plates, bands, clasps, scrolls, &c., are unique, and have been made by Mr. W. Shrivell, London.

### Surcharge of Architects' Charges at Altrincham.

At a recent meeting of the Altrincham Union, the clerk stated that in regard to the surcharge made upon the chairman by the auditor, the chairman had received a letter from Messrs. Mills & Murgatroyd, and he must say that in all his experience he never met with a letter like it. It was much to their honour to write such a letter, and it showed the respectability of the firm. He then read the letter as follows:—"23, Strutt-street, Manchester, June 3rd, 1876. To the Chairman of the Altrincham Board of Guardians. Dear Sir,—We see by the *Altrincham and Bordon Guardian* that you are likely to be surcharged a portion of the amount paid to us for our professional charges in connexion with the new hospital. Aware, as we are, of the difficult position in which gentlemen occupying your post are placed by the officials to whom they are accountable, we can assure you that we should be very much indignant to allow you to be subjected to any personal inconvenience on that account, and that we shall be glad to forward you our cheque for any amount you may be called upon to repay on account of our charges.—We are, &c., Mills & Murgatroyd, Architects." The reading of the letter gave great satisfaction; and the clerk added that he did not think Messrs. Mills & Murgatroyd would be called upon to forward a cheque.

**Proposed Clock-tower, Aylesbury.**—For some time past a project has been on foot for the erection of a clock-tower, to supply the place of the one taken down when the old market-house and tolls reverted to the present Market Company. Various public meetings had been held from time to time, and subscriptions solicited for the purpose of carrying on and completing the work. The appeal met with a hearty response, the total amount of subscriptions reaching over 500*l.*—a sum sufficient to justify the committee to make a commencement. Plans and specifications were advertised for, and that of Mr. Brandon, London, was accepted. The tower will be of brick, faced with Combe Down Bath stone. On either side will be a drinking-fountain, from which water will be conveyed to troughs at the foot of the steps for animals. The clock will have two illuminated dials, placed at an altitude of 36 ft. from the ground, and above will be a bell-turret, with a spire surmounted by a vane. The entire height from base to spire will be 64 ft., and the style is Early Gothic.

**Archæology at Lewes.**—A Hastings paper states that with the permission and assistance of Mr. J. C. Lucas, the owner of the property, Colonel Lane Fox has undertaken the opening of one of the burrows in the vicinity of Mount Caburn. There are many points of interest connected with this mound, which forms a bold termination to the spur of downs extending from the Cliffe at Lewes nearly to Glynde. On its summit is the famous circular encampment, consisting of a formidable double trench, enclosing a rampart of about three furlongs in extent. The fortification is supposed to have been of British origin, and there are numerous traces of both Celtic and Roman occupation in the neighbourhood. A preliminary survey has been made, and it is expected that Colonel Lane Fox will prepare a paper on the subject for the next meeting of the Sussex Archæological Association.

**Manufactured Antiquities.**—At the Central Criminal Court, on the 27th ult., Edward Brown pleaded guilty to an indictment which charged him with unlawfully transferring the mark of the Goldsmiths' Company from a silver article to another article composed of base metal. It appeared that the prisoner had got possession of some ancient silver articles, and transferred the marks upon them to articles manufactured so as to represent ancient silver articles, but which were composed of base metal. It was stated that there was a sort of mania among a portion of the public to possess antique silver articles, and that the things manipulated in the way above stated were frequently sold at enormous prices; and it appeared that a regular system was going on of manufacturing these spurious articles. Judgment was postponed to the next session.

**Compensation.**—The case of Haily and the Metropolitan and St. John's Wood Railway has been tried before Mr. Under-Sheriff Burchell and a special jury, at Red Lion-square. It was one of the first claims arising out of the new line about to be constructed from St. John's Wood to Harrow. The claim was in respect of a newly-built residence, No. 7, Devonshire-villas, Kilburn, near to Edgware-road Station of the North London Railway. Leasehold for a term of 97 years, at a ground-rent of 30*l.* per annum. The amount claimed in respect of the property was 3,000*l.*, and in support thereof Mr. Alfred Baker (the claimant's surveyor), Mr. Hesketh, Mr. Thompson, and others, gave evidence, whilst the company's surveyor (Mr. Harry Jones), supported by Messrs. Walker, Barrott, & Lowe, estimated the compensation at 1,900*l.* The verdict of the jury was for 2,600*l.*

**The New Law Courts.**—In answer to Mr. Mellor (House of Commons), Lord Henry Lennox said.—The agreement between Mr. Street, the architect of the New Law Courts, and the Office of Works, was made on September 23, 1870. The architect was to receive five per cent. on the amount proposed to be spent; one-third was to be paid on the execution of the contract, another third as soon as one-half of the contract sum was paid to the builders, and the remaining third when the final payment had been made to the builder. With regard to the second part of the question, it was arranged that if any alterations or additions were made to the work entailing an increase in the cost of the whole work, the architect should receive at the rate of five per cent. on that increase.

**Liability of Highway Boards.**—At the Darlington County Court, on June 22nd, before Mr. E. R. Turner, judge, an action was brought by John Reid, bailiff of the Darlington County-court, against the Darlington District Highway Board, for 30*l.*, for personal injuries. It appeared that on the night of February 24th last the plaintiff was driving in a dog-cart towards Darlington, and on arriving at Dean Bridge, which was under repair, his vehicle was upset by stones on the road. Plaintiff could not attend to his duty for some time from the injuries he had received. The defence was that the Highway Board were not liable, inasmuch as they had let it to a contractor; but his Honour held that as there had been no special contract for watching and lighting, the Board were liable. Verdict for 25*l.*

**An Architect called upon to Rebuild Work at His Own Expense.**—At a recent meeting of the Holborn Board of Guardians, a letter was read from the Local Government Board, stating that Captain Lockwood, sub-inspector, had visited the City-road workhouse, and found that in the block building occupied by infirm women there were certain structural imperfections which necessitated its demolition and rebuilding, and the Board wished to know what the guardians proposed to do. The building committee reported that they had considered the subject, and requested that the Local Government Board be informed that the defective brickwork referred to in their letter was about to be rebuilt at the expense of the architect.

**Death of a Scotch Artist.**—The death is announced of Mr. Thomas Gray, a young and promising Scotch artist. For some time deceased had suffered from pulmonary disease, but it was not thought that the end was so near. He was a native of Aberdeen, but had for several years been resident in London. In his youthful days, while yet in the north, he gave his attention to painting, and found an able instructor in his uncle, Mr. James Cassie, A.R.A. Amongst a large circle of his brethren in the metropolis he was well known, and, taking great interest in the formation of the Hogarth Club, he was appointed its secretary in 1869, an office which he held till the day of his death.

**Artisans' Dwellings Act in Birmingham.** The order of the Local Government Board, affirming the street improvement scheme proposed by the Corporation of Birmingham, has been issued, and incorporated in a Government Bill which has been introduced in the House of Lords. After reciting in full the scheme and the estimates attached thereto, the order sets out the subsequent proceedings for publication, service of notice, &c., and authorises the execution of the scheme, with the sanction of Parliament, subject to certain conditions and modifications.

**A Turf Advertisement.**—The proprietors of the *Glasgow News* have done a big thing in advertising. The slope of the hills, behind Ardenlee has been cut with letters each 40 ft. long and 6 ft. thick. The length of the advertisement is 323 ft., it covers an area of 14,855 sq. ft., and is 1,485 times the size of a page of the *News*. The borders of the letters are sown with sweet allsium—a white flower; the centre is set with dwarf beet, a dark purple; and on each side of the latter is a row of light purple candy-tuft. Passengers on board the ocean-going steamers can read this horticultural announcement nine miles off.

**The Sanitary Condition of Rome.**—Mr. Arthur Arnold, taking part in a discussion in the *Times* on the sanitary condition of Rome, says that the reason why the poor of Rome are comparatively healthy, is because they have not their houses so constructed as to become charged, especially at night, with the noxious gases of cesspools; it is peculiar to the rich to domicile poison in this way, and the requisite machinery is an invariable feature of the Anglo-Roman hotel.

**Rendle's Patent System of Glazing.**—A number of engineers and architects interested in the construction of railway roofs met together at the Paddington Station, on Tuesday last, to examine the ridge-and-furrow roofs (glass) put up for the Great Western Railway Company, on Mr. Rendle's new system. They are very light and agreeable in appearance. The system has been so successful, that the patentee has received instructions from the company to cover the stations at Cardiff, Swansea, Neath, Bath, Plymouth, and Sandown.

**The National Byron Memorial.**—At a meeting of the National Byron Memorial Committee, on the 1st inst., it was determined that the statue of Lord Byron should be in bronze, and that the pedestal be constructed out of the marble offered to the committee by the Greek Government. Mr. Fitzwilliam Dick made the offer of 1,000 guineas towards the construction of a classic canopy, provided other persons interested in the monument would contribute towards that object. The statue will ultimately be erected in the Green Park, opposite to the house wherein Byron wrote "The Siege of Corinth."

**Strike even at Saltaire.**—A deputation having waited upon Sir T. Salt, Sons, & Co., spinners and manufacturers, at Saltaire, with a view to endeavour to arrange some terms of compromise, the firm offered to make slight modifications in the proposed reduction of 10 per cent., and to open their mills on Monday morning to all such workpeople as chose to return to work on these terms. The result was communicated to two large open-air meetings of the locked-out workpeople on Saturday, and it was unanimously resolved to remain out until the late rates of payment are conceded. The differences have since been arranged.

**A Tribute to Bunyan.**—A short time ago the Duke of Bedford presented to the town of Bedford a statue of John Bunyan, which was inaugurated a few months since with considerable ceremony by Dean Stanley. The duke has just added to his gift another memento of the "dreamer" by presenting to Bunyan Chapel, in Mill-street, Bedford (or rather, as the building is somewhat oddly called, "Bunyan Meeting"), a pair of bronze doors of artistic design, and illustrative of ten scenes from the "Pilgrim's Progress." The doors have been executed from the designs of Mr. Frederick Thrupp.

**Restoration of a Scotch Mansion.**—The mansion-house of Lincluden, the residence of Major Young, which was almost totally destroyed by fire about a year ago, is now being restored. The mansion was built in the Tudor style, and its situation and surroundings are of the most picturesque description. The wish of the proprietor was to maintain, as far as possible, the original design of the mansion, and plans were prepared by Mr. Bryce, architect, Edinburgh, for having this carried out, and the building restored to what it was prior to the fire. The contractor is Mr. J. Halliday, Dumfries.

**Ely Cathedral.**—A meeting has been held at Cambridge in furtherance of the completion of the exterior of the octagon of Ely Cathedral. The bishop of the diocese presided. It was resolved to accept the plans as submitted by Sir G. G. Scott, and Mr. Wood's tender as approved, at a cost not exceeding 2,965*l.* The fund contributed already amounts to 2,500*l.*, and 500*l.* more is needed. The work will take three years, and will be commenced forthwith.

## TENDERS

For erecting new premises in Oxford-street and Old Cavendish-street, for Mr. Thomas Brandon. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Hill, Higgs, & Hill.....	424,400	0	0
Colls & Sons.....	21,577	0	0
Kirk & Randall.....	21,109	0	0
Thorn & Co.....	20,350	0	0
Nightingale.....	19,835	0	0
Sheffield.....	19,727	0	0

For laying out a portion of airing-courts at Kent County Lunatic Asylum, Chatham, near Canterbury, for the Justices of the Peace for the county of Kent. Messrs. John Giles & Gough, architects. Quantities supplied:—  
Nicholson (accepted).....22,675 0 0

For sundry painting works, terrace walls, and additional stabling at Southwood Hall, Highgate, for Mr. W. Jardine. Messrs. John Giles & Gough, architect. Quantities supplied:—  
Hook & Oldrey (accepted).....£1,040 0 0

For rebuilding premises, 107, High-street, Shoreditch, for Mr. G. Stone, Messrs. Berriman & Sons, architects. Quantities by Mr. C. H. Goode:—

Faulkner.....	£2,423	0	0
Croaker Brothers.....	2,283	0	0
Tully.....	2,180	0	0
Shapley.....	2,135	0	0
Bangs & Co. (accepted).....	1,770	0	0

For rebuilding premises, 108, High-street, Shoreditch, for Mr. Sharman. Messrs. Berriman & Sons, architects. Quantities supplied:—

Faulkner.....	£1,176	0	0
Croaker Brothers.....	1,115	0	0
Tully.....	1,090	0	0
Bangs & Co. ....	1,054	0	0
Shapley.....	1,048	0	0

For rebuilding premises, 169, High-street, Shoreditch, for Mr. McCann. Messrs. Berriman & Sons, architects. Quantities supplied:—

Faulkner	£1,252 0 0
Croaker Brothers	1,195 0 0
Tully	1,118 0 0
Shapley	1,090 0 0
Bangs & Co. (accepted)	952 0 0

For the construction of drainage works, Buntingford, Herts, for the Buntingford Rural Sanitary Authority. Messrs. Smith & Austin, engineers. Quantities by Mr. E. H. Horne:—

	Contract No. 1.	Contract No. 2.
Young & Co.	£1,474 0 0	826 10 0
Acoc	1,445 0 0	745 0 0
Cowdrey & Sons	1,286 0 0	806 0 0
Bloomfield	1,262 0 0	707 0 0
Potter	1,200 0 0	700 0 0
Gray	1,200 0 0	676 0 0
Botterill & Co.	1,113 0 0	613 0 0
Gibbons (accepted)	1,047 0 0	581 0 0

For the erection of cemetery chapel and curator's lodge, Eckington. Messrs. Rollinson & Son, architects:—

Marriott	£6,231 0 0
Greenwood	4,623 0 0
Stevenson & Fidler	4,322 0 0
Miles (accepted)	4,275 0 0

For the erection of schools, residence, fence-walls, and conveniences, at Ashover, for the Ashover School Board. Messrs. Rollinson & Son, architects:—

Greenwood (whole tender)	£2,771 13 0
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Excavator's, Mason's, Slater's, and Plasterer's Departments.

Hopkinson	£1,644 13 8
Fidler	1,567 0 0
Asker (accepted)	1,527 0 0

Carpenier's, Joiner's, Plumber's, Glazier's, Painter's, and Smith's Departments.

Davenport	£974 0 0
W. Statham	964 10 0
Mellor	864 0 0
H. Statham (accepted)	730 0 0

For the erection of a villa residence at Gladstone-road, for Mr. J. Parkin. Messrs. Rollinson & Son, architects:—

Tutin	£1,879 0 0
Wright & Madin	1,775 0 0
Sim	1,760 0 0
Saul	1,732 0 0
Forrest	1,706 0 0
Greenwood	1,691 0 0
Maw & Madin (accepted)	1,500 0 0
Hooke & Handby	1,465 0 0

For new warehouse, corner of Southwark Bridge-road and Sumner-street, Southwark, for Messrs. Riddle & Couchman. Messrs. Osborne & Russell, architects. Quantities supplied:—

Chessum	£10,200 0 0
Wood Brothers	9,483 0 0
Colls & Sons	9,163 0 0
Greenwood	8,775 0 0
Tarrant	8,100 0 0
Sabey & Son	7,990 0 0
Downs & Co. (accepted)	7,950 0 0

For alterations to 149, Aldersgate-street. Mr. Broadhurst, architect:—

Crabb (accepted)	£1,620 0 0
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For sewers, &c., in connexion with the south-west portion of the Wilson estate, Hampstead. Messrs. Farebrother, Ellis, Clark, & E. and C. Lowe, surveyors:—

Mowlem, Burt, & Co.	£13,470 0 0
Nowell & Robson	11,314 0 0
W. & C. Watts	11,172 0 0
Crockett	10,973 0 0
Killingback (accepted)	10,753 0 0

For Hotwell Schools, Bristol. Messrs. Hay & Oliver, architects. Quantities supplied:—

Veals	£3,650 0 0
Davis & Son	2,990 0 0
Estabrook	2,918 0 0
Forse & Ashley	2,920 0 0
Brook & Bruce	2,889 0 0
Pugsby	2,816 0 0
Lewis & Eddbrooke	2,815 0 0
Hatherly	2,799 0 0
Cowlin	2,793 0 0
Humphreys	2,790 0 0
Wilkins & Son	2,790 0 0
Hill	2,630 0 0
Stephens & Bastow (accepted)	2,586 0 0

For the erection of a small mansion, at Maidenhead, Berks, for Mr. R. Wilson. Mr. Fred. King, architect:—

Jones	£3,596 0 0
Walker	3,376 0 0
Button	3,152 0 0
Croxford & Co.	2,999 0 0
Unwin	2,974 0 0
Dover & Co. (accepted)	2,961 0 0

For six pairs of villa residences, at Shortlands, Kent, for Mr. R. Dixon. Mr. W. Bridge, architect:—

Dedman	£10,877 0 0
Broadbent	10,829 0 0
Walker	10,692 0 0
Unwin	10,429 0 0
Croxford & Co.	10,111 0 0
Dover & Co. (accepted)	9,999 0 0

For the erection of a villa residence, Woodside Park estate, Finchley. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Miskin	£2,610 0 0
Temple & Foster	2,343 0 0
Boyce	2,291 0 0
Plowman	2,235 0 0
Stephenson	2,243 0 0
Southeott	2,217 0 0
Aitchison & Walker	2,197 0 0
Donne	2,175 0 0
Small & Taylor	2,137 0 0
Jopling & Co. (accepted)	1,979 0 0

For building warehouses and stables in Hawley-road West, pulling down and rebuilding premises in rear of 230, High-street, Camden-town, for Messrs. Ward & Hawley:—

Gould & Brand (accepted)	£208 0 0
--------------------------	----------

For new hall at the Royal Masonic Institution for Girls, Clapham Junction. Mr. T. Massa, architect. Quantities supplied by Mr. W. Barret:—

Waldram & Co.	£8,740 0 0
Colls & Sons	8,537 0 0
Oliver	8,250 0 0
Pritchard	7,883 0 0
Fish	7,830 0 0
Brass	7,677 0 0
Kirk & Randall	7,584 0 0
Smale	7,017 0 0

For skating-rink and clubhouse in Langham-place, Regent-street. Messrs. Archer & Green, architects. Quantities supplied by Messrs. Argent & Woodward:—

Langmore & Burge	£24,460 0 0
Waldram & Co.	23,870 0 0
Chappell	23,408 0 0
Perry & Co.	21,700 0 0

For additions to No. 9, the Grove, Clapham-road. Mr. G. Legg, architect:—

Kent	£1,415 0 0
Chessum	1,376 0 0
Sweeting	1,345 0 0
Rider & Son	1,274 0 0
Shurmer	1,152 0 0

For rebuilding No. 1, Talbot-court, for Sir William Mitchell. Mr. G. Legg, architect:—

Conder	£3,847 0 0
Ashby & Horner	3,570 0 0
Little	3,497 0 0
Shurmer	3,440 0 0
Chessum	3,277 0 0

For Hammersmith Fire Brigade Station, for the Metropolitan Board of Works. Quantities by Mr. T. Nixon:—

Wood	£4,683 0 0
Chamberlain	4,336 0 0
Williams	4,321 0 0
Stimpson	4,290 0 0
Greenwood	4,289 0 0
Morter	4,200 0 0
Adamson	4,195 0 0
Shurmer	4,185 0 0
Hook & Oldrey	4,120 0 0

For alterations to the Cheshunt Almshouses, for the trustees. Mr. T. J. Hill, architect:—

Bentley	£347 0 0
Archer	343 0 0
Saunders	339 0 0

For Baptist Chapel, Wood-green. Mr. B. Fletcher, architect:—

McCowan (accepted)	£2,045 0 0
Vincent Brothers	1,975 0 0

For stabling and conservatory, Cavendish-road. Mr. B. Fletcher, architect:—

Butcher	£277 19 6
Densham & Sons	275 0 0

For alterations, No. 103, London-wall, E.C. Mr. B. Fletcher, architect:—

Dunt	£305 0 0
Weekes & Sons	285 0 0

For villa residence at Sydenham. Mr. B. Fletcher, architect. Quantities by Mr. R. C. Glead:—

Wells	£1,430 0 0
Shapley	1,195 0 0
Watson & Dennett	1,030 0 0
Brevitor	957 0 0

For warehouse proposed to be erected at Cloth Fair. Mr. J. Collier, architect:—

Mark	£1,845 0 0
Coleman	1,808 0 0
Lawrence	1,799 0 0
Scriven & White	1,719 0 0
Crabb	1,705 0 0
Newman & Mann	1,756 0 0
Hart	1,697 0 0
Morland & Nixon	1,697 0 0
Aitchison & Walker	1,633 0 0
Stevenson	1,495 0 0

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J. P. & Son (the account of the brick-machine came from Philadelphia).—M. & Co. (ditto).—W. S. (ditto).—Brickmaker (ditto).—A Competitor (the letter seems to show that the clerk of the School Board is right).—A. J. M.—J. H.—S. & A.—B. B. & B.—C. C. H.—F. T. D.—W. J. S.—S. F. C.—H. S. S.—E. S.—R. P. W.—G. T. C.—P. C. O.—Mr. S.—T. B.—C. G.—G. & B.—P. A. S.—Major G.—Dr. D.—G. R.—H. M.—G. P.—T. L.—F. S.—W. J. C.—F. C.—J. H.—C. C.—Mr. P.—T. J. H.—B. & Son.—C. P.

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# The Builder.

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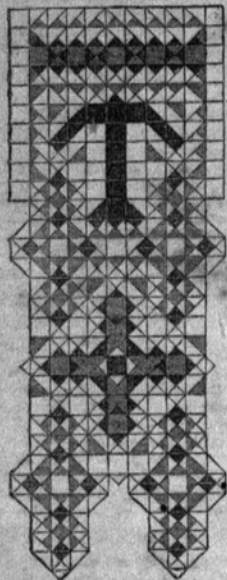
SATURDAY, JUNE 15, 1878.

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### The Life-Saving Exhibition in Brussels.

THE Brussels Exhibition, of which we gave an anticipatory notice a few weeks ago, has more than answered its promise. The general scope of the project was to set forth, as in a bird's-eye view, the actual state of opinion and invention, with reference to prevention of accidents and cure of diseases, including the risks of war. Upon a majority of the details, however, it might be superfluous in these columns to enter. But

them refer to the positive house accommodation, comfort, and security of people, whether inhabiting a city or a village. Several courts are filled with contrivances of escape from burning houses, and not a few are rich in suggestions of humanity in many a kindred form. It is the house which is the practical point to arrive at, notwithstanding all the luxurious ideas of M. Viollet-le-Duc, who writes only for the rich, and whose château is not complete without a vineyard and a peach-orchard. The exhibitors at Brussels are less ambitious. They are pragmatical in a certain sense, no doubt, in so far as they construct theoretical "cities" for "working-men" in which no working man would consent to live, as though he were a *cagot* or a leper; they aim at doing too much,—the Germans and the Russians especially; but, taken for all in all, they have made a display to which the epithet "noble" may, without the slightest reserve on the score of hyperbole, be applied. But, since Mr. Kay, the travelling commissioner for the University of Cambridge, wrote his admirable volumes, the question of the workman's or labourer's house has taken a front rank in all sanitary discussions. We find it here, at Brussels, most elaborately and variously illustrated. There are plans for the drying of foundations, the weather-proofing of roofs, the decent separation of the sexes, in even the poorest cottage, the cheapening of fires for winter, the full and free ventilation in the summer-months, the storage of food, economy in furniture, and the healthy arrangement of clothing—a point upon which, it may be remarked, the Germans and the Russians, the Swedes and the Danes, are peculiarly careful. No less than 240 examples occur of this character in the Exhibition at Brussels, concerning which itself a word may be said. It is not contained in a single structure, but grouped, without detriment to a single tree, in Maria Theresa's Park,—a cluster of pavilions, kiosks, galleried edifices, and so forth; but all

arranged in harmony with the original design, each part being happily accessible from every other. "Sweet home," it may be said, is the burden of the entire scheme. The Belgians, like the Dutch, it will be remembered, have a narrow area upon which to work; they have little room for orchards or gardens; they are not, habitually, tourists or travellers; hence, in some degree, their peculiar attachment to home, as demonstrated in this Exhibition. But the domestic evils in connexion with the house, which are displayed at Brussels, are, if slightly exaggerated, none the less suggestive. The comparisons drawn between the Belgian capital, Paris, and London, are by no means complimentary to ourselves, or even just; but Continental ignorance may be excused. We may admit, however, "the heavy, squat appearance of the houses in our suburban streets." Then, the promoters of the Exhibition, quoting from an English writer, say,— "Over and above the daily routine come the cataclysms; the pipes burst in frosty weather; the spring runs dry in the summer; the drains get out of order; and stinks and rats infest the house. . . . An east wind blows all the smoke out of the fireplace, and ruins, in an hour, the wall-paper and the satin furniture; and yet houses are built too high for their breadths, which is as much a fault of the Continent,—where all is not faultless,—as of England." But the Brussels Exhibition is, only under certain aspects, subject to our review. Those aspects are:—its proposed enlargement of dwelling-space for families; its intention, as the programme states, "to bring homes more under the influence of architectural taste," and, in connexion with these and several other topics, we have a large variety of opinions. For example, it is said, and we fancy it has been said before:—"First, we have hotel life, admitting of great mobility, but made miserable by endless jostlings with complete strangers of every rank, and in every stage of hurry and bustle, by the impertinence and unconcern of the servants, due to their entire independence of you. . . . Next come the flats, which have the merit, in common with the hotels, of rendering architecture of a noble kind possible; but this is all." The American eulogium, even at a competitive exhibition, stops here. Not, however, that, at this point the Exhibition stops. Will our readers have patience while we demonstrate the "thoroughness of a new American mansion," or hotel, for the object, as designated, is vague, with "thirty dining-rooms, thirty halls, thirty libraries, and thirty sets of books, pictures, ornaments, and articles for furnishing all these rooms, with thirty cellars, at least, to be filled with coal in cold weather, and more than thirty water-closets." Then, says the report, "We must have one dining-room, two drawing-rooms, one hall, one library, a few additional rooms; and, as sources of additional gratification," make us "one billiard-room, one theatre, or lecture-room, one smoking-room, one reading-room, and one billiard-room whereto a gentleman can retire, with hope that silence will not be an 'unattainability.'" So far,

the Brussels Exhibition is an exhibition of nonsense and quackery, with a thread of common-sense and practical experience running through it. But, as a rule, exhibitions are the opportunities of empirics. We are very far from wishing to undervalue the ideas or results entertained, attempted, or demonstrated by the promoters. A future occasion may, perhaps, allow us to render justice to them. It is invariably a delicate task to state and classify the laws underlying complex relations, because it is really optional how far we are bound to carry our analysis. Just as we may describe granite as made up of quartz, felspar, and mica, we are at a loss when we think we have found an exact result.

This, however, is wandering from the principal point, which is that of the industrial home. In the Brussels Exhibition, as in that of Amsterdam, the "dwelling-house" is set down as "among the first requirements of civilised society," and from the German catalogue we extract the following:—"Class I.—Shortly termed houses, but including institutions for the use of working men; plans of dwellings for married and unmarried working men and agricultural labourers; plans of bedrooms, kitchens, and boarding-houses; washing and reading rooms, and places of amusement. It also includes (we are not responsible for the grammar of the catalogue),—"Any portions of these buildings; model dwellings; materials for construction; experiments with cheap materials; mortar, iron, and concrete; felt and other coverings for roofs; and, in short, as the projectors declare, every element or component part of domestic architecture." Of course, they are right in their assertion that the importance of decent and healthy dwellings stands foremost amongst the social necessities of the day. This is, after all, the most indispensable need of the poor. Without a house there can be no health. And tens of thousands of habitations in London and our other great cities are not houses, or homes, at all. There was a noble-minded man, who lived a few years ago, and who wrote a few words upon this subject. He said,— "We need not waste words in pointing out the essential character of this necessity of life,—a home of some sort, in which an existence not wholly unworthy shall at least be possible."

Such is the idea of the inventors, belonging to this class, at the Brussels Exhibition. They contribute, for example, new systems of gas and water supply, and so forth; and, if it be impossible to welcome all of these with cordiality, some, at any rate, may be adopted, upon trial at least. Mr. Hovell Tharlow may be depended upon, with regard to one point, and it is a point that concerns every family,— the low-class families particularly,—in the land. Dealing with the Mulhouse system of four-house blocks, persisted in at Brussels, from 1867 until now, and which we have invariably opposed, he says:—"In blocks of four-contiguous houses, one mprose owner, one shrew, or common scold, or one set of ill-conditioned children, from whom there is no power of escape, may make the

habitations of the other three unpleasant, and render most desirable the right-of forcible eviction"; and he tells us, further, how, in a court, "a common pump has kept an attorney in good practice." Such affairs are known in England, and they are known elsewhere all Europe over. Drury-lane and Homdeaditch, let it be remarked, have their parallels upon the Continent.

But, referring, once more, to the Brussels Exhibition. The Dutch Carpenters' Society have a model for a row of cottages. This represents a block of eight buildings, precisely similar to those which were exhibited at Amsterdam, eight years ago,—each with a separate entrance, opening immediately into the living-room. The models of the little buildings at Dort, however, are, perhaps, the most practical. We will allow Mr. Hovell Thurlow, if he will permit himself to be abridged, to describe them, and his description answers accurately to what we have just seen at Brussels. The cottages face east and west, and have two fronts, one family occupying the ground-floor, and another the upper story. Each enters by a porch containing an outhouse. "In the case of the first-floor family, this porch is reached by a broad, solid stair, springing from a yard about 50 yards square." From the porch—and here is a point of considerable interest in the Brussels Exhibition, as it was at the Exhibitions of Paris, Havre, Leipsic, and Amsterdam—you enter a parlour, without an approaching passage, 14 ft. or 15 ft. each way, "with two windows; a fireplace in the middle of one side,"—a rather unmanageable Dutch phrase,—having a cupboard on the one and a sleeping alcove on the other side of it, and "in the back wall" two doors, one leading to a well-lighted kitchen, with a chimney and stove, two large cupboards, two dressers, and a cellar for the storage of potatoes; the other into a sleeping-room, with two beds. The internal arrangements of the upper and lower floors are precisely identical. But the garret is wainscoted, and can be divided between two families, the upper one entering by an in-door ladder, and the ground-floor family by an out-door ladder, leading to an end gable window. The underground cellar can, likewise, be divided, and entered, as Mr. Thurlow says, by the ground-floor family, if desired, from the inside of the dwelling, and by the upper-floor family over some steps from their garden. Usually, however, the ground-floor family takes the whole cellar, and the upper family the whole garret. Social precautions are understood thus, as in a philosophical treatise which came into our hands,—“In either case, the two families need never meet, and there need be no collision, nor even communication, between them, if not desired by themselves.” It is not to be wondered at that this subject should have engrossed so large a share of attention on the part of the Brussels Commissioners, and their colleagues in every quarter of Europe. No doubt they had other questions of interest to engage their minds,—the disposal of the dead; projects of cremation, mortuaries, new burial systems, and hospital architecture. There are, with reference to the last-mentioned topic, no fewer than 101 models and plans,—some of overpowering magnificence, which can never, by any possibility, be carried out; at once splendid and sad, grandiose and mournful; works of "soft-handed gentlemen," concerning the majority of whom it may be said, justly, that "there is no record of design at all." Saying this, however, we do not intend to imply that the Brussels Exhibition is a failure. It is, on the contrary, up to a particular point, a great and deserved success. There was nothing attempted which has not been carried out, and we have only, for the moment, glanced at one portion of the ground supposed to be covered, i.e., the architects' and the builders' fancies. In other respects, and in many varieties, the Exhibition is full, rich, and, so to term it, thoughtful. We have inspected many, in every country almost of Europe, but have never seen one which adhered to its purpose so faithfully. If, indeed, our notice has confined itself to an especial class, it is, at any rate, on account of no default on the part of the Exhibition, which dealt with the construction of ships as well as of houses; of fire-proof buildings, and fire-escapes; and with every mechanical means of protecting human life from the consequences of human neglect or ignorance. There is hardly an invention of recent times,—whether with regard to lightning conductors, gunpowder magazines, railway appliances, the disposal of the dead, or the safe employment of workmen on scaffolds, or in vaults, or mines, that is not, more or less, illustrated in an exemplary manner.

Well, after all this effort, must it still be true (and, as a matter of fact, it is not true now), that "there is nothing which a Londoner will so strenuously condemn as his abode, and that this is but an excusable result of all the troubles and inconveniences that the house inflicts upon him." The house in question is, generally, a wooden booth, covered at the top with slates, enclosed around with a thin film of brickwork, and daubed about with plaster. It can hardly, in fact, be called a building, and, for its size, it has far less strength and stability than the furniture it holds." Says a Belgian writer, "an English abode is a deep and inexplicable mystery, tending to irritate the stomach and derange the brain." Possibly, however, we may have seen some illustrations in the Exhibition of the Brussels Park which may not merely reconcile ourselves to our own domestic architecture, but also induce us to congratulate the Belgians upon being our best imitators in Europe. Their Exhibition is one worthy of them, and of all the nations by whom their grand ideas of humanity have been approved. The Fourth Henry of France said that he wanted to see a fowl on every peasant's table; the Second Leopold of Belgium says, in effect, that he wishes to see a decent roof over every industrious man's head.

#### DIFFICULTIES IN THE WAY OF PROMOTING DWELLINGS FOR THE POORER CLASSES.

THE Earl of Shaftesbury brought the White-chapel and Limehouse Improvement Scheme before the House of Lords on the 4th, and again on the 6th inst., in order to make observations on what he supposed would be the first of a long series of Bills. No one who takes a real interest in the welfare of the working classes can fail to agree with Lord Shaftesbury in regretting that no provision should be made, in Bills of this nature, for the convenient accommodation of the persons to be ejected from their dwellings. It is by no means the first time that attention has been called to the serious evils attendant on wide and sudden displacements which have already occurred in more instances than one. The example of Glasgow is one which should be remembered by our English Municipal Bodies. The municipality of that city have made extensive improvements, involving the demolition of much house property, and of the abodes of many poor persons. In no case, however, were the people compelled to remove until it was ascertained that adequate accommodation was provided for them within reasonable distances. When we remember the wide sweep that has been made in the metropolis for railway purposes, and the extent to which the house accommodation of the poor has thus been reduced, without any thought of providing an equivalent, it is obvious that any schemes directly intended to remove crowded dwellings ought to be jealously regarded, lest in fighting against one evil another be introduced. We shall be among the last persons to be rightly accused of indifference to that part of sanitary reform which demands the demolition of unhealthy and overcrowded dwelling and lodging houses. But it is not by the simple process of turning the inhabitants into the street that such a reform is to be effected. We trust that before Bills for such objects are confirmed by Parliament the president of the Local Government Board—or, failing that official, some independent member of one or other House of Parliament,—will insist on the insertion of clauses that shall prevent the injustice of the wholesale routing out of poor inhabitants without due provision for their need of shelter.

In the amended Bill some provision is included for this purpose. The new tenements are to be disposed in blocks, of five stories high. Eight hundred and eighty-eight tenements are contemplated. These are to consist of 117 tenements containing three rooms each; of 650 tenements containing two rooms; and of 121 consisting each of a single room. Thus, accommodation is provided for 3,870 persons, allowing one room for two and a half occupants. It appears, however, that the very difficulty which the new buildings are intended to obviate springs up afresh on the very face of the scheme. One considerable cause which has led to overcrowding is poverty. We do not deny that a vicious habit once formed is hard to eradicate, and that those who, in the first instance, would have shrunk from the crowded publicity of a poor lodging-house may become so accustomed to the life they were at first forced to lead that they will not be

ready to take any steps to change it. What, no doubt, is often the case. The habitations of the poor in our great cities have not, until late years, been built expressly for them. They have, to a great extent, been formed out of old houses, of moderate, or even of large size, situated in neighbourhoods which have gradually lost their original respectability in consequence of the ever-increasing density of the building with which they are surrounded. Such houses will, in the first instance, have lost the favour of the class of occupants for whom they were built. They will then, very likely, have remained long tenanted, and thus have fallen into that dingy and ultimately dilapidated condition which attaches so much earlier to empty than to tenanted houses. Most likely while in this state they have been sold, or have passed in some way into the hands of those who will have striven to increase the rent they returned by multiplying the number of tenants they contained. They have been let, sublet, and re-sublet. They have been divided into all sorts of inconvenient and unwholesome ways,—and crowded both as tenements and as rooms. Thus they have been often converted into sources of income as large as they could have afforded in their palmiest days. But it has been an income wrung out of the poor. Each tenant has had to pay a rent which might be all that he could afford, and which possibly might not have been too high for such house-room as ought to have been provided for him. It is by the process of crowding that the rent has been raised. We can thus trace, step by step, the mode in which these rookeries have sprung up. But we cannot see that the causes which led to their formation have been checked. On the contrary, some of these causes are in more vigorous action year by year. The old and miserable dwellings, on which no more was laid out for repairs than would keep a roof over the walls, may have attained long since their highest rack rent. But over all other portions of the area of the metropolis and other great cities and towns, the rate of rent is continually rising. The very clearing away of old houses raises the price of the surrounding land. All things that contribute to the expense of building have, as our readers well know, risen of late immensely in price. To build a house on a given spot in London, containing the same cubic quantity of space and material as the house that was built on the same spot fifty or a hundred years ago, would require a far higher expenditure at the present moment than that which was incurred in the former instance. Thus it is obvious that, to some extent, the accommodation which we are now preparing for the poor is more costly than that which we are destroying, and rightly destroying. It is more costly because we insist on more cubic space for individuals. It is more costly because it is a new building instead of an old one, and because its rent ought to be proportionably higher than the bare interest of the money, so as to provide for depreciation of property, and, at the lapse of a given time, for thorough repair or rebuilding. The old houses have long since passed this stage. Every year that they can be coaxed to stand is an almost unhopful addition to their life. On economical principles, then, their rent ought to be lower than that for new houses of equal accommodation ought to be,—it does not follow that it is. It may be said that the old rent is an unjust and extortionate rent; but it is possible that this might also be the case in new houses. We cannot enter into the question of the moral character of the landlords,—we can only compare legitimate causes of increase in rent. And these, other things being alike, are in favour of the old building against the new. Thirdly, the prime cost of the new building must be very considerably greater, for the same amount of the accommodation than was that of the old one. Therefore looking at the case not in a sensational, but in a practical manner, we find that the new abodes offered to the poor are in danger of becoming more costly than the old ones. They may be made to bear a higher rent than the old ones did, except in so far as that rent was im- properly high—that is to say, in so far as it was raised by the greediness of the landlords above the fair ratio of remuneration paid for the amount of capital involved in the house property. This being the case, one great evil which led to the overcrowding in the old houses, may be actually aggravated in the new. If sanitary legislation steps in, and limits the subletting process, and insists on the allotment of a given cubic space per inhabitant,—which, we all

agree, ought to be the case,—how is the economic difficulty to be met? Who is prepared with a plan that shall make both ends meet,—that shall provide the requisite accommodation, pay ground-rent, or interest on the purchase of land, house-rent, or interest on the capital sunk in building, together with provision for the replenishment of that capital within a given time, and current repairs; and that shall at the same time only impose a rent within the means of the class of tenants who are contemplated to pay? The difficulty is serious, and anything that may tend to lighten it should be received with much gratitude.

All the questions to which attention has been so properly directed by the Earl of Shaftesbury seem to us to be subordinate to this master difficulty. Indeed, they tend, to a certain degree, to aggravate its pressure. Provisions of all kinds for the decency, the comfort, and the cleanliness of the lodgers are essential. But every such provision entails cost,—that is to say, entails an advance on the minimum rent per tenement. So again, as to water supply, high service and constant service are most desirable. But the height of the blocks of buildings, and the level of the ground on which they stand, have to be taken into account. We may ourselves look forward to the time when high pressure and existent service shall be adopted throughout the metropolis. There is good reason to anticipate (although the matter is by no means certain) that a less daily demand would be made on the stores of the metropolis water companies by a constant service than by the ordinary plan of supply for a limited time, and the storing of water in cisterns. But we cannot expect that the price of supply per head will be less, at any rate, on the constant service system, than it is at present. The water companies, then, cannot be expected to supply the new buildings at less than the actual average rate of a ton of water per week per individual. We see that two and a half individuals are allowed per room. That gives two and a half tons of water per room per week. The actual price per ton, if we analyse the reports of the water companies, of the present supply, is 1.4d. That will give a water-rate of 3½d. per room per week, or 3½d. per week for a single-room tenement; 7d. per week for a double-room tenement; and 10½d. per week for a three-room tenement. But this charge, which amounts to 15s. 2d. per annum for the single room, and to 21. 5s. 6d. per annum for the three-room tenement, is a very notable addition to the rents. As a check upon this estimate, it may be noted that the annual average charge per head on the inhabitants of the metropolis during the last year returned for water was 6s. 6d. This would give a rate of 16s. 3d. for the single-room tenement, and of 21. 8s. 9d. for the three-room tenement. The difference of cost probably represents the water taken for public purposes. Has this matter been duly considered and wrought out in black and white by those who are projecting the new dwellings for the poor?

Again, the question of lighting has to be considered. If we regard, not the present cost of London gas, but that diminished cost at which it is proposed, in the Bill now before Parliament, that it shall ultimately be supplied, we have a price of 3s. 9d. per thousand cubic feet. The ordinary burner used by consumers produces a flame 3 in. high, giving the light of sixteen sperm candles of six to the pound, by the consumption of 5 cubic feet of gas per hour. This is the proportion arrived at for what is called sixteen-candle gas. If the gas be impoverished in quality it must be increased in quantity. Thus 6.65 cubic feet of twelve-candle gas are required to give the light of 5 cubic feet of sixteen-candle gas. If we consider light to be required for twenty-one hours per week on the average throughout the year, in each room, we have a consumption of nearly 5,500 cubic feet of gas; or, if there is no waste, of exactly 5,460 cubic feet. This alone amounts, at the price above quoted, to 11. 5s. per tenement per annum. It may possibly be said that a smaller burner may be used, and that thus a less annual consumption will occur. On the other hand we have taken all the conditions most favourably to the consumer: pure gas at a minimum price, burnt for a minimum allowance of time. It must be remembered also that we have allowed one burner per tenement. Additional gas must be consumed for passages, staircases, and common portions of the block buildings; and these burners ought, as a rule, to burn through all the hours of darkness. Again, the question will arise as to the distribution of

gas. If each tenement were supplied with its own meter, there is an addition directly made of 4s. or 6s. per annum to the charge for gas. Without separate meters there is no mode of apportioning the charge. The occupant of one tenement might require double the number of hours of light required by his neighbour. Some average must be taken in order to avoid the cost of separate meters. The average rate per head actually paid by every Londoner for gas last year was 17s. 3d. This, of course, includes public lighting of streets and courts, as well as private consumption. But it by no means excludes the consumption of an enormous quantity of oil, tallow, and other hydrocarbons. The poor, who use gas, use it far more exclusively than the rich, and thus probably consume a quantity per head not much, if anything, short of the average consumption. Much of this, however, no doubt, will be in the street shops, and not in the dwelling-rooms. The average of 17s. 3d. per head gives a charge of 21. 3s. 1½d. for each room accommodating 2.5 occupants. For these reasons it is probable that the above estimate of 11. 5s. per tenement per annum for lighting is not in excess.

The total cost per head of the various rates now levied in London comes to an average of 50s. per annum. This includes the foregoing items of gas and water. If we deduct the allowances already made for these supplies from the total, there still remains a charge of 11. 6s. 3d. per head, or 31. 5s. 7½d. per room, for Metropolitan police, Local District Boards, Board of Works, Commissioners of Sewers, and Metropolitan School Board. It is not very evident how solid and substantial houses, such as those which we contemplate must be, can be relieved, without special legislation, from a proportionate part of their rates. In case of their liability, it will be an addition to the rent, made probably in that form. Even if the occupiers were themselves rated separately, which would be a great waste of money in the matter of collection, the amount payable would not be diminished by that fact. If we conceive that by any arrangement the occupants of the new lodging-houses were only made liable to half the average rating of the metropolis, estimated per head, which would reduce the incidence of all rates, with the exception of what may be called the remunerative charges for light and water, to about a couple of shillings per head, we still have an annual sum of 31. 2s. 6d. per room to be added to the rent proper, or hard upon 1s. 2½d. per week for each one-roomed tenement.

The question of rent itself remains to be considered. If we allow 500 cubic feet of space to each individual, we require 1,250 cubic feet per room. Will builders be found to execute the work required at a lower price than 10d. per cubic foot? If so, a proportionate reduction has to be made on the following calculations. For cottage dwellings, indeed, accommodation may be provided at probably the half of this price per foot. But if we regard substantial houses, five stories high, built under the conditions incumbent on the London builder, the rate will not be low. We take a maximum, because we wish the subject to be wrought out in all its bearings. The builder's price for the tenements will amount, on the above assumption, to 521. 1s. 8d. per room. To this must be added a sum for land, whether purchased or paid as ground rent. It would be rash to place the price of land in the central parts of London at a much lower price than 10,000l. per acre. From two and a half to five times that amount is no unfrequent valuation—without going to such extreme cases as the site of St. Mildred's Church. The price of 9,680l. per acre amounts to 21. per square yard. If we allow for five stories, we have a sum of 8s. per square yard, or 51. 12s. per room to add to the cost of building. This gives a cost price of 571. 13s. 8d. per tenement. The ordinary return which is regarded as the limit for the productive employment of capital in building is 81. per cent. To keep quite within bounds, let us reduce this rate to 7½ per cent. We thus have a charge of 41. 5s. 9d. per room per annum, or about 1s. 8d. per week, required for the remuneration of the capitalist, apart from any charges for collecting, watching, or other purposes. Thus, in the absence of some aid or supplement, from some source not yet indicated, we cannot calculate on being able to offer lofty tenements of a substantial sort, which shall contain 500 cubic feet of space per inhabitant, for a less sum than 71. 8s. 3d. per annum, or 2s. 9½d. per week for each room accommodating 2½ residents, for rent and rates alone, exclusive of any house

tax or incidental charges of collection or of maintenance.

Now if, by going to work in a way that is consistent with the stability of building, and with the fulfilment of sanitary requirements, we find that the rent, rates, and water supply, and lighting of a single room, averaging two and a half occupants, comes to 71. 8s. 3d. per annum, exclusive of taxes, watching, warming, and any other contingent expenses, how does this tally with the needs, and with the means, of the population we are seeking to provide for? And what remains for those who cannot pay the sum of fifty-nine shillings per head per annum for rent? If we find that we can reduce the cost of building as low as 5d. per cubic foot,—a rate that we believe will cover a very tidy sort of cottage,—we shall reduce the rent and ground-rent to less than a shilling per room per week,—the rates thus forming a higher charge than the rent. Thus it is obvious that a very serious question as to the rating of houses built in lofty blocks for the accommodation of the poor has to be discussed, independently of the structural problem of the least costly mode of construction. These questions must be put in time, and must be considered in time. If we proceed without looking the difficulties of the case fairly in the face, we shall be entering on a sea of troubles. We shall be placing a considerable portion of the population,—a portion which is so helpless as to demand the utmost consideration and regard,—in direct collision with the law. We shall be re-enacting, in the heart of the metropolis, the Irish ejections described by the novelist. If the life is more than food, and the body more than raiment, attainable shelter is more than housing, which, however suitable from a secondary point of view, is unattainable by reason of its cost.

On moving the second reading of the Metropolitan Improvements Bill, the Duke of Richmond and Gordon stated that arrangements were contemplated by the measure which would provide for proper sanitary arrangements in the houses to be erected. The Earl of Shaftesbury, in thanking the Government for thus far attending to the suggestions he had previously made, took occasion again to urge the duty of timely notice to those who were to be displaced, and of provision for their immediate shelter. The two conversations in the House of Lords show what can be effected by one earnest man. We trust that the question of cost of lodging will receive an equal degree of intelligent attention and support.

#### PROPORTION IN THE FINE ARTS.

UNDER this heading we gave, in a recent number, a *resumé* of the substance of a lecture delivered by Mr. Cave Thomas, at a meeting of the "Society for the Encouragement of the Fine Arts," on the 1st ult., the main object of which was, in recommending a theory of beauty in art with which the lecturer's name has been previously connected, to show that art was not, or need not be, tentative in its endeavour after excellence, and that, in fact, there was a sure guide for the artist in securing the most beautiful forms and proportions in his productions, if only he would avail himself of it.

The discussion of this idea, which in one shape or another has been not unfrequently brought forward, is in process of being a good deal revived just at present. Only a week or two previously, in the same room, the members of the Architectural Association listened to a lecture from an able architect on the theory of definite and fixed proportions which should pervade Gothic buildings, and upon which designs ought to be constructed, instead of on what was referred to as *tâtonnement*. This special application of a theory of proportion in architectural design we do not intend here to dwell upon, only referring to the fact of the two lectures having been delivered within so short a period of each other as apparently significant of a movement of interest in the subject. The last word in regard to the subject of architectural proportions, treated of by Mr. Pullan, has not, we think, been said; but it is, in fact, a different kind of consideration from that brought forward by Mr. Cave Thomas. It is in reality only concerned with a method of working out a design the leading *modulus* of which has been determined on; it is a process rather than a principle; whereas the lecture by Mr. Thomas attempted the establishment of a definite principle of design, a standard whereby the better or worse, the beautiful or the not beautiful, were to be tested.

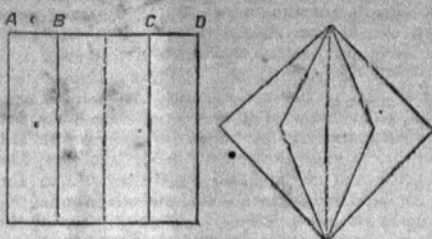
This principle, briefly expressed in the summary of the lecture (page 570, *ante*), was offered to his audience, apparently, by Mr. Thomas as a certain and almost unimpeachable deduction derived from years of study of the subject; and we understand that, contrary to the usual custom at the meeting of the Society, before which it was delivered, discussion on the lecturer's views was politely prohibited. With every recognition of the ability of Mr. Thomas both as an artist and a philosopher on art, we can scarcely, however, follow this example, or allow the statement of his theory to pass in our columns without a word or two of examination in regard to a view of the basis of art which seems to us very much open to question.

"The golden mean" is, according to Mr. Thomas, the end and aim of art. That which is most beautiful, most satisfying to the mind and the eye is that which is the central form between all excesses on the one hand, and deficiencies on the other hand. All criticism of art really resolves itself, he thinks, into an act of mental mensuration. With this definition of criticism we do not quarrel, as expressed in these words, which it will be observed are capable of a very elastic meaning, and really express very well the true function of criticism, which is first to ascertain or consider what the aim of the artist has been, and then how far he has in any respect either exceeded or fallen short of that aim. But the application of a system of estimating or fixing the mean, as a guide in artistic production, is complicated by other considerations.

It appears to us that Mr. Thomas uses the expressions "proportion" and "mean" to express two things which are radically different in their nature, and which are to be estimated in a very different manner. One of the illustrations which he gave (not referred to in the summary furnished to us) consisted in supposing that we had placed side by side a heavy, bulky, over-muscular figure, such as would be taken to represent an Atlas or a Hercules, and a thin, wiry figure, built for speed alone, such as some of the well-known types of the figure of Mercury. Both these are, and are only partially satisfactory, because both are excessive in opposite directions. Alter by degrees that which strikes one as out of balance in either of them; refine down by degrees the superabundant muscle and development of Atlas; add by degrees more flesh, and fuller and finer contours, to the figure of the Mercury; and the two gradually approach each other in form, and at the point where they become similar we find the characteristics and proportions of such a form as the Antinous, which is admitted on all hands to be a form of almost perfect beauty and symmetry. That is not a bad illustration of the process of selecting types from nature. In connexion with the subject, reference was made to the fact that the individuals of any species of animal which are the most beautiful are those which exhibit the mean between any excess or deficiency in proportion. And so we might, as Mr. Bonomi pointed out in a letter in our columns not long since, obtain valuable conclusions as to the correct standard of the human figure, if we could induce the Government to let us have for this purpose a synoptical table of the sizes and proportions of the men in our Guards' regiments, who exhibit probably the best average of the human figure which is attainable from the living model in the present day. So, also, there is some reason to think the Greeks carried on their observations of the figure, observing what was common to the best figures, accepting that and rejecting the points which were only exceptional. All this is perfectly reasonable as a means of arriving at a general idea of the standard or normal proportion of the human figure, for example; and there is something in the process of thus eliminating the best out of a number of varied types which reminds one of Darwin's generalisation in science, and suggests the idea that in art, as in human and animal life in unrestricted conditions, there is a "survival of the fittest."

But the idea of the mean assumes a different aspect when we come to any attempt to reduce it to figures or to a calculable form. Mr. Thomas illustrated his lecture by some simple diagrams showing this search for the golden mean in a geometrical aspect. In the following two figures, for instance, it was stated that the most pleasing and satisfactory proportion of parallelogram was that included within the lines B and C in fig. 1, in which B and C stood at equal distances from the boundary lines and the centre line of the com-

plete square; and fig. 2, in which the area of the inner diamond is equal to the sum of the two areas between it and the rhomboid, is supposed in like manner to show the most pleasing proportion for that style of figure. This illustration



was not accidental to the lecture, but was part of the reasoning by which the argument was built up. But does not Mr. Thomas perceive that in this case he is reasoning by analogy between two things which are totally distinct? The beauty of the human figure, for example, is in its expression as a living, acting, and thinking organism; and seeing that all such organisms are not equally expressive or equally beautiful, we may arrive by comparison and selection at certain conclusions as to the finest type, and that fitted to be the medium of the highest art expression. But a geometrical form belongs to quite a different category of things. A geometrical form or proportion has no expression, except in relation to some function which it fulfils. Abstractedly, it is almost impossible to say that one is more beautiful than another; and as to the illustrations given, our own eyes contradict the truth of them every day. As to the "golden mean" diamond shape, for instance, to take a very familiar example; in the leaded panes of Gothic windows the proportion which looks best, and has been most employed both in old and new buildings, will be found, we suspect, if the matter be worked out with mathematical accuracy, to be a broader and shorter form in almost all cases. As to the parallelogram, fifty instances suggest themselves at once in contradiction to Mr. Thomas's mean form. In fact, proportions in geometrical forms are beautiful or not in relation to their position and use. The Doric column is a beautifully proportioned thing in its own place on a large scale. Put it to support the horizontal rail of a balustrade, and it looks a mean kind of stick. Magnify the baluster, and place it as a column in the temple, and it will look hideous. Each form is proportioned to its position, to the work it has to do, to the scale of the building, and to what we know of the nature and tenacity of the material in which it is executed, and which, being a constant, will not admit of the same proportionate tenuity on a small scale as on a large one. These and a score of other considerations, sometimes too delicate for analysis, and rather to be felt than described, go to determine whether a certain form in a certain position is well proportioned or not.

Then there is the question of the physical basis of certain arts, which comes to be imported into the subject. It was shown "that there are common harmonic principles underlying all the arts." If words mean anything, this cannot be the case. Where is the common harmonic principle between music and sculpture, for instance? There is a common harmonic basis underlying music and painting, inasmuch as there are fixed and mathematically demonstrable ratios existing between different sounds and between different colours, and the proportionate relations are, to a certain extent, the same in sound and in colour. But does any painter,—does Mr. Thomas himself,—arrange the colours on his canvas on the basis of a calculation of the harmonic ratio of the vibrations of the light reflected by the different pigments? The painter arranges and combines them, no doubt, to produce a harmonious effect, and the knowledge of the numerical relations of colours may explain to him, if he cares to know, why such and such combinations are pleasing; to a certain extent, at least, for we do not believe such knowledge will explain it entirely. But after all, the practical outcome of it is, that it is the painter's eye and feeling that do the work, not his power of calculation. And so with music, to which Mr. Thomas appealed in support of his views. There are certain very interesting facts in regard to the physical basis of music, and which connect it in one sense physically with colour. There is the fact, for instance, that the series of sounds

which form the "harmonics" to any note, have their proportionate vibrations in an arithmetical ratio.\* There is the fact, that only one combination of sounds can be permanently satisfying to the ear, as the final chord of a piece of music, and that the vibrations of its three initial component sounds are as 4, 5, 6. But these facts have little or nothing to do with music as an art. The first of them, which is exciting much interest now, was absolutely unknown to the great composers. Their works were quite independent of it, just as the colouring of Titian is quite independent of any knowledge of the vibratory proportions of colour. Such knowledge is very interesting, it may be very valuable in more ways than perhaps we know of at present; but it will never make a man an artist. It is worth notice that Bacon, whose opinion should at least go for something, draws the very same comparison that Mr. Thomas draws, between painting and music, but with the opposite conclusion. In his essay "On Beauty," he refers (whether correctly or not is no matter here) to Apelles and Albert Dürer as artists of whom "the one would make a personage by geometrical proportions, and the other by taking the best parts out of divers faces to make one excellent"; and he adds, dryly, that such personages "would please nobody but the painter who made them." Then he proceeds,—“Not but that I think a painter may make a better face than ever was, but he must do it by a kind of felicity (as a musician that maketh an excellent air in music) and not by rule.” And this we believe to be "the truth on't." Nor do we suppose that Mr. Cave Thomas would wish to be understood as conveying the idea that any one by mere application in the path of his theories and instructions could "arrive," as the French say, to produce works of art of the highest class. But we must say that his lecture, as delivered, was calculated to produce that idea in the minds of "weak brethren" who may have heard it; and that he is himself in danger of being led away by a theory which, like most theories of the kind, is, in regard to actual artistic and expressive power, an *ignis fatuus*, leading the artist away from what should be his true aim. And for Mr. Cave Thomas himself, we think that we are paying him no ill compliment, and giving him no bad advice, in saying that we rather wish he would paint more, and theorise less.

#### NEW SCHOOLS AT OXFORD.

THE new University schools have been finally voted by Convocation. The design selected by a delegacy appointed in November, 1875, is that of Mr. T. Graham Jackson, fellow of Wadham College; Messrs. Bodley, Champneys, Deane, and J. O. Scott having also engaged in the competition. The general arrangement is that of a spacious quadrangle, surrounded on three sides by buildings two stories high, containing the examination schools and their offices,—viz., on the ground floor nine *viva voce* schools, with a small private room for examiners attached to each, and on the first floor three large writing schools (for 200, 200, and 120 candidates respectively), with a tenth *viva voce* school and two examiners' rooms. In the writing schools 25 square feet is allowed for each candidate (the space in the examination rooms of the University of London being only 19½ square feet); and the cubical air space obtained by lifting their ceilings into the roof will insure the necessary condition of wholesomeness which is so conspicuously absent from the present schools. The fourth side of the quadrangle, between the schools proper and High-street, will be occupied by a building with the principal frontage to the street, containing a large and lofty writing-hall, with offices, &c. The material is to be stone. The design is described by the architect as "Gothic in feeling and motive," but he has chosen in preference to Early Gothic work "that late eclectic style of which Oxford and Cambridge contain admirable examples."

\* To put it in a more popular form: if the dampers of a piano are raised and a note in the lower register of the instrument struck forcibly, certain strings, and no others will vibrate and sound in sympathy with the string originally sounded, and their vibrations,—viz., respectively, to those of the originating sound, 2 to 1, 3 to 1, 4 to 1, 5 to 1, 6 to 1, 7 to 1, 8 to 1, 9 to 1, 10 to 1, &c. Mr. Cave Thomas seemed just about to refer to this in his lecture, but he spoke, instead, of the vibrations of a note to its octave being as 1 to 2. So they are, but the remaining octaves follow in geometrical progression—4, 8, 16, &c. It is the "harmonics" that follow an arithmetical progression.

## PAINTINGS ON CHINA.

In the same gallery where was exhibited the collection of stoneware from the Lambeth potteries, of which we have said a few words, Messrs. Howell & James now exhibit, for the first time, a collection of artistic painting on china, for the best productions in which branch of art they have offered prizes and medals, to which a definite value is attached from the fact that these have been adjudged upon the decision of two artists of recognised position, Mr. Poynter and Mr. E. W. Cooke.

A certain proportion of the objects in this collection ought not to have been produced at all. Any attempt at landscape or realistic interiors is out of place in china painting, serving only to show what the material can *not* do. Such things as the views in Falaise and Rouen (20 and 29), for instance, are complete mistakes; no aerial perspective can be realised in them; they only look coarse and inartistic. The same may be said of other productions, which have obtained prizes as landscape subjects. It may be questioned also, apart from the suitability of the material, whether such subjects are not unsuited for the decorative treatment of a dish or plate which, though it may be hung up as a picture, of course, is always supposed to be capable of practical use as a receptacle for something; and to put a landscape or an interior in realistic perspective upon it is out of place; it should have a flat and conventional treatment. The incapability of the material is, however, the more important drawback; and for the same reason we object to the attempt to finish heads with life-like realism in the same way as in oil-painting; the girls' heads in Nos. 5 and 7, for instance, and others of the same type here, are what no one of fastidious artistic taste would care to possess. Mere sprigs of flowers, with birds and insects grouped with them, may be treated more realistically with good effect, as they form, when so dissociated from any of their natural surroundings, a kind of conventionalism in themselves. Of this class Miss Merry's two designs (22, 23) are good, and Miss Mapstone's "Purple Iris" on an orange ground (164); Miss Spiers's "Summer," a group of flowers and a thrush (171); Miss Batler's "Lilies and Birds" (175); and others. Then it is possible to arrange subjects of this kind so as to express, in a decorative manner, a certain distinct sentiment, as has been rather well done by Mr. Haines in a design called "Evening" (68), where flowers and birds are delineated against a ground which suggests in tone and arrangement the evening sky, without any attempt at actual landscape effect or perspective.

Among the examples in which figure subjects are introduced we must recognise the merit of that by which Miss Linnie Watt has gained the 15-guinea prize for the best work by professional artists, and which, though it comes in the category of subjects we have mentioned as not really suitable for the style of art, is much more satisfactory to the judgment than some others of the figure subjects, from the richness of texture preserved, quite different from that hard mechanic look which some of the specimens of this class present. Lady Rawlinson's head of "Rubens" (72), drawn and shaded in monochrome, and with a bold and effective border consisting of an orange scroll on a purple ground, shows true artistic feeling; so does Mr. Holiday's drawing of "The Arts" (180), showing figures of natural flesh-tints on a green ground conventionally representing foliage. Mr. H. Ryland's small plate, with a "Venetian Head" (188), lined in blue, against a light and dark ground, dividing the plate irregularly into halves, and with a very well-designed little border, is a model of the kind of way in which figure subjects may be effectively treated in this material. There are some other plates of figure subjects which are in a good style and commendable, but which we decline to particularise, because they are sent with the name of Somebody "& Co.," whom we are not going to advertise. Who is "Co.," and at what school of art did he study? We do not recognise "Co." as an artist. When we see a design we wish to know who invented and drew it, not who "exploited" it. We may observe that there are good many productions of the Lambeth School of Art hung up, not for competition, but just to show what the school is doing. We take it that the Lambeth School of Art is on the wrong track in regard to subjects for painting on china, and is far too ambitious in its tendencies. Let the students attempt less on china, and they will do more.

In purely ornamental design (and we confess

our sympathies go most with that) we notice some beautiful bits of work; scarcely anything, perhaps, so good as Miss Faulkener's "Decorative Plate" (173), with a design symmetrically unsymmetrical, as one may say, of blue leaves and stalks intertwining, with orange buds and centres to the flowers,—a most refined little bit both in tone and design. "Conventional Floral Decoration," by Mr. Church (88), has the same kind of merit. Miss Lewis's "Kingfisher and Wild Flowers" (316) is notable for the very original and artistic border, effective both in line and colour; and Mr. Haines, whose name we have mentioned before, and who seems thoroughly to know what he is about, has a beautiful "Conventional Design" (375) of leaves and broad yellow flowers, with a border of very dark mottled green: as a bit of colour this is one of the best things, as well as in style. M. Huart's "Persian Design" (449), and Mr. Payard's designs under the same title, though in a very different style (451, 476), are exceedingly good; the former, however, belongs in fact to the style now recognised as Rhodian. A little conventional design for "Peace," by Miss Jacobs (390), shows some thought and a true style.

Four more of Mr. Tinworth's little terra-cotta bas-reliefs are exhibited, and are as clever as those we have previously seen; in spirit and point the one representing the Jews who had sworn "not to eat or drink till they had killed Paul" is especially admirable. The same artist has furnished the design for a large stoneware vase, called "The Solomon Vase," the leading feature of which is a set of little figures in niches round the broadest part of the vase, illustrating in various ways the verses of Ecclesiastes, following the sentence, "For everything there is a season." One or two of the illustrations strike one as oddly conceived,—for instance, "A Time to Embrace" is represented by "the Shunamite and her son," and the opposing clause, "A Time to Refrain from Embracing," by "Joseph in Potiphar's House" (!), which is to the point, certainly, in a way. But in outline, colour, and detail this vase is a noble production of the art, and worth looking at in itself.

## THE HINDOO AND HIS ARCHITECTURE, AT SOUTH KENSINGTON.

VERY much is sure to be written and said about the unique collection of Hindoo curiosities of all kinds, which have been acquired by the Prince of Wales during his late tour in India, and which are now exhibiting, through his Royal Highness's considerate kindness, at South Kensington. The objects are, doubtless, in themselves enough to attract a large amount of public attention, but varied comments on them will certainly attract more and more of detailed attention and study. In the rooms preceding those which contain the Prince's collection are many fragments of sculptured architecture, together with photographs, forming part of the India Museum, and we propose to look at a few of them, especially the architectural ones, and to point to some lessons which they may possibly teach. The history of architecture has yet to be adequately written, and its very foundations and first beginnings need to be dug into by dint of thorough and laborious work and research. Here, in this vast continent of India, with its thousands of square miles, with its millions of inhabitants, its all but perfect and primitive language, and its past history stretching back into times beyond record, is to be found a field of inquiry not to be surpassed, if it can be equalled in interest elsewhere. We have often regretted that Humboldt—that first of travellers—did not accomplish for India what he did for America, and the kingdom of New Spain. How many books there are about "India," none need to be told, but unhappily the information they afford is but slight. We want insight into the place. Here in this collection of facts there is at least a something certain to go by.

In the first place, it is to be observed that the architectural section of this display of fine things is a good deal scattered about the rooms, the object in the arrangement being, perhaps necessarily, to keep the individual collections, as collections, together. We must needs, therefore, search the galleries many times before getting the "architecture" well together in the mind's eye. Then, of course, it is very imperfect and fragmentary in character, coming from all parts, and as applied to all purposes. The collection includes many notable specimens. We

are here referring to actual fragments. There are also many very valuable drawings, both native and otherwise, which tell of architectural arrangements, and with their details. We but glance at the vast subject, hardly knowing where to begin, the objects being so scattered.

Numbered 19 is a native drawing giving a fair idea of that essentially Oriental display,—a Royal and Imperial audience, such as might have been seen in the days of the great Akbar, or Aurangzebe. It, at times, is thought that all Oriental things are to be infinitely improved by close and intimate contact with things of "Western" invention and growth. Those who think thus should examine in detail this interesting sketch, and compare what is in it, especially as to the costumes, with those which are now taking the place of them. It is like so much else that is valuable of the past, it cannot return, but it is worth the long looking at for many reasons! The architecture of it, too, is noteworthy, and shows how all things, if left to themselves, grow together and harmonise with each other; the men and women, the dresses they wear, and the dwellings they live in. Such a drawing as this, with many others scattered about, will afford insight into the life of Indian royalty in past days. And reference to many of the actual objects collected together here and there from the palaces and other places, and given by the successors of those who built the throne-room represented, will make the impression the drawing makes on the mind the more vivid and real. What would Imperial Akbar, one of the strong men of the East, say could he but see this display as we now see it?

Not far from this drawing are two models in wood of painted ceilings, well worth note and study; in one of them circular mirrors are most ingeniously inserted as panels, and must have, *in situ*, a striking effect, not interfering with the idea of a ceiling, or roof, as such, but simply adding to the effect and novelty of it. The colour of these ceilings is of that bright, though quiet kind, which the Hindoo artist and workman seems to create instinctively.

While on the matter of ceilings, it may be well to look at some sunk panels, wonderful in ingenuity of design, from the Upper Temple, Polwarrah. Such work shows how thoroughly the Hindoo architect understood his special work, and style of architecture. No labour would seem ever to have been spared in the working out of an Hindoo art thought. Ceilings there are, too, in abundance here, in photographic illustrations, drawn from the temples and palaces, and well worth looking at, thus to get at general ideas, and at the position of the architectural fragments.

A model of a complete ceiling, as it now exists, it is to be hoped, at Lahore, should be noticed; it is in all ways worth attentive study.

Passing from the ceilings, on which really a volume might be written, we may come to the perforated panelling which forms so striking a feature in Mahometan Hindoo architecture. In these panels the quiet and skilful labour of the Hindoo workman shines conspicuously. There is no end to the variety of the interlacing patterns, and no end, as it would seem, to the labour involved in their execution. There is a "lattice," in blue stone, in room No. 1, from Keroly, and a square panel in stone admirably cut. A panel also in black marble with ivory inlaid letters from Malwa. These elaborate and ingenious works of art cannot well be copied, perhaps not at all, by our workmen, but they may be looked at, and studied, to learn what is possible, and how much a people may do without any of our mechanical helps. The reader may here perhaps be usefully reminded that these things we have noted are not among the brightest and most attractive in this magnificent display of Indian work, but they are not the less notable and worthy of study. Indeed, we may affirm generally that it is among the duller objects that the most characteristic, and truly Hindoo and native art action shows itself. It is important to bear this fact well in mind, for the very conspicuous, and very bright, and highly coloured objects, are "Europeanised," and have indeed come from India, but from our art schools as well. Is it gain or loss? We have thought, as more immediately interesting, in this place, to confine our thoughts, having already spoken of the Prince's collection generally, to the architectural phase of the collection, which, though not quite so attractive as the gorgeous coloured woven fabrics which hang on the walls, is quite as important and as interesting if looked at closely enough and with patience. Indeed if

we want to come to a thorough understanding of the art of India and the art power of the native races who inhabit the country and have inhabited it for so many ages, we must begin with the architecture—with common house and temple, building, and even with cave making and forming. It is difficult to say where "architecture" really begins; but it is certain that some kind of habitation, however rude, to house the man must have preceded the building of a temple, however necessary that might be. We are told that a "damp wretched hut," consisting of but one room, is the usual dwelling of the poor in Bengal. Even this, therefore, though not architecture in the common acceptation of that word, is at least building or construction, rude as it is, and simple in the putting together, and the palace itself springs up out of this. We thus get to the origin sometimes of a native style of architecture, and there is in this very collection a singular illustration of architectural growth. It needs close study to be fully appreciated.

We allude to a careful and measured drawing, both plan and elevation, of the Amravati Tope, by Sir Walter Elliott. The plan, unfortunately, though an elaborate one, has no references, so that a good deal may be missed in the study of it, and no section is given, but what there is, is curious enough. The Tope itself was, in all probability, like others, originally surrounded by wooden posts firmly set into the ground at regular distances, and the spaces between these posts were then filled in with wooden strips interlacing them like basket-work. Indeed, it would seem that the mode of work adopted in the forming a basket was directly imitated, and made to do constructional duty in the building of this wooden wall. All this simple construction has, in this Tope wall, been translated into stone, and, with its gateway (quite a study in itself), was elaborately carved. It shows an architectural growth, and how an "architecture" may possibly spring into existence out of the very commonest and most obvious constructional forms. No one will dispute the applicability of the word *architecture* to the forms as seen in this drawing; but few would seek for their origin in an osier basket! We may pass from this rude architecture to some examples of a far more elaborate kind, and will wonder at the ingenuity and inventive power of the strange people who created them. There are some columns magnificently cut, with colossal figures from the Tennevely Pagoda, Southern India. These are seen in a photograph only, it is true; but they will evidence to many how individualised races work, each one in its own way. Neither Assyria nor Egypt has done better. The Seringham Pagoda, "horse-court," should be noted, and the wall frescoes. These, with others, show how very much there is yet to be found in Hindoo art and architecture, and how architecture, as a fine art, develops itself and grows when sufficiently isolated.

This fine collection suffers, as we have said, a little from the way in which it is necessarily exhibited. We should like to see all the architecture together, and in one room, and scientifically arranged, the varied details illustrating the general forms, both as seen in drawings and in models,—the sculpture here forming part, and an essential part, of the architecture, and growing out of it. It might be a work of time and industry to do this well, but when done it would, to a few at least, throw not a little light on the growth of architectural forms. It is to be remembered that "ruins" exist all over India, many buried in the thick jungle, and that we possess here but a fragment or two of them. Their extent may be judged of from the models here to be seen of but two or three groups of them. These are in Room II., and will serve to show what this architecture of the Hindoo looks like when grouped together, in lengths of buildings, towers, and courts, one beyond another. Such truly architectural arrangements are hardly to be imagined in these days as having reality, and still less use. Then the whole mass of these buildings was covered, both inside and out, with the most elaborate carving and stone writing, like an MS., and doubtless as capable of being read as we now read a printed book. To us the forms as here seen in detached fragments are strange and unintelligible enough, and we may dream anything about them, and their precise meaning may never be found, but to those who wrote on the walls the writing was plain, without doubt. If any spectator, looking at this display of the works of a bygone day, will compare it, architecturally and otherwise, with what he sees around him, he will not, surely, have visited this fine show in vain.

#### THE REMONSTRANCE OF M. SCRIBLERUS THE YOUNGER WITH THE CHIEFS OF THE ROYAL ACADEMY.

It hath been long (my dear Academicians) the subject of my concern and surprise, that whereas numberless authors have digested the Catalogues of ancient Exhibitions, there hath not risen up among us one person so publick spirited, as to perform the like for the modern. Although it is universally known, that our every way industrious artists, both in the quantity of their productions, and in the velocity of their execution, do so infinitely excel the ancients. Therefore to supply this defect I purpose to analyse some of the poetry and philosophy of the Royal Academy Catalogue, and to collect sundry critical observations, which have not heretofore been printed, upon the practice of the deep geniuses of your body; imitating herein my predecessor, the secretary of the renowned *Temple*: and in this my undertaking I am the more animated, as I expect more success than has attended that great Critic, since his wit, though it might be brilliant, has ever been slackly understood, and his sarcasm however just appreciated only by a very small number.

If we visit those Exhibitions of Antiquity, which have not been entirely dismantled by the professional Iconoclast, we shall find Painting and Sculpture arrayed as the handmaidens of Architecture; and, withal, possessed of a mien unassuming, and graceful. Therefore it hath been thought that the higher arts were kept in bondage by the ancients, under the rule of Mechanical learning. The emancipation by the moderns of Painting and Sculpture from the thralldom which they endured in so confined an arena as the Parthenon at Athens, or in some of the Roman Temples and publick monuments, hath opened to them an extended career. For in such buildings, the inspirations of the artist were degraded to purposes of meer utility, and their employment directed by that pestilent foe to High Art, and destroyer of fine figures, which is known by the name of Common Sense. But in your Exhibitions (my dear Academicians) the rein is given to originality, and in your Catalogues to versatility. It is your custom to mingle, in long and lofty Galleries, bits of the most various and discordant kinds, landscape, history, portraits, animals; and by strong oppositions of colours, and contrariety of images, to ensure the greatest happiness of the greatest number, by selling as many works as the public can be induced to buy.

It may be expected that like other Critics, in speaking of the most popular Exhibition of modern times, I should particularize the best pictures of the year, for the guidance of merchant princes at a distance, and of successful stock-jobbers at home. But this hath been done with completeness, while even the ideas of the artist were flowing from his brush to the canvas; and the public prints have announced, several months before the annual invocation of the Goddess in March, how prolific has been the brain of Jove. The short limits of this discourse will not allow me to treat of all the grounds upon which I have founded my remonstrance. Therefore I shall subdivide it, as my predecessor did a similar one, addressed to the poets of our nation; and as he discriminated, in a *Catalogue of books*, between the Florid, the Pert, the Alamode, the Fincal and the Cumbrous, so, in your *Catalogue of pictures*, I shall illustrate the Inexplicable, the Statistical, the Realistical, the Comical, and the Classical.

##### 1. THE INEXPLICABLE.

One of the sources of the Unique or Singular is to be found in a complete oblivion of everything that has gone before, and another in a total disregard of whatever may come after. An explanatory quotation, which is to serve for purposes of description, must not be too clear, lest it seem vulgar; for obscurity bestows a cast of the wonderful, and throws an oracular dignity, which hath no meaning. For example: you paint a pretty English face, with an open mouth, disclosing the sweetest set of teeth that ever Nature developed, or Dentist mounted; you clap it within a grille of iron bars; and, with a monk tugging the foot of a crucifix, you obtain a representation of "Below the Doge's Palace at Venice in the Fifteenth Century" (1550); then, to make doubly sure, you add, in this manner,

"And ne'er  
In madder accents rose despair."

Or, you take as a model some low type of

female beauty, from the coasts of Asia-Minor or Southern Italy; you emphasise the curve of the nose, the curl of the lip, and an almost absence of forehead; you paint only her head and shoulders; and with the skin of some animal, and an armlet, in the shape of an asp, you produce:—"Cleopatra" (1282).

Or, if your model be some young and innocent-looking girl, you take the opportunity of imparting to her a useful moral lesson, such as (1320),—

"Maidens should be mild and meek,  
Swift to hear and slow to speak."

Because there is no fear of any one else interpreting your covert meaning.

##### 2. THE STATISTICAL.

While the style to which I have referred seeks to confuse, this aims at giving instruction. Having made a charming picture of "A Port on the Zuyder Zee" (573), you swell the size of the catalogue by adding gratuitously:—"This inland sea is about to be drained by the Dutch Government."

[In the preceding divisions I have thought fit to treat of the Catalogue; and in the following ones I shall speak more particularly of the pictures].

##### 3. THE REALISTICAL.

"The Hymn of the Last Supper" (579) is in this Style. Nothing seems more plain than that Europe hath been long weary of the Conventional manner, and that as we have had "Passion Plays," complete in character and costume, so we must be prepared to find the idealistic illustration of Holy Writ, superseded by the portrayal of realities; it being certain: our knowledge of the ancients justifies a presumption that the modern painter hath the means, at least, of learning the archeology of the First Century. Human nature itself favours the change: the taste of the *bathos* is implanted in the soul of man, and if the ancient painters were perverted by custom to relish the sublime, very few people understood them; but on the contrary regarded their works with the unprejudiced eyes of children. Modern painters work up, or rather down, to the taste and comprehension of the people. But to descend to the *bathos* in one particular, argues the necessity of discovering the "profound" in all. If our painter hath with propriety laid the scene of the Last Supper in a wooden hut (of somewhat colossal dimensions), and furnished it with an oddly-shaped table of rude and elaborate workmanship, he hath at the same time introduced a cloth so white and unsullied, as to be fit for the palace of kings. Moreover, both table and cloth are anachronisms, rendered the more inconsistent by the presence of three-legged stools. In the First Century it was the custom, even in Athens and Rome, to lie extended upon couches (witness the term, "banquet"), during the hours of repast. And it hath struck me that if in Asia, where chairs and tables are even now uncommon, the fashions of Rome were sometimes adopted by the Rich, the habits of nature were always practised by the Poor; and that then as now the inferior inhabitants of India, Syria, and Arabia used the earth for a table, and in lieu of benches . . . . . (hiatus in MS.). I am also constrained to believe that before the descent of the Barbarians, the colour of the peoples of Western Asia and of Southern Europe was neither brown nor red; and although it hath been supposed that Jupiter was of a caroty hue, it cannot be ethnologically exact, to paint the ancients who inhabited those countries with hair of that colour, as in "The Hymn of the Last Supper"; unless indeed the custom in India, at the present hour, of dyeing red the blue-black hair of children, obtained in Syria among men in earlier times.

##### 4. THE COMICAL.

Characteristical of this Style is the portrait of "His Reverence" (1315): that of a priest lifting his hat to two unsophisticated girls. In order to do so, he has turned upon the Critics that side of His Reverence, which it hath ever been deemed impolitic to present either to friend or foe. For the one is ungracious, and the other cowardly; but our painter perhaps argues that an action, which in a man would be resented as offensive, may in an ecclesiastic be regarded as comical. Nor are the accessories of the picture opposed to such an hypothesis, for as in representations of *Orgies à la Régent*, the plesantries indulged in by the guests were reflected in the images which

cover the walls and the furniture, so the haze, which obscures the action of His Reverence, is reflected in the surrounding Architecture. Therein the base-mouldings of a column resemble fungus which clings to the neck of a bottle; and while the distant street, which is at a stone's throw, is enveloped in mist, some of the steps, that His Reverence is about to mount, are without a joint, implying one of two things: either that they consist of long slabs of stone, or are composed of the best Parian cement.

## 5. THE CLASSICAL.

If any one doubt that I have an excuse for making these observations, let him seek it in this concluding division. Among the ancients, it was the province of Painting and Sculpture to adorn Architecture, but among the moderns, Architecture and Sculpture are impressed into the service of the painter; and in "Atalanta's Race" (1943) he has treated both, with a light heart and a heavy hand. I have sought in vain to learn what relation the colossal column (in the middle distance), which is partly hidden by *Atalanta* (in the foreground), bears to the Ionic temple on the left; and if it form part of another temple, I cannot perceive (even with the Erechtheum in my mind's eye) where the rest of that said temple is situated. Nor is the subtlety of the Greek acknowledged in the divers bases and cornices and such architectural devices, for the painter hath so placed them that their projection would have injured the feet and thighs of the passer-by, or torn his sandals and his robe. As for the glare of the marble, it hath been left in its natural harshness, which (it is well known) was softened by the ancients with colour. And, at the same time, so little has the author of "Atalanta's Race" appreciated the minuteness with which optical illusion was counteracted by them in the best period, that the distant canopy, which covers the judge, is supported by columns without *entasis*, and crowned with a pediment whose raking lines have no curve.

The defect of whiteness, which the moderns love, is also exaggerated in a view of Thebes in "The Daphnephoria" (241); and though I grant the excellence of that picture, I herein enter a solemn protest against the practice of giving pretty English features, and white forms, to slave-girls, who had never been permitted to wander far from their masters, had they been only half as charming as it is the custom of the moderns to depict them. Witness the habits of nations, who, at the present day, are not totally removed in thought and inclination from the ancient Greek.

As I have thought fit to censure poetical licence, so I will condemn artistic solecism. The painter of "An Audience at Agrippa's" (249), wishes us to believe that his *Agrippa* is he, who came into the world 63 years before our Lord; and with whose connivance was erected in Rome that Pantheon, in which (Mr. Addison said) the imagination is filled with something great and amazing. Therefore it were well had our painter reflected that to draw the marble walls of *Agrippa's* house with gaping joints, that were newly put together, and with worn cornices, that no elbow approached, exactly as the rubbings and concussions of Time hath handed both to us, is to commit a blunder, which, in the contests and dissections of Athens and Rome, was thought to be worse than a Crime. In *Agrippa's* house, as our painter hath imagined it, the arch is moulded and jointed, not as ancient Romans would have constructed it; but as it was imitated by the architects of the Most Christian King, in the Saloons of Versailles, and the Pavilions of Marly. The *estrados* of the Roman arch was truly defined; and when, as often happened, the marble face was a veneer, laid against a core of bricks, its jointing was never dissembled, like that of the moderns, in numerous edifices they erect, under a system of false economy and immoral speculation.

My master, the Dean, described the Critic as a collector of people's faults; and it was a pretty conceit of Mr. Fielding, to couple the professions of Criticism and Christianity, when he said: if we judge according to the sentiments of some Critics and of some Christians, no author will be saved in this world, and no man in the next. I have not however failed to relish many beauties, which (my dear Academiciana) I encountered in your pictures, while searching after defects; but of them it is not my present intention to treat.

I have thought fit to warn the proper authorities how baneful an effect the manner of exhibiting those beauties hath upon Critics who honestly go to admire them. The Geometrician in delineating the great examples of ancient Architecture draws them to a uniform scale: for facilitating reference and inviting comparison. But in an Exhibition of the Royal Academy, a "View of the Queen's Apartment at Lilliput" rubs frames with "Gulliver and the Maids of Honour in Brobdingnag," a hazard not unaccompanied with injustice. For as beauty ever delights in the companionship of a foil, so the Academician seeks a contrast of mediocrity to attract the wit, and dissipate the bile of assailants. Because no man can penetrate your Galleries (my dear Academicians) without being seized with a megrim; and when that hath arrived, I would most fervently enjoin the visitor to seek repose in the room devoted to Architecture. There, Venus, eager for flirtation, may lure Adonis, not now unready. Nor hath the publick, which seldom judges inconsistently with itself, blame for this. Architects have not known how to touch that string in the harmony of human understanding, which, in most visitors to the Royal Academy, is exactly of the same tuning. Instead of prosaic description of architectural drawings, something in the Comical, or the Statistical, or the Inexplicable Styles should be added to attract the modern intellect. Instead of naming one of their works, "A Drawing Room in the Mediæval Style," architects might dignify it with such a motto as,

"Cracked bargains from brokers,  
Cheap keepsakes from friends."

Or, to some monument of more than sepulchral outline\* (designed in the taste of Her late Majesty), they might add,—

"Tully was not so eloquent as thou,  
Thou nameless column with the buried base."

Or, to a twilight sketch of the temple of *Pallas Athene*, they might append a line of the epigram of the modern *Aristophanes*, concerning the rich attorney's elderly, ugly daughter, thus,—

"In the dusk with the light behind her."

Indeed, there are no limits of the *bathos*, to which the poetical touch of nature doth not descend; but I have done. I warrant my remonstrance, though it may escape the ears of painters, will open the eyes of architects to a perception of their shortcomings in this wise; and future visitors to the Royal Academy will be unable to say of its Architectural Gallery that

"Something of sadness had wrapt the place."

And I beseech you (my dear Academicians), should you doubt the aptness of my poetical quotations, to remember that all of them, and forsooth many others of a like kind and equally superfluous, are printed in the pages of your Catalogue—this current year of Grace.

## THE CASTLES OF BROUGHAM AND BROUGH.

ANNE Dorset, Pembroke, and Montgomery, Baroness Clifford, Westmoreland, and Vescei, hereditary sheriff of Westmoreland, and Lady of the Honour of Skipton, in Craven, was in every way a remarkable woman: she was of high birth, held large estates, was the widow of two considerable peers, and had received and largely profited by an excellent education. To a strong and copious memory she added a sound judgment and a discerning spirit. She was a person of great firmness of character, and passed her life amidst events that exercised and strengthened that quality. Among the many subjects upon which she was informed, and which ranged, says Dr. Donne, from "predestination to sea silk," was included a very close knowledge of the particulars of her own estates, and a very thorough determination to maintain her houses and castles in good repair. She found the castles of her Clifford and Vipont ancestors, Appleby, Brougham, and Brough, in ruins; she restored and made them habitable, and, though time and the hand of the spoiler, have again brought two of them, Brougham and Brough, to decay, their walls still exhibit much of the amending hand of the great Countess, as well as of the original work of her remote ancestors.

## BROUGHAM CASTLE.

This very curious pile stands on the right bank of the river Eamont, just below the point at which it is joined from the south by the Lowther,

so that the combined stream covers the fortress on the north, as do the two waters and the marshy ground between them, on the west front. The castle is placed but a few yards distant from, and but a few feet above, the Eamont, and between it and the large rectangular camp, which marks the site of the Roman "Brovacum," whence both castle and township derive their names; such, at least, seems the most probable etymology, though a claim has been set up for Burgham, which would have been more tenable had there been evidence of the place having been an English as well as a Roman stronghold.

The Roman road from Brough and Appleby towards Carlisle and Penrith skirts the north-eastern front of both camp and castle, and is carried, by a modern bridge, across the river, a few yards below the latter. Above the castle and upon the Eamont, was placed the castle mill the weir connected with which still remains. The actual site of Brovacum has been claimed for Brougham Hall, on the adjacent highground; but, however this may be, the camp below is undoubtedly Roman, and an excellent example of the entrenchments of that people. A Roman altar was found, in 1602, at the confluence of the two rivers. What earlier name is embodied in the Roman Brovacum is not known, but "Bro" in South Wales is the old Welsh word for "the hill country," and is preserved in Brocastle, and Broviscin, in Glamorgan. The parish of Brougham is large; the church is called Ninekirks, probably a corruption of St. Ninian's kirk. The parochial chapel, which stands near Brougham Hall, is dedicated to St. Wilfrid.

The camp is contained within a single bank and exterior ditch, both very well marked, though in height and depth much reduced. Along the scarp or inner slope of the ditch are traces of a step or terrace, as for a line of palisades, in front of and below the main defence. The area within the ditch is 113 yards broad, and its length, now 134 yards, was probably 198 yards, those being the proportions of the camp at Brough. The ditch is 172 yards broad. The entrance is gone; it was no doubt in the centre of the east side, that towards the road. The angles are, as usual, slightly rounded. The castle stands a few yards north of the camp, the adjacent parts of the latter having been cut away and levelled in forming its outworks. The castle is, in plan, a very irregular four-sided figure; the south and west sides meet at less than a right angle, and are in length 80 yards and 77 yards. The north side, at right angles to the west, and upon the river, is 50 yards. The east side has been partly rebuilt, with a low salient angle. It is in length about 40 yards. This area is the main, or rather the only, court of the castle. The keep originally stood clear within the court, near to its north-east angle; a large gatehouse now occupies that angle, and much of the north front, and is connected with the keep, which, therefore, is no longer isolated. The hall and domestic buildings stand against the south wall, and are continued a short distance along the east wall. A large square tower is placed at the south-west angle, and covers a postern. The west wall is free, and seems to have been low. The castle is about 50 yards from the river, and 30 feet above it. The entrance was from the east, along the bank of the river. A ditch, wholly artificial, and probably filled with rain-water, protected the west, south, and east fronts. Towards the west it is broadest and deepest, that being the exposed front. Towards the river the natural fall and the marshy character of the ground were a sufficient defence. The entrance is, and probably always was, in the east wall, at its north or river end. This part of the *enceinte* wall is built with a shoulder or re-entering angle, so as to command, for some yards, the approach to the outer gate. The moat is now traversed by a causeway of earth, replacing the earlier drawbridge.

The gatehouse, rectangular in plan, and 90 ft. long by 39 ft. broad, occupies the space between the keep and the north wall, and extends either way beyond the keep. It is composed of two parts,—one, a block of chambers, lodges, &c., forms, or rather abuts upon, the curtain; the other, connecting these chambers with the keep, contains the vaulted entrance. The entrance is broken transversely into two parts, separated by a small open court. The outer passage, 34 ft. long, belongs to the outer gate, the other, 36 ft., to the inner gate. The keep forms one side and the lodges the other. Thus, there are really two gatehouses,—one abutting on the north-east, and one on the north-west, angle of the keep, each with

its own defences and gates, the buildings on the north communicating with both. The exterior portal is in the east wall. It has no flanking towers, being protected by the curtain. The north-east angle is capped by a square buttress, placed diagonally. The gateway has a plain flat segmental arch over it. Upon a stone are the words, "This made Roger," and above are two tiers each of two good decorated windows of two lights, with trefoiled heads and a quatrefoil in the head, and divided by a transom. Between the two upper windows are three bold corbels, intended to support a machicolation resembling those on each face of the keep. It is said that formerly the arms of Vaux, "chequy," were carved over the entrance; but it seems probable that they were the arms of Clifford, "chequy, a Fess," or it may have been "a Bendlet." The passage within, 11 ft. broad, is vaulted. The first defence was a portcullis, of which the square groove, 6 in. broad by 4 in. deep, remains. Within this is the rebate for a pair of gates, and on the right the small door of a lodge. At the inner end of the passage was a second pair of gates, opening towards the first pair, and beyond them the open court, with the keep-wall on the left. Above this outer gateway is a large room, 21 ft. east and west, by 32 ft. long. In its west wall is a fireplace, and a door opening into the middle chambers. In its north wall a good Decorated window looks upon the river; in the east wall are two windows overlooking the outer gate, and between them, over the gate, a recess for working the portcullis.

Beyond the open court is the second part of the gatehouse, which commences by a portcullis backed by a pair of doors, within which is a passage 20 ft. long by 16 ft. broad, vaulted in two bays with transverse and diagonal ribs springing from six corbels. There are no ridge ribs; the inner or further portal also had doors. The left-hand lodge is a vaulted cell, 11 ft. long by 3 ft. 3 in. broad. On the right the room is much larger, and leads to the north postern. The exterior or north front of these two gatehouses forms a handsome block, and is pierced by various openings at different levels. At its north-east corner is an angle buttress; then follows one in section a half square, set on diagonally; and west of this, again, is a large square buttress, in one side of which is the north postern, a small shoulder-headed door at the foot of a flight of stairs.

The lofty tower at the south-west angle of the court is about 35 ft. square, with an appendage on the east face. It has thick walls and mural passages, and projects but little from the curtain. It has a basement and three upper floors. The first-floor was entered by an exterior flight of stairs, which also communicated with the rampart of the west curtain. At its junction with the tower is the postern, the approach to which is guarded by a loop, while nearly over the door discharges the shoot of a garderobe.

Along the south wall are the domestic buildings, of which the chief was the chapel, about 35 ft. by 20 ft. This was on the first floor, with a timber floor and open roof. The chamber below was entered from the court by a lancet door. The chapel had a large east window, of which the jambs remain; and in its south or curtain wall are two long trefoil-headed windows, splayed within. Towards the east end are three sedilia, also with trefoiled heads and trefoils in the spandrels, the whole beneath a flat top. There is also a piscina of late Decorated aspect. Near the chapel, towards the south-east angle, the remains of a large fireplace seem to indicate the kitchen, and along the east wall are two windows, and traces of a fireplace between them, all which seem to belong to the hall. At the north end, also, on the first-floor, are remains of a handsome door, in the Perpendicular style, with a four-centred arch beneath a square head. The staircase may have been exterior. Grose shows some walls here in 1775, which are now gone.

The keep, called in Countess Anne's time "the Roman Tower," the only remain of the original castle, is 44 ft. square, and, in its present state, of unusual height. Its exterior plinth is confined to the north side. The two western angles are covered by pilasters, 12 ft. broad and of 6 in. projection, one on each face, meeting so as to form a solid angle. Two other pilasters, balancing these, cover the east end of the north and south walls, but there are none on the east side, that having been covered by the fore-building. The south face is prolonged eastwards 12 ft. by a wall 5 ft. thick, which rises to the third-floor level, and formed the south end of

the fore-building. The pilasters rise to the present summit of the wall, and terminated originally in four square turrets, of which traces remain at the two northern angles. The keep has a basement and three upper floors, of which the uppermost, if not an addition, has been recast. The walls are 11 ft. thick at the base, and at least 10 ft. at the rampart level. The parapet is gone. There is no external set-off. In the centre of each face, and near the top, are three or four bold corbels, which evidently carried a short machicolation; and in the angles, near the top, are several cruciform loops, slightly fan-tailed at the top and bottom, and with lateral arms ending in oilets, much resembling those at Kenilworth. Some of these are the lower half of those of the turrets, which, with the parapet, were standing in 1775. At the upper part of the south-eastern angle the wall is corbelled out 12 in. for a breadth of 15 ft. on the southern, and rather less on the eastern, face. This is to give a little more space to a mural oratory, which has a loop on the south face, and a small trefoil-headed window towards the east, clear of the fore-building. On the north face, near the east pilaster, a vertical line of six loops shows the presence of a well-stair from the first-floor. The four lower loops have round heads; the two upper have square heads, and are probably later.

The basement is at the ground level. It has splayed loops to the north, west, and south; and in the east side is a recess with parallel sides, and a trace of the rebate of a doorway. This, if original, must have led into a cell below the fore-building, as at Rochester; but it may be a Decorated insertion. It is nearly covered up with rubbish. In the north-east angle, which has been filled up with a short wall, is a small door opening into a bent passage, which now leads into the open air, at where was the foot of the great entrance-staircase. There may always have been a cell here, but the cross-wall and the outer door are not original. In the west end of the north wall is another recess opening into a garderobe chamber, 5 ft. long by 3 ft. broad, and original. The floor has had a vaulted and ribbed roof, springing from corbels at the angles, and from four others, in the centre of each side. There was, in 1775, a central pier. As at Richmond, this vault was an insertion, replacing timber. The basement was about 13 ft. high.

The first floor is 23 ft. square. It has round-headed window-openings to the north and west, in round-headed recesses, with beaded angles. In the south wall was a fireplace, probably an insertion; and in the north wall, near the west end, a small door opens into what was probably a garderobe, like that below. In the north-east angle, filled up like that below by a short cross-wall, is a door opening on a well-stair, which occupies that angle, and ascends to the roof. The east wall has been in some measure rebuilt, recently. In it may be seen parts of a large decorated doorway, evidently inserted to give a direct entrance to the chamber. This floor has had an arcade against its walls, of which traces remain on the south and west sides. The arcade had slender piers and trefoiled arches. It is unusual to find so ornate a room in the first, or, indeed, any floor in a Norman keep: it must have more resembled a chapter-house than a private chamber. The chapel at Castle-Rising was so arcaded, and those at York, and that in the curtain at Richmond. This floor was about 15 ft. high, and was covered by the joists and floor of the room above.

The second floor has round-headed recesses, beaded at the angles, for the windows, in the north and west sides; and a flue, now laid open, occupies the south side. In the east wall is the original entrance,—a plain round-headed arch of 6-ft. opening, with a chamfered rebate for an exterior door. There was no grate. Close north of this is a small door entering an oblique passage, which opened, as at Middleham and Rochester, upon the turret over the outer entrance. The well-stair has no direct opening into this floor, whatever may have been the case before the alterations. There seems to be, as below, a garderobe in the north-west angle.

With this floor the original keep seems to have ended. There is now, however, a third floor, which if not altogether new, has been remodelled. The walls are very thick, and the four angles within are filled up with short walls, converting the chamber into an octagon, or rather into a square with the angles taken off. One of these fillings up, that to the north-east, is carried down the whole way. The other three are confined to the top floor, and rest upon brackets. This floor had a large recess and a window in each of the

four main faces, of which that to the west is segmental and ribbed. These recesses are quite inaccessible; but it would appear, from the thickness of the wall, and from certain square apertures outside, that they communicate on the west side with mural chambers. In the north-west angle is a very remarkable fireplace of about 9 ft. opening, with a perfectly flat plat-band, composed of thirteen stones joggled together. This is a very fine example of this kind of work, and it stands quite unaltered. In the opposite, or south-eastern angle is a shallow-pointed recess, and in it a square-headed doorway, which opens into the oratory. The window recess in the south wall differs from the rest. Its arch was high-pointed, and moulded with deep reduplicated bands, with half-shafts with bell capitals; no doubt Decorated, but of Early English character. From the east jamb of this recess a second passage opens into the oratory, and this was probably the principal entrance to it. The oratory is seen from below to be vaulted and groined. It occupies the south-eastern angle of the building.

The east face of the keep was covered by the fore-building, which evidently contained a straight staircase, which rose from the north-east corner of the keep, and ascended to the main doorway on the second-floor level. This doorway is near the south end of the wall, but, notwithstanding, the steps must have begun above the ground level to reach, without undue steepness, so considerable a height. The wall has been so much injured, and so freely repaired, that the marks of the stairs are no longer visible, but a toothing and some springing stones, as for an arch, seem to show that the staircase rose from the east angle, under a covered way or low tower, the battlements of which were evidently reached by the oblique passage still seen above in the wall. Below the level of the original doorway are traces of a larger and more lofty doorway, in the ornate Decorated style,—evidently an insertion. This would give direct passage into the first-floor of the keep, and was probably inserted when the arcading was introduced, and this converted into the main apartments. There are other toothings and roughnesses in the wall, indicating various alterations. The fore-building was about 12 ft. broad, and contained a basement and two floors, as shown by the openings in the south wall, which are, near the ground, a loop; above it, a small window, and above that a garderobe, corbelled out upon two heavy blocks upon the south wall. Above the line of roof of the fore-building is to be seen the east window of the oratory, and near it a cruciform loop.

Unfortunately for the close examination of this very curious keep, the upper part is inaccessible, and ladders of sufficient length are not readily to be procured. The architectural history of the castle may be inferred from its details, so far as these are visible. It is evident that the original fortress was a Late Norman keep, and it must have been placed within an *enceinte* pretty closely corresponding to that now seen, and which skirts the edge of the ditch. Of this supposed *enceinte*, as well as of the domestic buildings and gatehouse, which must have been present in some form or other within it, there remain no very certain traces. The keep and the ditches probably were the work of Robert de Vipont, very early in the thirteenth century.

In the Decorated period the castle underwent great alterations. The keep was raised a story, and an oratory included in the new work. The basement was vaulted, the first floor arcaded, and the fore-building so altered as to admit of an entrance on that floor. All the rest of the castle, gate-houses, domestic buildings, and the whole of the *enceinte* wall belong to one general period, and are probably the work of Roger de Clifford, the first of his race who held this property, and the husband of Isabel de Vipont, its heiress, in the reign of Edward I. Usually, when a Norman fortress was remodelled in the Edwardian period, the keep was neglected, and left in its original isolation; here, however, it was decided to turn the keep to account, and to ornament its principal chambers, and connect them with the suite of rooms in the upper floor of the gatehouse.

There are some peculiarities of detail in this castle which need further investigation. The large windows of the first and second floors of the keep are original; but the half piers and bell-caps in the exterior jambs look much later, and may be a part of the decorated additions. It is said that the buildings against the east wall received some alterations from another Roger de

Clifford, grandson to the former. It is curious that walls so thick as those of the keep, and of such good material, should have been left solid, unpierced by the chambers and passages so much affected by the Norman architects. It is also to be observed, that the curtain wall is but scantily furnished with flanking defences. Countess Anne mentions "the Tower of Leagner," and "the Pagan Tower," and "the Greystoke State Chamber," in Brougham Castle.

## BROUGH CASTLE.

Brough Castle covers the whole of a steep knoll which rises 60 ft. on the left bank of the Swindale or Helle Beck, and is about 50 yards from the water. The beck receives the Angill from the south-east, just above the castle, and their combined waters, at times of considerable volume and force, fall into the Eden about a mile and a half lower down. The castle itself is 630 ft. above the sea level, and the encircling fells of Westmoreland and Yorkshire rise to elevations of from 1,000 ft. to 2,000 ft. About five miles to the east are the sources of the Greta and the Balder, and a little further off and towards the north the head springs of the Lune, not the noble stream that gives name to Lancaster, but a tributary to the Tees.

Even in this wild and almost impenetrable country are traces of Roman civilisation. The road from Lavatæ (Bowes) to Luguvallium (Carlisle), ran through Brough, which is identified with the station Verteræ, and by Appleby and Brougham, joining at Penrith the main road, the work of the same people, from the south. Five and seven miles to the east of Brough are two Roman camps, and there are others upon the same line of road at Redlands and Kirkby-Thore, and a very perfect one at Brougham. The Roman road at Brough runs generally east and west, and crosses the Beck at Market-Brough, so called in distinction from Church-Brough, which lies three furlongs to the south of the river, and contains the castle. The collective parish is named "Brough-under-Stainmore." Verteræ, if identified with the existing camp and castle, stands off the main road, and south of the river, as at Brougham.

Verteræ is represented by a rectangular camp, of which the castle covers the northern and higher end, that next to the river. This camp is 157 yards north and south by 113 yards east and west, of which the platform within the ditch covers 134 yards by 90 yards. Of this area there is cut off at the northern end by a cross-ditch a plot, 90 yards east and west by 50 yards, which is occupied by the castle. This portion is further defended by some additional earthworks, perhaps Norman, to the east and west. The southern fragment of the camp seems to have been used as a sort of out-work to the castle, probably for the protection of sheep and cattle.

The castle was thus placed crosswise in the camp and parallel to the river, the action of which has carried away the outer half of its ditch, and converted the slope into a precipitous bank, at the top of which is the curtain-wall. The eastern outwork is composed of the end of the knoll or ridge on which the castle stands, and which is scarped into a triangular platform, the base of which, 57 yards long, covers the end of the fortress, and projects 38 yards. The ditch cutting off this work from the body of the place is 23 yards broad, and very deep. The earthworks westward are two banks and ditches, across the tail of the knoll, one 57 yards long, and 47 yards in advance of the main ditch, and the other 84 yards further in advance, and 94 yards long. Both are intended to cut off approaches along the river bank. The cross-ditch covering the south front of the castle is about 30 yards broad, and up it, from the east, came the main approach. These ditches, on the south east and west fronts, are wholly artificial. There is also a trace of a bank and ditch along the east front of the camp, about 30 yards in advance of the main ditch, and about 60 yards long. A road, which may be Roman, comes up from the south, and crosses the Angill by a bridge, 250 yards above or to the east of the castle, to join the main road over another bridge in Market Brough. Upon this stream is the castle mill. The defences, in masonry, seem to have been confined to the castle proper. There is no trace of such upon the out-works, which probably were stockaded. The ditches are at far too high a level to have been fed from the river; but the soil is retentive, and they seem to have been filled with rainwater.

The castle is composed of one ward, a trapezium in outline, the east, north, and west

sides being at right angles, and respectively 77, 90, and 57 yards, and the south or oblique side, 94 yards. It is, in fact, a right-angled triangle, with the acute angle truncated. The keep is placed at the truncated end, and forms the south-west angle of the ward, its south and west sides being exterior, and in the line of the curtain. The domestic buildings were along the south side and about the south-east angle, and built against the curtain. Near the centre of that side was the gatehouse, and attached east of it the hall, beyond which a large three-quarter drum tower capped the south-east angle. This and the gatehouse are the only mural towers. The kitchen and chapel and some later buildings probably rested against the east wall, and there are slight foundations between the gatehouse and the keep. The north curtain, towards the river, seems to have been free from buildings. Upon it are two buttresses, and in one a garderobe, entered probably by a side door and passage in the wall. This curtain is 6 ft. to 5 ft. thick, and from 12 ft. to 15 ft. high inside.

The gatehouse is placed near the centre of the south side of the castle. It was an oblong building, and formed the west end of a block of which the hall and withdrawing-rooms formed the eastern part and remainder. It was composed of a passage between two walls, of which one remains, and is 6 ft. 6 in. thick and 45 ft. long; the outer 10 ft. being outside the curtain. The portal is gone, but the springing-stone remains of the inner doorway, 3 ft. 7 in. broad, and recessed 8 ft. 6 in. within the inner front. The vault of the passage, about 10 ft. long, rested upon three bold ribs, of which the springing-stones remain, and beyond which was the outer gate, of which a part only remains. There was an upper floor, and if the rubbish were cleared away the plan of the gatehouse would be visible. The walls seem Norman, but the ribs, vault, and fittings are probably insertions of the Decorated age.

The hall was poor. It was on the first-floor level, and had a floor above it, and, therefore, a flat ceiling. The basement is composed of three vaults placed transversely, with flat, slightly-pointed arches. The doors are towards the court, and one chamber has a small Tudor fireplace, in a corner. Each had a loop in the outer end, and in the ends of two are mural garderobes in the substance of the curtain. The hall was not above 12 ft. or 14 ft. high. In its north side is a round-arched recess, probably the original entrance, by an outer stair; and near it a fireplace. In the south or curtain side are two good late Decorated windows of two lights, rather flamboyant in tone, with plain exterior drips. Above these is a step or ledge for the floor of the upper room, and two windows not directly over those of the hall.

There is no very decided evidence of a chapel. The kitchen, probably, was near the north-east end of the hall, and against the east curtain. The withdrawing-rooms were at the east end of the hall, and extended into Clifford's Tower, a fine bold drum of 30 ft. diameter, which caps the south-east angle of the ward. This tower seems to be of Decorated date; and the base and part of the wall original; but it has been almost rebuilt, probably with the old cut stones, in the Tudor period, to which belong its numerous square-headed windows. Part of it was taken down in 1763.

The keep stands upon rather the highest part of the enclosure. It is rectangular, 43 ft. east, and west, by 51 ft. north and south, and stands upon the curtain, with which its west and south faces are continuous. As it does not quite cover the whole end of the ward, this is closed by a low curtain, 17 ft. long and 3 ft. thick, which extends from the keep to the north-west angle of the ward. The keep is composed of a basement and three floors, and is about 60 ft. high. The parapet is gone. It has a plinth only on the two exterior faces, where the ground is low, and there are two sets-off which indicate the level of the second and upper floors. At the end of each face is a pilaster, 7 ft. broad and of 6 in. projection, and those adjacent meet and form a solid angle. These pilasters rose clear of the wall to form angle turrets, of which parts remain. From the upper set-off, on the north and south faces, rises an intermediate pilaster, 3 ft. broad. The walls at the base are 10 ft. thick, and, at the top, 6 ft. The basement is at present nearly filled up with earth and rubbish, and much of the east side, and part of the south-east angle, fell in in 1792, and obscures the details of the main entrance.

The basement is at present entered by a plain

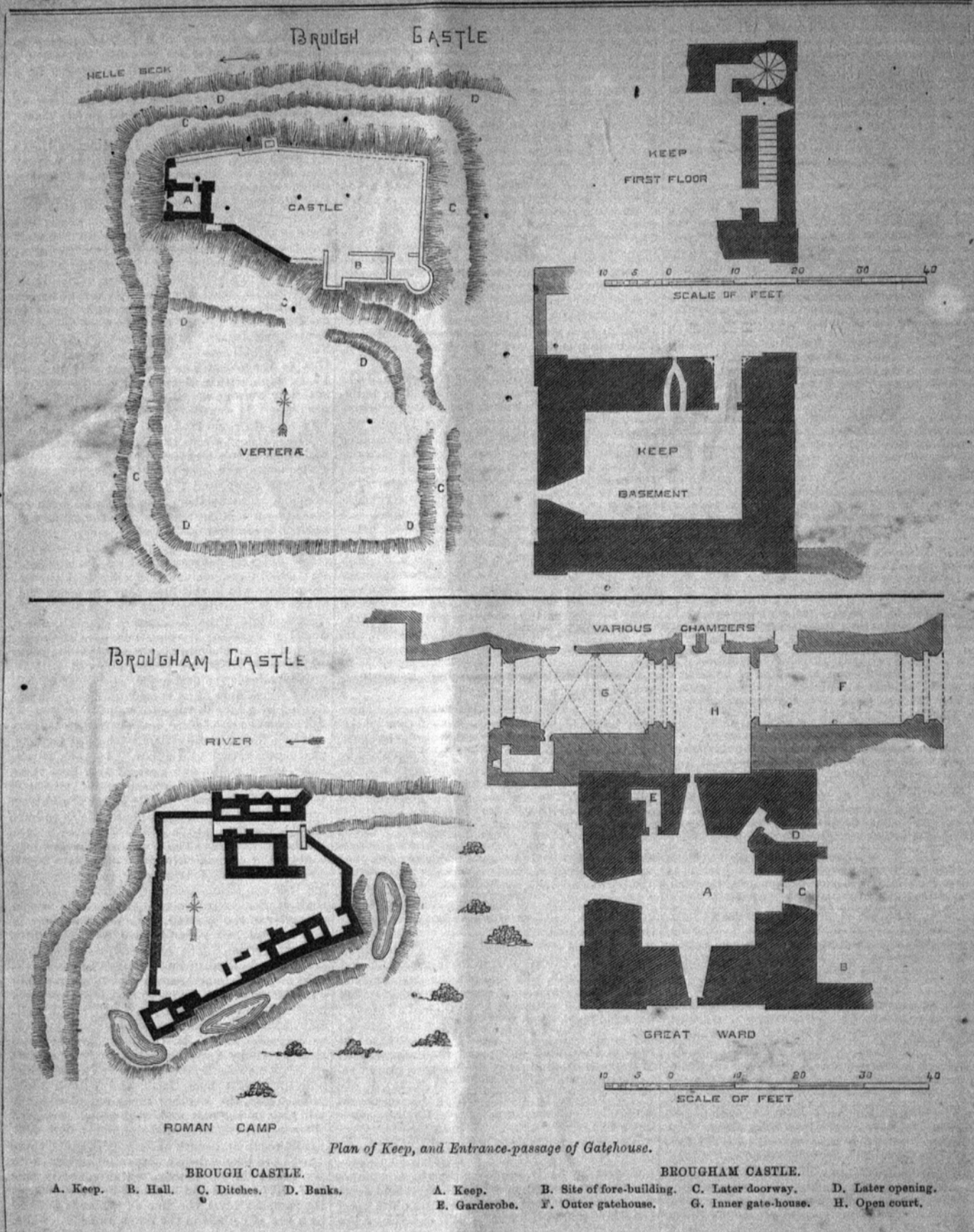
round-headed doorway of 4 ft. 7 in. opening, in the north wall near its east end. This has a rebate for an inner door, but no groove for a portcullis. The outer jambs are broken away. It is pretty clear from a comparison of its ring-stones with the original arches above, that this entrance is an insertion, probably of the time of James I. or Charles I. In the same side, near the doorway, is a very peculiar air-hole formed of two loops, 2 ft. apart, which converge to a single exterior loop. Possibly the basement was divided into two chambers, and one loop opened from each; but there is no trace of any partition. In the west wall there was probably another loop now converted into a window of 2 ft. opening, square-topped, set in a bold splayed recess, evidently an insertion of a period when security was no longer the first consideration. The window opens in the line of the plinth, the set-off of which is carried over its head as a square hood-moulding. The south wall was blank, and so, probably, was that to the east. The basement was 13 ft. or 14 ft. high, with a flat timber ceiling. There certainly were no mural chambers and no staircase in it. It was probably entered from above by a trap-door and ladder, and used as a store.

The first floor, about 13 ft. high, seems to have had loops in plain round-headed recesses in the north, south, and west sides, of which the latter is broken away, and a two-light Tudor window inserted. The northern loop has also been replaced by a similar window. In the south wall the loop is represented by a small square opening. In the ruins of the east side may be traced the remains of a doorway and the base of a lobby and staircase in the wall. It is clear that the external door was in this face, near the south end, and that it opened direct into the first floor, while right and left in the thickness of the wall, was a mural passage, at its south end a mere lobby, but to the north containing a straight staircase which rises 13 ft. by twelve steps, 4 ft. 4 in. broad, towards the east angle, where was a small lobby which opened on the second floor, and was lighted by a loop in the east wall.

Thus, the second floor was entered in its east side by a direct mural stair, like those at Carlisle, at Chepstow, and at Ludlow. In each of the sides, north, south, and west, of this floor is an original round-headed recess, and in the east wall, over the mural stair, are traces of a shorter recess, placed higher up, whence seems to have been a passage into a mural chamber in the south-east angle. The southern recess alone contains its original window. This is a small coupled window of two lights, square-headed, but within a round-headed arch. The dividing shaft is decidedly Norman, as is the whole character of the opening. The north window is also coupled and round-headed, but looks like a Stuart insertion. The east and west windows are square-headed, of Tudor date. In the north-west angle is a mural recess with loops, possibly a garderobe, and in the north-east angle a square-headed doorway opens by a lobby into a well-stair, which commences at this level and ascends to the roof. It is 7 ft. 6 in. in diameter, and rises 31 ft. by forty-six steps to the rampart walk. This second was originally the principal and uppermost floor, lofty, and with a high-pitched roof, the weather moulding of which is still seen on the east and west walls. The roof ridge was at the level of the rampart walk, and, as the north and south walls seem original, there must have been a deep cavity on either side, with the gutter in its bottom. Subsequently this roof was removed and replaced by a flat roof, at the rampart level, the line of which is marked by a row of corbels in the north and south walls. The cause of this change, common probably to all Norman keeps, was the superior convenience of a flat roof, rendered possible by the introduction of sheet lead as a roofing material.

The third floor was formed by dividing the height thus gained by a floor laid at the level of the springing of the old roof, and thus was created a second floor of 10 ft., and a third of 20 ft. In the west wall was opened a square-headed window, in a splayed recess, and close south of it is a small Tudor fireplace, the flue of which ascends into the south-west turret. The east wall is less perfect, but still shows the line of the old roof and the jamb of a Tudor window. In the north-east angle is the door from the well-stair.

The floors of the walls were throughout of timber, the joists of the first and second resting in holes in the north and south walls of the turrets; that at the south-west is probably modern. It contains the flues of several fireplaces, which appear to have been inserted in the south wall,



but which have fallen out. The keep probably had originally no fireplaces. The north-east turret contains the head of the well-stair. The other two turrets seem to have been mere shells, having only the two outer walls. They all rose about 12 ft. above the rampart walk, and 5 ft. or 6 ft. above the crest of the parapet on the outside of the east and south walls of the keep. Near the top are ranges of triangular holes formed by thin tile-stones set on edge, and looking much like pigeon-holes. The row in the south wall has five holes, and in the south-east turret are three. In the east wall are two sets, one of three holes, and one, imperfect, of two. There is one hole in the north-east turret. They are evidently original and do not appear to communicate with the interior. There is no trace of a regular fore-building, for which the keep, like

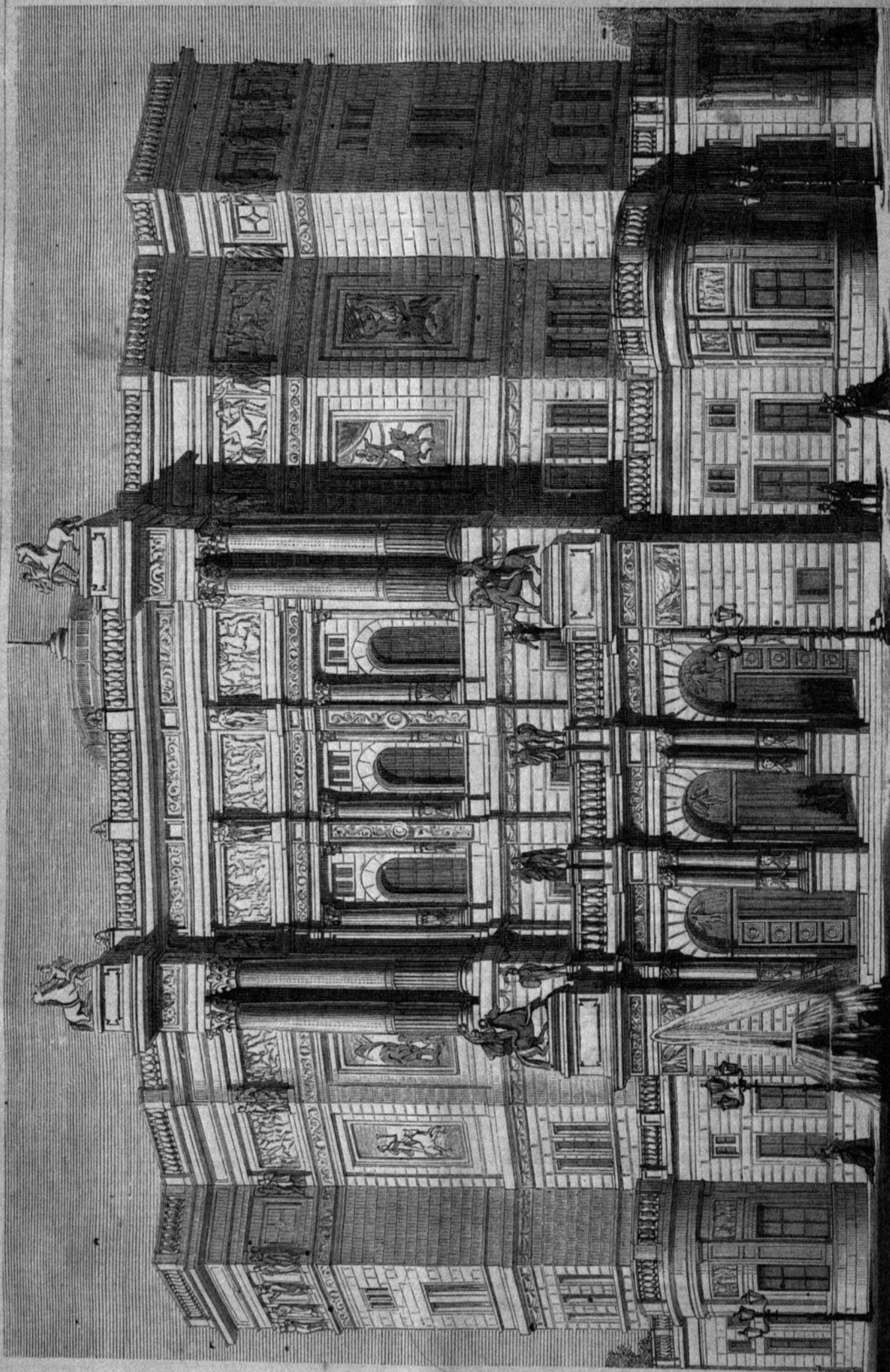
Goderich, was too small, but there was probably an open stair either of wood or stone ascending to the main door, which was about 12 ft. from the ground. The exterior of the keep was quite plain, and of rather rude workmanship. The pilasters are of square stones, and the wall, in part of similar material, and in part of stones of irregular shape, laid as uncoursed rubble. There is no herring-bone work, and no visible trace of Roman material worked up.

The keep is evidently late Norman, and the walls are original, though much pulled about, and with many insertions of the Tudor and Stuart days. This is another example of the high-pitched roof, as at Richmond and Bridgnorth, the whole roof having been concealed by the walls.

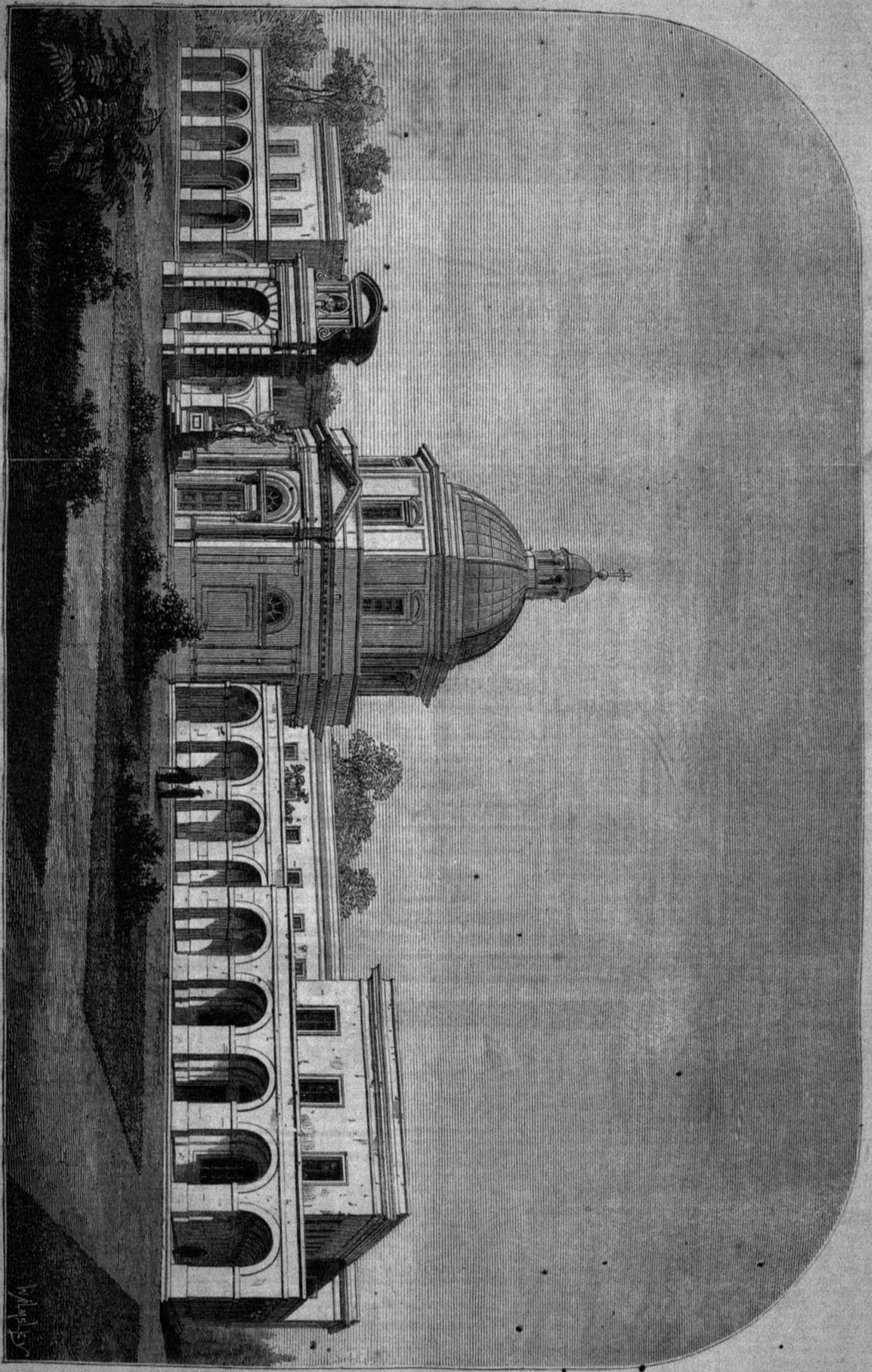
Probably the founder of the castle built both

the keep and the curtain wall on the lines of the present curtain, and cut the cross ditch which isolates it from the rest of the Roman camp. The gatehouse and hall and the south-east tower were probably alterations and additions of the Decorated period. The whole fortress was repaired by Countess Anne, whose hand may be traced throughout the structure. The keep has been split with gunpowder, probably by order of the Parliament, producing fissures in its north and south walls.

Robert de Veteriponte or Vipont, the head of a great Westmoreland family, to which the armorial bearings of the Musgraves and Lowthers, the Blenkinsops and Hellbecks, show them to have paid early allegiance, is regarded as the founder of the castles of Brougham and Brough, at any rate in their Roman form. His imme-



RENZ'S CIRCUS, BERLIN.—HERR A. WESENBERG, ARCHITECT.



THE BUGEDA INSTITUTION FOR THE TRAINING OF DESTITUTE ORPHANS, MALTA.—FROM THE DESIGNS OF COUNT VESPIGNANI, ARCHITECT.

diat ancestor came over with Duke William from Normandy, and the family first planted themselves in the counties of Devon, Northampton, and York. Robert, the second or third in descent, flourished in the reigns of Henry II., Richard, John, and Henry III., dying in 1228, the twelfth of the latter sovereign. He filled many posts of military trust, was custos of many castles, and sheriff of many midland and northern counties. He was also a justice itinerant, and of the Common Pleas. In 1203 (4th John) he had a grant from the king of the Bailliewick of Westmoreland and the castles of Appleby and Brough, at first during pleasure, but afterwards in fee. Possibly the grant was connected with the fact that his mother, Maud, was a member of the great Westmoreland family of Morville, and probably a daughter of Hugh de Morville, one of Becket's assassins. Robert's wife, Idonea de Buisli, was heiress of the castle and Honour of Tickhill. He was a man of very great wealth and power, and likely to have taken steps to secure his Westmoreland lair against its northern neighbours. The grant mentions the castles of Appleby and Burgh, and Burgh, that is Brough, was sacked by William of Scotland in 1174. Probably, therefore, there already existed some kind of strongholds at those places, founded it may be by the English on the Roman stations. Moreover, the year 1204 is very late indeed for keeps of so decided a Norman type, and it is no doubt possible that De Meschines or De Morville, the preceding lords of the fee, may have built both castles, but on the whole the evidence is rather in favour of Lord Robert as the founder, or at any rate the builder of the oldest parts now to be seen.

John de Vipont, son and successor, died 25 Henry III., in debt to the king, who gave his estates in ward to the Prior of Carlisle, who neglected the castles. In his time the keep of Brough was out of repair, and the joists rotten. Lord John sided with the barons, and died of wounds received at Lewes. His daughter, and finally sole heiress, Isabel, was married to Roger de Clifford,—the Roger of the inscription over the gate of Brougham,—and who was killed in battle in Anglesea by the Welsh, in the reign of Edward I. Robert de Clifford, their son, lord of the Honour of Skipton, of Appleby, Brougham, and Brough, fell at Bannockburn. There were then two parks at Brough, a mill, and the demesne land. The castle ditches let for the herbage at 6s. 8d. per annum, and the constable had 40s.

Roger, the next lord, was a great builder; he followed the fortunes and shared the fate of Thomas of Lancaster. He is thought to have made the additions to the eastern side of Brougham, where his arms and those of his wife, Maud Beauchamp, were long to be seen. His successor was his brother Robert, whose second and surviving son Roger, proved age 28th Edward III., recovered the family estates which had been forfeited, and kept his castles in repair. He died, 15th Richard II., seized of Appleby, Burgham, and Burgh. The four following Lords fell in battle: Thomas in Germany, John in France, Thomas at St. Alban's, and John at Towton. In the 4th Henry V., the Castle of Brougham lay waste, and the whole profits of the demesne were not sufficient to repair and maintain it. The next, Henry, was the Shepherd Lord, who in 1519 held a great feast at Brough, at Christmas, which was followed in 1521 by a severe fire, in which the castle was burned to the bare walls, and long remained waste. The succeeding lord and his son, both Henry, were the first and second Earls of Cumberland, of whom the latter died at Brougham Castle about 1560. George, the third earl, the admiral, who died 1605, was born at Brough in the last year of Queen Mary, 1558. With his brother Frances, the fourth earl, who entertained King James at Brougham for three days in 1617, the male line failed, and the estates and baronies came to Countess Anne, the daughter of Earl George. This lady, who repaired Brougham and Brough in 1651-2, was born at Brougham in 1589, in the same room in which her father was born, her mother died, and King James was received. Margaret, her daughter, by the Earl of Dorset, carried the estates to the Tuftons, earls of Thanet, who also inherited the hereditary shrievalty of Westmoreland, until their extinction in the present century. They dismantled Brougham and Brough, and sold the fittings in 1714. The present owner appears to be very attentive to what remains of the two castles. Both are repaired in a very substantial manner.

G. T. C.

## RENZ'S CIRCUS AT BERLIN.

THE celebrated Ernst Renz, the "king of horse-riders," as he is styled, was forty years ago the nameless member of a wandering equestrian troupe. He became better known to the German public when he made Berlin the centre of his activity, where he first introduced those representations, half drama, half ballet, sometimes called pantomimes, sometimes *féeries*, &c., which gradually overshadowed the more legitimate branches of horse-riding, equestrian performances on horses saddled and bare-backed, which no longer entirely satisfy a modern public. For such representations a standing circus was necessary, and it was erected by Eduard Renz, the younger, in the Georgenstrasse, Berlin. This latter had to vacate again in 1872, the site being required by the Berlin Metropolitan Railway. He subsequently acquired a considerable space of ground for the erection of a new circus in the Lindenstrasse. The plans for the building, the ideas of which had been supplied by the owner himself, were drawn by Herr A. Wesenberg, architect.

The front part of the ground, as far as it borders the street, is to serve for the erection of a residence for Herr Renz. The circus and the stables are to occupy the rear part of the plot, the area of which is nearly 2½ acres. The circus is calculated to hold 4,500 spectators, room being found for that number in an amphitheatre and two galleries. There is, besides, a row of private boxes, with a number of retiring-rooms. The building also contains a stage for the orchestra; an arena, of a diameter of 43 ft.; a stage, of 5,382 square feet, which may be thrown into one with the arena; all the necessary machinery for the transformation of the stage; a spacious principal vestibule, two side entrances, pay-offices, refreshment-rooms, riding-corridor, saddling-place, harness-room, sixteen wardrobe and dressing rooms, room for dancing and gymnastic exercise, painters' room, and a few property-rooms. Outside of the circus-building proper there will be stables for 110 horses, with different connecting-passages, stables for sick horses, and conveniences for the public, the artistes, and attendants.

The whole building, with a façade rich in sculpture (the subject of our illustration) stands free. Carriage approaches are not provided; but there is a wide glass-covered passage from the front part of the building to the road.

## THE BUGEJA INSTITUTION FOR DESTITUTE ORPHANS, MALTA.

DURING the recent visit of His Royal Highness the Prince of Wales to Malta the first stone of the charitable institution for the education and training of destitute orphans, founded by Mr. Vincenzo Bugeja, a wealthy inhabitant of Malta, was laid by Lady Van Straubenzee, wife of the governor. It had been supposed, in the first instance, that the Prince would have performed the ceremony, but it being a purely Roman Catholic establishment, this was not found to be convenient. Nevertheless, by the Queen's command, the Prince conferred on Chevalier Bugeja the Companionship of St. Michael and St. George.

The object of the institution, which is to be erected under the name of the Vincenzo Bugeja Conservatorio, is to feed, clothe, educate, and train to industrial occupations fifty female children deprived of their natural protectors through death, crime, or other misfortune. The site selected for the building is in a very central and healthy situation, about two miles out of Valetta, and the building is so designed as to admit of being extended hereafter to accommodate 100 inmates. Besides the entire cost of the building, the Chevalier Bugeja has provided an endowment of 1,000*l.* per annum in perpetuity. The gift will in all amount to about 40,000*l.*, the largest ever made in the island.

The plans were prepared by Count Vespignani, the architect of Pius IX., and have been adapted to the site, with improvements in the internal distribution, and sanitary arrangements, by Mr. W. Poulson, of Malta, an architect and sanitary engineer of practical ability.

The object of the founder is to give to Malta a model of an institution, as regards the education and training of children, and the arrangements for health, organisation, and discipline. In the course of the address made on the occasion of laying the first stone, the founder said,—“I am aware of the danger attending

such institutions when admissions to them are made too easy, namely, that of encouraging parents to be remiss in the discharge of their duties to their children. I am also aware of the difficulties by which young women brought up in an asylum are generally surrounded, when they leave that institution. But of the two evils, the abandonment of destitute children appears to me to be the worse. The building which I contemplate to erect will afford accommodation for fifty girls. The plan, however, which I have now the honour to submit for your approval, admits of enlargement, by the mere addition of another floor. I have, as far as lay in my power, made arrangements, which I hope will be found satisfactory, for the management of the institution after my death; and I cannot refrain at this moment from expressing my heartfelt thanks to his Excellency Sir Charles van Straubenzee, the worthy governor of this island, for the permission he has given me to entrust part of that management to the heads, for the time being, of some departments of the public service, and my gratitude to that eminent English firm 'Baring, Brothers, & Co.' who, looking to the nature of the institution, have, in deviation from their usual practice, consented to accept the office of trustees of the funds destined for its maintenance. May it, with the aid of Almighty God, and under your auspices, prove equal to its object.”

The block-plan of the building is in the form of the letter E, the chapel, seen in the view we give, standing forward between the two projecting wings, and being connected with the main building by arched corridors. A boundary-wall and railing enclose the whole, with a Triumphal Arch at the entrance, through the opening or gateway of which the statue of St. Vincent de Paul is seen.

## THE AMRAVATI SCULPTURES.

INDIA MUSEUM, SOUTH KENSINGTON.

THE last ordinary meeting of the Royal Asiatic Society for the present session was held on the 3rd inst., in the India Museum, South Kensington, in order to allow of Mr. James Fergusson, F.R.S., giving an account of the Amravati sculptures, now arranged there.

Mr. Fergusson, in commencing, said that the marvellous sculptures arranged on the walls had never previously been properly exhibited. The Amravati tope or tumulus, to which they belonged, was in the Guntoor district, and was first discovered by Ensign Mackenzie in 1795, while travelling in the district on official duties. At that time the site of the tope was being excavated by order of the Rajah in order to provide stone and lime for building a new city and palace at that place. The sculptures which Ensign Mackenzie saw during the progress of the excavation struck him as being of extreme interest, and twenty years afterwards, when he became Surveyor-General of India, he sent a large staff to the spot, and this staff was occupied for two years in making drawings of such marbles as remained. The drawings were made in triplicate, and one set was deposited in the India Office. There were also sent over and placed in the India Museum two or three pieces of the sculpture from Amravati. These sculptures, which were unlike anything else in the Museum, attracted Mr. Fergusson's attention, but nothing could be made of them, as no text or description of any sort accompanied them. It was difficult to tell their relative positions, or, indeed, of what structures they formed parts. They remained inexplicable until 1867, when Mr. Fergusson was asked to send some casts of Indian sculpture to the Paris Exhibition. As it happened, these particular pieces of sculpture were the only ones which Mr. Fergusson thought of sufficient interest to send casts to Paris. He expressed this opinion to one of the official attendants at the Museum, who replied, “Why, sir, if these are the things you want, we have plenty of them in the coachhouse!” On further inquiry and examination, Mr. Fergusson found that all the sculptures from Amravati now on exhibition in the India Museum at South Kensington, had been stowed away in the coachhouse for want of room. They formed the Elliott collection. It appears that when Sir Walter Elliott was Commissioner of Guntoor he was aware of the existence of the sculptures at the Amravati tope, and had sent them over to England, but there was no room for them in the old India Museum in Leadenhall-street, nor was there space for them in the temporary quarters of the Indian Government at the

Westminster Palace Hotel; so they remained hidden away until 1867, as already mentioned. When they were removed from the coach-house they were all photographed to the same scale, so as to afford facility for "piecing" the photographs with a view of discovering the design. After much time and trouble, Mr. Fergusson found that they could be arranged into two or three groups of sculptures of different styles, and bit by bit it dawned upon him what they were. In a plan of the tope made by Mackenzie, no central building was shown, only a circular space surrounded by two rails, inner and outer. From evidence afforded by the pieces of sculpture themselves, Mr. Fergusson came to the conclusion that one group belonged to the central building. He could never have arrived at this conclusion but for one peculiarity in Buddhist architecture, viz., that when the Buddhists wanted to ornament a building they had no means of doing so except by repeating indefinitely a miniature representation of the building itself. From the plan, and from the sculptures themselves, Mr. Fergusson gleaned that the central building was a tope about 20 ft. in perpendicular height, with a further height of about 20 ft. to the top of the dome, and about 30 ft. in diameter. This point being determined, it was easy to see that the rest of the sculptures could be divided into two great groups, one belonging to the inner, the other to the outer rail, and by piecing them together, as shown in the diagrams, the arrangement of the building was easily understood, and the position of nearly every fragment of the sculptures ascertained with certainty. The mode in which this was done, and the reasoning on which his conclusions were based, were fully set out by Mr. Fergusson in his work on "Tree and Serpent Worship," which was the result of this examination. Passing from this branch of his subject, the lecturer proceeded to give a few figures and facts which appeared to him necessary for the understanding of what was to follow. Buddha, the founder of the Buddhist religion, was born in 623 B.C., and was a prince of a royal family north of the Ganges. At the age of twenty-seven, struck with the misery of mankind, he resolved to devote the remainder of his life to the alleviation of human misery. He died in 543 B.C., at the age of eighty, having devoted himself to preaching and teaching for fifty-three years. His body was burned, and his relics distributed to seven different cities who claimed a right to them. His religion languished for 300 years after his death,—at least, we found very slight records of it during that interval. But in 250 B.C., Asoka did for Buddhism what Constantine did for Christianity,—i.e., he made it the religion of the State. From that date until about 750 A.D.,—a period of a thousand years,—it continued to flourish. During this period an immense number of topes were constructed. Tradition assigns 84,000 as having been built by Asoka alone; but however incredible that may appear, they were certainly built in vast numbers. They were never sepulchral monuments, but were erected either to receive relics or to mark the spots where Buddha had preached, or performed some miracle either in his present or some previous state of existence. The outer rail at Amravati was about 14 ft. in height, and was ornamented with a number of discs 3 ft. in diameter, externally representing lotus flowers, internally covered with figure sculptures. There were thirty pillars in each quadrant of the rail, each with a central disc, and two half discs at top and bottom, and three discs in the intermediate rail between. At bottom there was a Zöphorus or frieze of animals; above, externally, a procession of the figures bearing a roll, and internally a storied bas-relief, the whole extending to upwards of 600 ft. in length. The sculptures of the central building and of the outer and inner rails afforded a complete pictorial Bible, so to speak, of the Buddhist religion, and as a procession path ran round between the rails the priests and people constantly had these sculptures before them. The inner rail was later and more elaborately sculptured than the outer one. The outer rail of the Amravati tope was built about the beginning of the fourth century, when Buddhism was in the plenitude of its power in India, and when the celebrated tooth relic, which up to that time had been enshrined at Pari, where the temple of Jugganath now stands, visited this place on its way to Ceylon, where it was shown to the Prince of Wales a short time ago. The inner rail was at least a century more modern. About the year 500 the tope

seemed to have been deserted, and apparently got buried; but about the year 1,200 a part of it was re-arranged for the purpose of receiving the tooth of Buddha, which was then brought back to India. In conclusion, Mr. Fergusson expressed a hope that the site of the tope at Amravati would be further explored, for although no doubt many of the sculptures (being of marble) had been burnt by the natives to make lime, many might yet remain. These sculptures were most interesting, not only architecturally, but on account of the insight they gave of Buddhism as it existed in the fourth century. There were no books so old as that in India, and these sculptures afforded a picture of Buddhism as it existed at that date. They showed what was unsuspected until they were discovered, viz., that there was a great deal of Tree and Serpent worship mixed up with the Buddhist religion at that period. Since the Amravati sculptures had been discovered, Gen. Cunningham had succeeded in bringing to light a rail dating as far back as 200 B.C. This rail was as rich in sculpture as the one at Amravati, and each bas-relief contained a title or inscription to say what it was. In the celebrated Sanchi tope the gateways were decorated with sculptures dating from the first century A.D. By comparing these different sculptures it was possible to read the history of Buddhism and of its varied changes and corruptions. It was a remarkable fact that although Buddhism was the most extensive religion in the world, and although it was still the religion of China and the surrounding countries, it had entirely disappeared from India, where there was now not a single Buddhist establishment of any sort. The inscriptions and sculptures of the time of Asoka, 250 B.C., showed that Buddhism possessed a singularly complete and pure body of doctrine at that time, which especially inculcated the duty of children to their parents, and kindness to animals. There was no figure of Buddha seen in the sculptures before the first century of the Christian era. On the outer rail of the central building at Amravati there were numberless instances of the serpent being worshipped, and a number of trees. On the Sanchi tope, tree-worship was represented eighty times. It was believed that Tree and Serpent worship was the fetish of those races who were originally converted to Buddhism; and that, while it did not make itself apparent when Buddhism was in its strength and power, it gradually made itself felt, and as Buddhism got weak and corrupt, native superstitions cropped up and became incorporated with it, until it lost its original distinctive character. The engrafting of these superstitions was probably the cause of its fall, for it was then no longer the religion of a great and intelligent people.

#### A VISIT TO THE NEW VICTORIA DOCK WORKS AT EAST HAM.

THE London and St. Katharine's Dock Company are at present engaged in the construction of a very great extension of the Victoria Dock, the intended enlargement of the existing water area of the dock being upwards of 90 acres, in addition to further quay and warehouse space, having a frontage of nearly four miles in length, and covering an area of about 120 acres, the aggregate area of the enlarged dock and quay space being about 200 acres in extent. The works are now in active progress, and the following particulars, obtained by a visit made last week to the spot, may be interesting. The site upon which the new dock and quays are being constructed forms a portion of the Plaistow Marshes at East Ham, and stretches in an eastward direction from the boundary of the present dock to the north-west bank of the Thames, where the dock will be entered from the river at a point between North Woolwich and Barking Reach, and about a mile and a half below the first-named place. It is bounded on the north by Beckton and the gas-works, and on the south by North Woolwich. The entire length of the land on which the dock and quays are being formed, from the junction with the existing dock to the river bank, is upwards of two miles, situated partly in the parishes of East and West Ham and Plaistow, in the county of Essex, and partly in that portion of North Woolwich which forms a part of the county of Kent. The company obtained an Act of Parliament last year for the works in question, and there has been no delay in their commencement. A large area of land, several acres in

extent, at Silvertown, and immediately adjoining the new dock site, presents a perfect village of workshops and huts, which have been erected by Messrs. Lucas & Aird, the contractors, for the purpose of carrying on the works. The excavations for the docks are being actively carried forward, upwards of 2,000 men being at work, and more than a score of locomotive engines, in addition to several excavating machines of American invention, which perform both the work of excavation and also that of conveying the excavated earthwork into the wagons drawn by the locomotives. The amount of excavation to be effected is something enormous, amounting to between 3,000,000 and 4,000,000 cubic yards, of which a large portion has already been executed, the excavated material forming an embankment on the north and south sides of the intended water area, and which will form the site for the quays, and the warehouses, and other buildings to be erected. In carrying on the excavations some interesting geological discoveries have already been made. From the surface to a depth of several feet the earthwork consists of peat, and amongst it a number of fallen trees, in an admirable state of preservation, have been found. Underneath the peat a bed of gravel has been met with, and below this gravel a stratum of concreted shells and clay has been come upon, intermingled with which stag-antlers and other animal remains have been found. The water area of the new dock will be 7,640 ft. in length, with a width at the water level of about 540 ft., covering, as already stated, upwards of 90 acres, and it will have a minimum depth of 27 ft. below Trinity high water. In addition to this area the entrance-lock from the river into the dock will be 800 ft. long and 80 ft. wide, with strong and powerful gates, which will be opened and closed by hydraulic power. The enlarged dock, when completed and joined with the present dock, will thus have two entrances, namely, the present entrance on the west side at Blackwall, and the new entrance now in course of construction at the east end near Barking Reach, there being a river frontage of three miles and a half in length between the east and west entrances respectively. Near the entrance-lock to the enlarged dock below Woolwich, the Ham Hall and Woolwich Manor-road intersects the land, which will form the lock, and this road is intended to be diverted in the direction of the river, with the construction of a swing-bridge across the lock, to be opened on vessels entering and leaving the dock. The facing of the dock walls will be of granite, several feet in thickness, and, in addition to the large quantity of stone which will be required it is estimated that not less than 30,000 tons of Portland cement will be used in the construction of the works. An important feature in the undertaking is the diversion and partial reconstruction of the North Woolwich branch of the Great Eastern Railway. This line runs immediately along the north-east side of the present Victoria Docks, intersecting a portion of the site upon which the enlarged dock is in course of construction, and in order to admit of the extended dock being connected with the existing dock, the North Woolwich line is to be diverted, and carried under the dock by a tunnel at a depth of 43 ft. below high-water mark. The entire area of the Victoria Docks and quay space, when the works now in progress are completed, will be upwards of 300 acres, with a circumference of more than five miles. It is calculated that the new works, the estimated cost of which is nearly 1,000,000*l.*, will take about three years to complete. They have been designed by Mr. A. M. Rendel, C.E., of Great George-street, Westminster, Mr. Anross being the resident engineer.

The magnitude of these works suggests a comparison between the area and extent of the London docks, and those on the banks of the Mersey, at Liverpool and Birkenhead. The estimated water area and quay space of the London and St. Katharine's Docks are about 120 acres; the East India Import and Export Docks, 32 acres; West India Import and Export Docks, 54 acres; South Dock, 24 acres; Timber Dock, 21 acres; Commercial Docks, 150 acres; Grand Surrey Docks, 75 acres; and Victoria Dock, 90 acres (exclusive of enlargement in progress); being a total of 566 acres. The water area and Quay space of the Liverpool docks are 259 acres, and that of the Birkenhead docks 166 acres, being a total of 425 acres on both sides of the Mersey, as compared with 566 acres, the present area of the docks on the Thames, exclusive of the Victoria dock extension in progress.

## DINNER OF THE ARCHITECTURAL ASSOCIATION.

THE annual dinner of this Association took place on Friday, the 7th inst., at the Holborn Restaurant, Mr. J. S. Quilter, president for the past year, in the chair.

In proposing "Prosperity to the Architectural Association," the chairman said the Association was established, now a good many years ago, to supply a want felt by the younger members of the profession, who needed help, but could find no one to help them. They, therefore, determined to help themselves, and the result was seen in the fact that the Association now numbered between 700 and 800 members, many of whom would, doubtless, in due time come to be the leading men of the profession. Adverting to the internal working of the Association, Mr. Quilter observed that, although a large proportion of its members took an active part in its management, its prosperity depended upon the sustained individual interest and support of each member. With the toast was coupled the name of Mr. H. C. Boyes, the president elect.

Mr. Boyes, in responding, said he looked upon the presence of Mr. Charles Barry, the president of the Institute, as a great honour to the Association, and as an earnest that the Institute and the Association would for the future work more in unison than had hitherto been the case. With reference to the proposals made a year ago or more for the amalgamation of the two societies, he (Mr. Boyes) felt bound to express his conviction that each society would get on better, and would be best promoting its own welfare and the advantage of the profession, by maintaining a complete independence. At the same time, it would be advantageous to the Association and the profession if in every way in which it was possible the Association would accept the advice and leadership of the Institute in all matters of professional importance, while at the same time maintaining its own system of government and working. He hoped that means would be devised for closer union between the two bodies on some such basis as this.

Mr. Roger Smith said the Association that evening received the unprecedented favour of the presence of the President of the Institute. He (Mr. Smith) fully agreed with Mr. Boyes as to each society maintaining its independence. It was, indeed, absolutely necessary that there should be two societies. The Association was essentially a students' society, whose members had as their primary object the meeting together for mutual instruction. Having had some opportunities of seeing the manner in which the classes of the Association were carried on, he could bear testimony to the excellent quality of the instruction given therein. Nor was the instruction given through the medium of the Association confined to matters of construction or design; its members had opportunities of learning the conduct of business, and of preparing themselves to meet the larger outside world. On the other hand, the Institute had to maintain the dignity of the profession, and in all matters pertaining thereto the Association would do well to follow its lead. He felt quite sure that when the Institute did anything the value of which could be perceived by the Association—and the Institute had done a great deal for the Association and for the junior members of the profession generally—the Association was generally sufficiently appreciative. The Institute had, however, done some things for the junior members of the profession which had not been so fully appreciated as could have been wished. For instance, the Institute established the Voluntary Architectural Examination; but he appealed to the members of the Association to say whether it had been adequately responded to. He was quite sure that in the hands of Mr. Barry the conduct of the Institute would continue to be favourable to the objects of the Association. Mr. Barry not only inherited a great name, but had himself produced works of no mean order. The pleasure with which his election as president of the Institute was received was unalloyed, and his presence at the dinner of the Association was a valuable augury as to the future. He (Mr. Smith) was not one of those who thought the time would come when both societies would amalgamate, but he did look forward to a time when they would be in closer union, and co-operate more together. He begged to propose "The Health of Mr. Barry."

Mr. Barry, who was very warmly received, said he had accepted the invitation to be present at the Association's dinner with especial pleasure.

He agreed in thinking that the Association and the Institute might be of great use to each other. Indeed, he looked upon the relationship between the Institute and the Association as that of a father and son, and he thought the Association might look up to the Institute as a son looked up to a father, who had gone before and borne the burden and heat of the day. On the other hand, the Institute might look upon the Association as a father would upon a son, as being more energetic, more enthusiastic, and one in whom he felt exceedingly proud. The Association was undoubtedly a great success, and had fully proved its *raison d'être*. At the same time, it was necessary to give dignity and impress to the exertions of the younger members of the profession, and that function could only be discharged by the Institute. It was quite probable that some efforts now being made within the body of the Institute would result in closer relations being established between the two bodies,—he would not say "affiliation," for he did not like the term, although he had used the simile of father and son. In conclusion, Mr. Barry thanked the company for the manner in which they had received the toast.

The remaining toasts were "The Retiring President" (proposed by Mr. W. H. White in a humorous speech, and responded to by Mr. Quilter), "The Past Vice-Presidents" (proposed by Mr. Phené Spiers, and spoken to by Mr. H. C. Boyes and Mr. H. L. Florence), "The Secretaries" (proposed by Mr. J. Douglass Mathews, and acknowledged by Messrs. S. Flint Clarkson, E. G. Hayes, and Aston Webb), "The Officers, Committeemen, and Presidents of Classes" (proposed by Mr. Riddett, and responded to by Mr. Pownall, librarian), &c.

The torrent of speechmaking was agreeably diversified with songs by Messrs. Dale, Riddett, Dear, Booth, and Hazlehurst, and Mr. Hennessey gave a recitation in a very able manner. Mr. Riddett's song, "The Architectural A B C," on the model of "A was an archer who shot at a frog," afforded much amusement.

## THE HEALTH OF SCHOOLS.

THE American Social Science Association have wisely taken in hand the investigation of this subject. In answer to a call issued from the Department, a public sectional meeting was held last year, at which were read completed and authorised reports from the committee of the Department upon two subjects: viz., "The Nervous System as injuriously affected by Schools," and "School Gymnastics." Brief communications, made in response to an urgent public demand for information, were also presented by the Department, concerning Defects of Sight, the Care of the Eyes, Medical Supervision of Schools, Systematic Inspection of Schools, Statistics of Sanitary State of Schools, Statistics of Rate of Growth of School Children, and School Architecture. The latter series of papers must be considered as provisory, rather than as containing the full expression of the Department's opinion. The secretary's report, explaining more fully the character of the work done, was read without debate. These papers have been printed, and are now before us.

The first session of the Department of Health was held in the Council Committee-room of the City Hall, the Rev. Charles H. Brigham, of Ann Arbor, presiding.

The writer of the paper on "The Nervous System as affected by School Life" (Dr. D. F. Lincoln) says,—“Our entire nation is believed to be suffering from certain widespread sources of nervous degeneracy. Our children are but a part of the nation, and must suffer along with the older members of the population. How shall we discriminate between what is national and what is simply scholastic? Give the child a constitution derived from excitable parents; a nutrition in infancy and childhood from which iron, lime, and the phosphates are mainly excluded; a diet in later childhood most abundant but most unwholesome, and based upon a national disregard of the true principles of cookery; a set of teeth which early fail to do their duty; a climate which, at its best, is extremely trying, killing either the aged by excessive cold, or the little children by tropical heat; an atmosphere so deprived of moisture, that the most casual observers speak of it, and men of science consider it as capable of modifying our constitutions most profoundly; add to these influences those of a moral nature, arising from the democratic constitution of our society, spurring on every

man, woman, and child to indulgence in personal ambition, the desire to rise in society, to grow rich, to get office, to get everything under the heavens; add a set of social habits, as applied to the life of young girls and boys, which is utterly atrocious, which robs so many of them of their childhood at the age of ten or twelve, and converts them to simpering, self-conscious flirts and men of the world, *rude*, and independent of control, a depraved and pitiable breed of 'little women and little men'; add finally the fact that we have now a population of six millions dwelling in cities of over one hundred thousand inhabitants, and exposed to those deteriorating influences which notoriously belong to great cities: give the child these conditions to grow up under, and can you wonder that he or she 'deviates from the type' (as it is fashionable to say) of the sturdy Anglo-Saxon pioneer who settled this continent?"

The Association is seeking in every direction information on the subject of school hygiene, and Dr. Barnard, a member of the committee, is now in London with that end in view.

## ROME.

IN the rooms of the Institute of Architects, Mr. John Henry Parker has just now given three lectures on "The Ruins of Ancient Rome," the proceeds being devoted to the Roman Exploration Fund. The Fund Society is now making an effort to raise 500*l.* for the purchase of a strip of land in Rome, extending from the Aventine Mount to the Colian, and containing one of the short *aggeres* of Servius Tullius spoken of in the first lecture. This *agger* crosses the valley which had the Porta Capena at its east end. Mr. Parker dug ten pits on that line in 1868, and in each found the *agger* face by the wall, and with the aqueduct carried upon it, but was obliged to have the pits filled up again, because the owner would not then sell the land. The plot has now changed hands, and the present proprietor is willing to sell it. It is deemed very desirable to secure it, since it demonstrates that each of the seven hills was a separate fortified village, until Servius Tullius enclosed all within the ring-fence of his own wall.

The second lecture was on "The Forum Romanum and the Via Sacra." Mr. Parker took an imaginary walk with his audience through the Forum Romanum and the Via Sacra, showing them all the objects of interest in succession as they passed along, beginning with the building now called the Municipio, because it contains the Municipal offices, but originally called the Capitolium, and which then also contained all the public offices, the Treasury, the Record Office, and the Senate-house, or *Curia*. The upper part had been of wood, and had been burned several times; once in the time of Sylla, when the body of Clodius was burned in the Senate-house, at the east end. The fine wall of travertine was part of the reconstruction of that period, but the west end of the building has not been rebuilt, and is mentioned by Varro as one of the earliest buildings in Rome. In the Forum itself he pointed out the various objects of interest—the temples, Basilica Julia, Cloaca Maxima, screen walls of white marble, with fine sculpture of the time of Trajan and Hadrian, &c. In the Via Sacra he showed that the temple of Antoninus and Faustina has just been cleared out to the lowest level, now making visible the steps recorded by Palladio as being there, but never visible before. The magnificent monolithic columns of cipollino marble, 46 ft. high, can now be seen for their whole height for the first time for centuries. The last lecture was devoted to the Colosseum. The great excavations made under the area or arena in 1874 and 1875 have entirely changed the ideas previously entertained respecting the history of this enormous structure. Instead of being entirely the work of the Flavian Emperors, as is commonly said, it is now clear that all they really built were the magnificent stone front and double corridors round a brick theatre previously existing. He evidently uses the words "theatre" and "amphitheatre" indifferently, and contrasts the insanity of this amphitheatre, holding 80,000 people, with the great theatre of Pompeii, which held only 40,000, though built fifty years later, when the city had been so much increased. On an inscription found in the amphitheatre it is called Theatrum only. In the old tufa walls are vertical grooves for lifts to send up the wild animals in cages on to the stage or arena above, through trap-doors, and behind the outer wall, nearly under the podium of the lower gallery, are the dens for the

wild beasts. The scenes must have been prepared below, and sent up in the central passage to the arena above. One of the scenes was a representation of the Tarpeian rock, and culprits were thrown from the top of it down to the bottom of the gulf. The rock was 50 ft. high, and the gulf 21 ft. deep, so that the culprits were cast down 71 ft., and this scene was witnessed by 80,000 people.

#### THE CORNWALL CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

The intended proceedings of the Congress have been sketched:—

*Monday, August 14th.*—Reception by the Earl of Mount Edgcumbe at Cotehele on the Tamar. Dinner at Sandoe's Royal Hotel, Bodmin, after which the company will adjourn to the Guildhall, where the Mayor and Corporation will receive the president and association, and the Earl of Mount Edgcumbe deliver the inaugural address.

*August 15th.*—Excursion to Tintagel, driving through Pancarrow grounds and camp; then on to Lanteglos Rectory, where the Rev. J. J. Wilkins will receive and entertain the members at luncheon, and conduct them over the church, &c. After, Tintagel Church and Castle, Camel-ford, will be visited if time will permit. Evening meeting at Bodmin.

*August 16th.*—Excursions to Restormel Castle, Lanhydrock, Lostwithiel, and St. Neot's Church, where Mr. Loftus Brook, F.S.A., will describe the painted windows and architectural features of the church. Evening meeting at Bodmin.

*August 17th.*—Excursion to Launceston. A *conversazione* will be held at the Bodmin Guildhall.

*August 18th.*—Excursion by train to Truro, to the Royal Institute of Cornwall. Reception by the president and members, and further excursion to several places of interest in the neighbourhood. Train to Penzance.

*August 19th.*—Excursions. Passing several monoliths in fields adjacent to the road, arrive at Boscawen Un—Stone Circle, thence to Sennen Church, and the Land's End. Luncheon, thence to Buryan Church, Rosemoadress Circle, Boleit monoliths, and underground structures. Evening meeting at the Guildhall, Penzance.

*August 21st.*—To Chywoone Castle and cromlech, Bosullo hut circles. Luncheon at Chywoone. Then proceed to St. Just Church and inscribed stone, Chapel Enny, cave dwellings and barrow. Evening meeting in Penzance Guildhall.

*August 22nd.*—Excursion to St. Michael's Mount, where they will be received by Sir John St. Aubyn, bart., M.P.; thence to Chysanster, hut village, Bosphorthennis Beehive-hut, Lanyon cromlech. Closing meeting of the Congress at Penzance.

#### SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

On the 29th ult., the Earl of Shaftesbury presided at the thirty-second annual meeting of the Society for Improving the Condition of the Labouring Classes, held at Willis's Rooms. Mr. Charles Payne read the report. The details were generally satisfactory, and suffered by no comparison with previous years or the efforts of kindred agencies. The Streatham-street (Bloomsbury) house, for fifty-four families, full; the George-street (Bloomsbury) house, for 104 single men, furnishes an average of 103. The Thanksgiving Model Buildings, Portpool-lane, Gray's-inn-road, for twenty families and sixty-four single women, with a public washhouse, return full occupation and increase of washings. The renovated lodging-house, 2, Charles-street, Drury-lane, for seventy-two single men, full; the renovated dwellings for 102 families, Wildcourt, Drury-lane, return full tenancy; the renovated dwellings for seventy-two families, Clark's-buildings, Broad-street, St. Giles's, return full; the renovated dwellings for eighty-seven families, and lodging-house for thirty-six single men, Tyn-dall's-buildings, Gray's-inn-road, show marked improvement and nearly full occupation; Great St. Andrew-street, St. Giles's, renovated houses for twelve families, full. The amount received by the Society from all sources during the year was 5,570*l.* 15*s.* 9*d.*, which, with a balance in hand at the beginning of the year of 4,331*l.* 5*s.* 5*d.*, made a total of 5,997*l.* 1*s.* 2*d.* The current

expenses of all the Society's houses (including repairs) amounted to 3,629*l.* 16*s.* 9*d.* This, with other specified outgoings, left a cash balance of 541*l.* 3*s.* 2*d.* The property belonging to the Society is estimated as worth 32,841*l.* 12*s.* 10*d.*, and the general liabilities amount to 22,613*l.* 15*s.*, leaving assets to the amount of 12,227*l.* 17*s.* 10*d.*

Thanks to the noble chairman having been voted by acclamation, on the motion of Sir Walter Stirling, seconded by the Rev. Mr. Allen, Lord Shaftesbury, in acknowledging the compliment, took occasion to apimadvert on what he deemed the mistakes of recent Acts of Parliament for improving the habitations of the poor. He complained that they fostered the perverse system of single rooms, and made no suitable provision for housing those who were being improved off the selected sites. The Limehouse, Whitechapel, and Birmingham schemes were all open to these objections, while the Glasgow experiment, on the other hand, seemed to have steered clear of these rocks. The Society's practice of adapting old buildings, rather than erecting new ones, he was convinced, was a sound one, and they would adhere to it until it was proved to be otherwise.

#### LAYING THE FOUNDATION-STONE OF A VICARAGE HOUSE AT KENNINGTON.

THE foundation-stone of the vicarage about to be erected in connexion with the Church of St. Agnes, Kennington Park, which has been built from the designs of Mr. George Gilbert Scott, jun., was laid on Saturday afternoon last by the Rev. Canon Gregory. The vicarage will be uniform in its architectural character with the church and schools, both of which are in the Early English style, built of red brick with stone dressings, and covered in with red tiles. The site of the vicarage-house is immediately in front of the west elevation of the church, and its principal frontage overlooks Kennington Park. In addition to a basement it contains two stories, with gables in the centre of the main elevation. The formation of the building is of a somewhat peculiar character. It extends the entire width of the west-end elevation of the church, and the ground-floor portion of the structure is divided in the centre by a passage 8 ft. in width, approached under a recessed Gothic archway, leading to the principal entrance into the church. The main body of the elevation is 21 ft. in height to the eaves, the two central gables being carried to a height of 36 ft., and a high-pitched roof rises 16 ft. above the main cornice. The study, an apartment 19 ft. by 13 ft., is on the north side of the archway, on the ground floor, and the drawing-room and dining-room on the south side. The rooms on the upper floor and gables will be devoted to bedrooms and servants' apartments. The kitchens and other domestic offices are in the basement. In consequence of the unusual shape of the site there is not a square apartment in the building, the study and the other rooms on the ground floor, as well as those in the story above, being oblique and irregular in form. Mr. G. G. Scott, jun., the architect of the church and schools, is also the architect of the vicarage, and the contractors are Messrs. Hill & Higgs, who have also just undertaken the contract for the completion of the church, the works at which have been suspended during the last few months, but have this week been actively resumed, and the edifice, which has an exceptionally lofty and striking interior, is to be completed and opened on the 1st of November.

#### ALL SAINTS', STOKE NEWINGTON.

A NEW church, situate in Aden-grove, Stoke Newington, and dedicated in honour of All Saints, has just been completed, and was consecrated by the Bishop of London on the 1st inst. The foundations, which, from the peculiarly treacherous nature of the soil, alone cost upwards of 1,100*l.*, were built about a year and a half since.

The style of architecture adopted by the architects has the English characteristics of the thirteenth century. In plan the church consists of nave and aisles, with narthex at the west end; chancel with vestries and organ on the north side; and a south aisle intended for use as a morning chapel. The building is constructed throughout of brick, with Bath stone dressings to the doorways, windows, water-tables of buttresses, gable crosses, copings, &c.; and red

Dumfries stone in the shafts of the clearstory and sedilia. The roof internally is barrel-vaulted, divided into panels, which are filled with monograms and ornamental decoration in distemper. Over the nave arcade, which is in five bays, is a range of detached columns, combining triforium and clearstory, and continued the entire length of the church, except the sanctuary at the east end.

The font, executed by Mr. R. L. Boulton, from a design by the architects, is of Painswick stone, and has been made sufficiently large to allow of immersion. The church will contain about 760 worshippers. The architects are Messrs. Francis T. Dollman and William T. Allen; and the contractors are Messrs. Hill, Higge, & Hill.

#### CHELTENHAM WINTER GARDEN AND RINK COMPETITION.

In reply to advertisements from the Winter Garden and Skating Rink Company, eight designs were sent in. After examination it was decided to award the first premium of 100*l.* to the plans with the motto, "Neils under arbyt," and the second of 50*l.* to those signed "Faite." The former proved to be those of Mr. Darby, of Cheltenham, and the latter those of Mr. E. L. Paraire, of Oxford-street. The skating area of the rink, as shown in the successful plan, is about 17,000 ft., or about 3,000 ft. larger than the new rink at the Crystal Palace. Mr. Darby's plans furnish only the accommodation asked for by the committee, comprising rinks, pavilion, and promenade, and winter garden, all on one floor. The building has a central dome and transept, which, with the wing on the southern side, are set apart for the winter garden and promenade, while the skating-rink occupies the lower or northern wing, which is, however, easily convertible into a promenade or meeting-room. Towards the Queen's Hotel are an entrance-drive, porch, and the necessary offices. This is the only design in which red brick is not prominent. The main work is of cream-coloured brick, with roof of iron and glass.

#### NEW BARRACKS, SURREY.

THE barracks at Stoughton are now approaching completion. To the left of the entrance-gate on entering the barrack inclosure stands the keep, a lofty, embattled, square structure, with towers at each of the angles. This, as well as the rest of the buildings, is constructed of red bricks, the walls being 3 ft. thick. The sills and heads of the windows are formed of artificial stone, and the red brick has been further relieved with Pether's ornamental white bricks, with nail-head mouldings. The keep has been fitted in the interior for the guard-room, &c. The top of the building has been fitted for a magazine, and here are also two tanks containing each about five thousand gallons of water, which is supplied from the Guildford Waterworks. Further to the left is a block of buildings about 190 ft. long, which will be used for offices. Still further to the left, and separated from the offices by a wide road which leads to the side gate, are buildings intended for wood stores and workshops, with a space for a coal-yard. Running parallel and to the northward is a block of soldiers' dwellings, in which four rooms are allotted to twenty-eight men. Adjoining the north wall is a drill-shed, the size of which is 130 ft. by 30 ft. Ranging along the east side are blocks of buildings forming the married soldiers' quarters, &c., there being accommodation for twenty-three married soldiers and school in one block, while a second block of buildings at the back of this contains room for twelve more, and has also a laundry under the same roof. In the north-east corner is situate the hospital, with an infectious ward isolated from the main building. The officers' quarters, which stand at the opposite side of the entrance-gate to the keep, consist of buildings of a more pretentious character. Suites of rooms are arranged for eight officers and two field officers. The building, like the rest, is of red brick, relieved with artificial stone and white bricks. It has entrance porch, supported by Aberdeen marble pillars with carved Portland stone caps and bases. Several features about the internal fittings call for remark. The floors of the buildings are formed not of boarding, but of cast slabs of artificial stone, formed of Portland cement, ashes, and other ingredients. Flights of stairs have been cast in a single piece with the same material. The flights, it may be

added, are erected without any artificial support. The mess-room has a costly white marble mantle-piece, inlaid with majolica tiles of a passion-flower pattern. The works have been carried out by workmen employed by Government, under the direct supervision of Lieut. Elliot Wood, R.E., assisted by Sergeant-Major Snelling. The barracks are expected to accommodate about 300 men. The barracks will also form the headquarters of the 2nd Surrey Militia when in training. It is worthy of notice that no fewer than four million bricks have been used in the works; these have been supplied by Mr. W. Wells, of Ryde's-hill. The Stoughton Estate, adjoining the barracks, has been purchased by various gentlemen, with a view to building. Mr. George Garnett has erected for Mr. W. Wells a large hotel, which was licensed in March last. He is at present erecting a mansion for Mr. Leake.

#### DISPUTE AS TO SUFFICIENCY OF BILLS OF QUANTITIES.

BULL AND SONS v. THE BOARD OF MANAGERS OF THE WEST LONDON SCHOOL DISTRICT.

VICE-CHANCELLOR Sir Richard Malins some short time ago decided this case, in which the plaintiffs were Messrs. Joseph Bull & Sons, of Southampton, who prayed that a contract entered into between them and the defendants, the Board of Management of the West London School District, in May, 1870, should be set aside, and that they should be entitled to receive from the Board, in lieu of the contract price, the fair value of the materials and works actually supplied and executed by them for the Board, together with interest thereon, at 5l. per cent. per annum from the time of the same being so supplied and executed.

It appeared that in February, 1870, the Board of Management advertised for tenders by builders for the erection of the then proposed schools at Ashford, in Middlesex. The plaintiffs answered the advertisement, and were supplied with bills of quantities for the intended works, and a form of tender. No specification had been then prepared, and the drawings from which the bills of quantities had been prepared were in the rough and in pencil. Some of these drawings, however, were seen by the plaintiffs at the office of the surveyors to the Board. In April, 1870, plaintiffs sent in a tender for the works, which was accepted by the Board, for a sum of £43,500l., according to the form supplied to the plaintiffs, and based on the bills of quantities furnished to them. In May, 1870, the contract was executed for the works, and plaintiffs were put in possession of the site. They had since completed the school buildings. Early in the progress of the works they were supplied with a specification, which was then signed by their firm. Questions, however, arose, and plaintiffs alleged that they subsequently discovered, as the fact was, that the specification specified work and materials to be done and supplied greatly in excess of the work and materials included in the bills of quantities, and in many instances of a more expensive quality, and not included at all in those bills; it was on the faith of the bills of quantities alone that they had undertaken the construction of the buildings. Plaintiffs did the works according to the more costly specification, and claimed to be paid, in addition to their tender under the contract, several thousands of pounds for their extra labour. The Board had offered to pay them for any extra work, according to the contract that might be fairly due to them; but the plaintiffs' case was that they were, under the circumstances, entitled to go behind the contract, so to say, in their estimate of what was to be paid to them, and they ultimately filed the bill in this suit, praying for the relief already mentioned. The surveyors of the Board, who had been, but were not now, partners, appeared at the hearing by separate counsel; and there was a question whether they should be allowed separate sets of costs.

The Vice-Chancellor, having given the counsel for the various parties time to consider on what terms (if any) they could settle the question in dispute, ultimately made an order, by consent, that the matters should be referred to some skilled person, as arbitrator, to determine what amount should, beyond the original tender, and outside the contract, be paid by the Board of Management to the plaintiffs in respect and satisfaction of their demands in the suit. His lordship allowed the surveyors one set of costs only.

#### CASES UNDER THE BUILDING ACT.

RAILWAY COMPANIES' EXEMPTIONS.

At Southwark, on the 30th of May, the London and South-Western Railway Company were summoned under the Metropolitan Building Act for having several houses in Agnes-street and Vine-street, adjoining their terminus in the Waterloo-road, in such a state as to be dangerous to the persons inhabiting them.

Mr. Napier, from the solicitor's department of the Metropolitan Board of Works, said that the houses in question were purchased by the railway company for the purpose of extending their station accommodation, for which they obtained a special Act of Parliament. The houses, however, had not been pulled down, but were inhabited by families who paid the rent to the company. Some of the houses, two stories high, were found to be from 8½ in. to 12½ in. out of the perpendicular at the rear. The railway company, through their counsel, Mr. Bullen, contended that their houses were not in a dangerous state, and, it being the private property of the company, the Metropolitan Board of Works had no right to interfere

with them. He also contended that the Act of Parliament protected them from such interference. A few days ago Mr. Partridge made an order upon the railway company to take down and otherwise secure the houses, as required by the Metropolitan Board of Works. Mr. Crombie, solicitor to the company, asked for and obtained a case.

#### "PICKING UP TOOLS."

At the Westminster Police-court, Messrs. Peto Brothers, of Pimlico, builders, were summoned before Mr. Woolrych, by Richard Lawless, a bricklayer, for the sum of 9d., alleged to be due in lieu of an hour's notice, for "picking up tools."

Complainant said he had been engaged in the service of the defendants, and was told at five o'clock that he would not be required any longer, and he was to fetch his money. He claimed 9d., one hour's money, for "picking up" his tools, but was not paid, and hence the summons.

Mr. Woolrych asked if it was the custom of the trade? Complainant said it was. He had as many tools to pick up and grind as others in the building trade.

The defendants' casier said they never paid this claim in any house in the trade. The only money paid was to joiners for grinding money, and that was two hours. Besides, they always gave notice to these men, and notice had been given to the complainant.

The foreman proved that at a little after two he gave the complainant and his mate notice that at five they would not be wanted, and all the man had to "pick up" was a pair of lines and a trowel. He was discharged because he did not do enough work.

Mr. Woolrych was of opinion that this claim was unfounded, and was not a custom of the trade. He was also of opinion that notice had been given by the foreman. The summons would be dismissed.

#### LABOUR AND TRADE UNIONISM IN THE UNITED STATES.

THE report of the British Consul at New York furnishes some important details respecting the condition of the labour market in the Eastern States of the Union, and also of the position of trade unionism. A comparison is made between the wages last year and those current fifteen years before. Last year there was great commercial depression, employment was difficult to obtain, labour was abundant and far in excess of the demand for it, and skilled workmen in thousands were working as labourers at labourers' pay. The quotations, therefore, are only given as nominal. The following items are of interest:—

	1860.	1875.
	Dol. c.	Dol. c.
Foreman of blacksmiths .....	2 50	4 00
Blacksmiths .....	1 50	2 65
Foreman in foundry .....	3 00	5 45
Foreman of brass-founders .....	3 00	3 20
Brass-founders .....	2 50	3 00
Foreman of pattern-makers .....	2 50	3 75
Pattern-makers .....	1 75	3 00
Wood-workers .....	1 60	2 18
Painters .....	1 40	2 30
Labourers .....	0 95	1 25
Ordinary workmen, U.S. armoury ..	2 00	3 00

Domestic servants receive now from \$2 50c. to \$4 50c. a week, the common domestic getting about \$3; cooks of skill, \$4 and \$5. In 1860 the rate was \$1 50c. to \$2, running rarely to \$2 50c. The general average of advance, which must, as the Consul enforces, be taken in connexion with the difficulty of getting employment on any terms, shows wages to be 52 per cent. higher than in 1860. In cotton work the increase was 50 per cent.; in woollen, 65 per cent.; in iron and wood, 64 per cent.

Turning to the subject of trade unionism, it appears that the unions number about one-third of their total strength in 1873. The building trades societies had suffered especially in loss of members, dwindling down from 10,000 to only 3,000. Altogether the unions in 1873 number 48,180 members; this year they contain less than 18,000, of which 3,000 are out of employment. Of workmen outside of trade organisations it is estimated that out of a probable 58,000 two-fifths were idle at the beginning of the year.

#### LONDON SCHOOL BOARD.

FOUR new schools have been publicly opened by Sir E. H. Currie, vice-chairman of the Board, within the last few weeks. The first at Wandsworth, on the road to Tooting, which consists of two separate buildings, one for infants, the other for boys and girls, with spacious playgrounds between. The accommodation is for 607 children, and the contract price was 5,473l. Mr. Pritchard, of Finsbury, was the builder; and Mr. Hall, clerk of works. The next was at Bermondsey, in the Neckinger-road, the accommodation being for 872 children. The infants are placed in a

one-storied building, that for the boys and girls being of three, the ground-floor forming a covered playground. The elevation is relieved with some good carving in red brick by M'Callloch. The cost of the site was 4,008l. 2s., and of the building 8,378l. 10s. 1d. The builder was Mr. Jerrard, of Lewisham, Mr. Carter being the clerk of works. The third school is situated in the Knapp-road; Bromley-by-Bow, near the central gasworks, and consists of a three-storied building, standing in ample playgrounds. The ground floor has one large schoolroom and two class-rooms for infants, the first and second floors, for boys and girls respectively, having two schools and two class-rooms with double staircases and exterior covered corridors to each. The number of children is 841, and the cost as follows:—Site, 2,620l. 13s. 10d.; building, 7,362l. 14s. 3d.; or equal to a total cost of 8l. 15s. 1d. per head. The contractor was Mr. Nightingale, of Vauxhall, and the clerk of works Mr. Tester. The other school is placed in Regent-street, Deptford, and of this we gave particulars lately. The accommodation is for 832 children, the cost of the site being 3,810l. 15s. 9d., and of the building, 7,516l. 9s. 4d. All of these schools are in the Queen Anne style of architecture, from the designs of the Board architect, Mr. E. R. Robson. At each of the three latter openings a musical performance was given by some of the Board teachers in the neighbourhood, under the direction of Mr. E. Sibson.

#### SCHOOL BOARD SCHOOLS.

Ashey (Isle of Wight).—The new school recently erected by Messrs. Jenkins, from the design of Mr. Francis Newman, for the School Board of the United district of Ryde, was formally opened on the 19th ult. by the Chairman of the Board (Mr. Thomas Dashwood, J.P.).

Peterhead.—The Peterhead Burgh School Board have accepted the following tenders for the work in connexion with the proposed new schools to be erected in King-street:—Carpenter work, Mr. David Fraser, Peterhead, 540l.; plasterer work, Mr. W. Stuart, Peterhead, 119l. 10s.; slater work, Mr. Wm. Simpson, Peterhead, 169l. 7s.; plumber work, Mr. John Ferguson, Peterhead, 110l. 8s. 4d.; mason work, Mr. Wm. Stuart, jun., Peterhead, 1,578l.; and blacksmith work, Mr. Wm. Fowler, 89l.

Hemel Hempstead.—At a meeting of the Hemel Hempstead School Board, on the 15th ult., Mr. Robinson (of the firm of Cave & Robinson, architects) attended the Board, and was informed that their plans for the schools for Piccott's End and Bury Mill End were accepted; and Mr. Ladds, architect, of Chapel-street, Bedford-row, London, was informed that his plan was accepted for the school at Boxmoor.

North Shields.—The new Eastern Board schools, situate in East Percy-street, North Shields, were opened by Alderman Green, the chairman of the Tynemouth School Board, on the 12th ult. The schools are divided into three departments, affording accommodation for 250 boys, 250 girls, and 280 infants,—total, 780 children, and in general arrangement of plan may be likened to the letter E, the northern arm of the letter being occupied by the girls, the southern arm by the boys, and the centre by the infants. There are two entrances,—one for boys, and the other for girls and infants. The style is Tudor, the walls being of sneaked stone rubble work, with ashlar dressings. The corridors are lined with white glazed brick, and floored with cement, and the whole of the woodwork is varnished. The various rooms are heated by open fires, Boyd's hygeistic grate being used to ensure the emission and circulation of heated, fresh, and pure air. Ventilation is provided for by the use of Hill & Hey's Excelsior syphon ventilators. The contract for the whole of the works was let to Mr. Joseph Elliot, of North Shields; the internal fittings have been supplied by Messrs. Colman & Glendinning, of Norwich; and the work has been carried out from the designs and under the superintendence of the architect to the Board, Mr. F. R. N. Haswell, of North Shields, Mr. Hartman being the clerk of works. The total cost is about 20,000l.

Northwram.—At a meeting of the Northwram School Board on the 13th ult., the chairman moved that Mr. R. Horsfall, architect, Halifax, be engaged to prepare plans and superintend the erection of Catherine Slack school and master's house. This was seconded by Mr. Bates. Mr. Wormald moved that Mr. William Henry Haworth

be the architect, and Mr. Sunderland proposed Messrs. Jackson & Fox; but as neither of these two amendments was seconded, the original motion was carried by three to one.

**Normanton.**—On the 27th ult. the foundation-stones of new schools at Woodhouse, for the Normanton School Board, were laid. The buildings have been designed by and will be erected under the supervision of Mr. William Watson, of Wakefield, and consist of three separate and distinct departments. They will accommodate 500 children, and are planned to form three sides of a square. The main front is towards the high road leading from Normanton to Wakefield, on which about the two principal entrances to the schools; on the one hand that for the girls and infants, and on the other that for the boys. The central, or infant school-room, is 54 ft. long by 26 ft. wide; the class-rooms are 26 ft. by 18 ft.; and running back are the boys' and girls' schools, 40 ft. by 20 ft. each; and classrooms, 20 ft. by 18 ft. The design is Romanesque. The school will be built with the best pressed red brick, and with Huddersfield hard-stone facings. The contract for the entire work has been taken by Mr. Henry Gibson, of Normanton, for 4,420*l*.

#### SCHOOL-BUILDING NEWS.

**Holdenby.**—A new national school was opened at Holdenby, on the 13th ult. It has been built from designs by Messrs. Carpenter, of London. It has a high-pitched roof, Gothic flat-headed windows, with tracery, two high chimneys, and a porch. The building is divided by partitions, so that part of it can be used as a class-room. It measures, without the porch, 42 ft. in length and 18 ft. in width. The roof inside is open-timbered, plastered between the rafters.

**Copford St. Mary.**—A new national school was opened at Copford St. Mary, near Salisbury, on the 15th ult. Accommodation is provided for about seventy children, the principal room being 22 ft. 10 in. by 17 ft., and the class-room 13 ft. by 17 ft. The material used is Westbury brick, and the roof is composed of dun-coloured Bridgwater tiles of a special pattern. The rooms are fitted with Penfold's warming and ventilating grates. Moule's earth-closet system has been introduced. The cost was between 500*l*. and 600*l*. The architect was Mr. E. H. Lingen Barker, of Hereford; and the builder, Mr. Gaisford, of Warminster.

**Dean (Bedfordshire).**—On the 8th ult., the new National School of this village was formally opened by Mr. J. W. Rawson-Ackroyd, who gave the site, and was the principal subscriber. The total cost, including fittings, will not be short of 580*l*. The school is of pale brick, with Bath stone dressings; the weatherings and set-offs being in brick of a deep red. The style is Tudor. The building consists of one large room, with a coved, paneled ceiling, the cornice and moulded ribs being stained of a darker colour than the panelling. This room will be divided by a rod and curtain, for school purposes, into two apartments. The architect is Mr. W. Lewis Baker, of Hargrave, Northants. The contractors were Messrs. Smith & Son, of Raunds. The ironwork of the benches and desks was supplied from the foundry of Messrs. L. Baker & Co., of Hargrave.

**Gloucester.**—The St. Catherine's Schools, Gloucester, were opened on the 15th ult. The building consists of a boys' and girls' room, 60 ft. by 20 ft., and an infants' room, 20 ft. by 18 ft., each approached by separate entrances, with porches; the porch of the infant school, however, has direct communication with both the rooms. They have lofty open-timbered roofs, with ample means of ventilation. The fireplaces are open, and the floors are boarded. The style and material of the schoolrooms harmonise with the church. Messrs. Medland & Son are the architects, and Mr. W. Fream, jun., the builder. As the site occupied a low position, and was liable to floods, it has been raised 4 ft. and 5 ft., the ground having been made level with the churchyard, and in parts planted with shrubs. There is ample space surrounding the schoolrooms, which will be available for playgrounds. The cost has been 1,000*l*., exclusive of land.

**Edgbaston.**—At a meeting of the shareholders of the Edgbaston High School for girls, the council reported that a house in Hagley-road had been purchased for the sum of 3,500*l*., and they had obtained possession of the premises. In order that the school might be opened at the earliest possible period the council had ventured to obtain from the architects, Messrs. Martin &

Chamberlain, a plan for adapting the premises for the purposes of the school. This plan had been approved, and a specification placed in the hands of three builders.

#### THE SYSTEMATIC MEASUREMENT OF THE HUMAN FIGURE.

SIR,—On the 4th inst. I went to the Loan Collection at South Kensington, to hear Mr. J. Bonomi explain the measuring instrument which he has invented, and which I have taken the liberty of calling the Anthropometer. I regretted there were not more persons present on the occasion. It is astonishing how slow the English are to perceive the importance of anything new.

There is no knowing what a judicious use of this anthropometer might reveal to us by yielding a series of measurements of the human frame. Its testimony might either confirm or upset the theory of progressive development. Let me explain. I was myself measured by it, but the measurement from tip to tip of my fingers, with outstretched arms, was not exactly the same as that of my stature. I did not exhibit that squareness insisted upon by Vitruvius by several eighths of an inch. But the width, measured in the same way across the arms of the two persons who passed under the anthropometer after me, far exceeded their stature. The following questions then occurred to me:—

1. Does an exceeding length of arm indicate a closer relationship to the Simian type?
2. Does the equality between the measurement of the outstretched arms and the stature indicate a balanced intellectual and physical constitution?
3. Does shortness of arm occur in over-brained persons?
4. Do the uncivilised races exhibit great length of arm?

You will, sir, I think, allow that these are important questions for determination, and Mr. Bonomi ought not merely to register the dimensions of the persons he measures, but their trades and professions, and, when eminent, also their names.

There is another service which the anthropometer could render us. It is high time that we should determine the normal proportions of an Englishman; and should the canon of Vitruvius not be verified by that determination, it should at once be cast aside. The eminent lecturer on anatomy at the Royal Academy, Dr. John Marshall, has it in his power to utilise the anthropometer, and to add by its means another to his scientific laurels.

METER.

#### CONTRIBUTIONS FOR ANNUAL OUTINGS.

SIR,—Your correspondent "A. S." has done wisely in calling attention to this subject. The company I represent employs about 300 men, and contributes to the fund for the annual holiday, or "bean feast," on the distinct understanding that the manufacturers, tradesmen, and others are not solicited for subscriptions. If the latter persons were to send on to the employers any applications received from workmen, the nuisance would soon cease.

J. M.

From enclosed circular, dated 22nd May, the editor of the *Builder* will see that the principal houses in the iron trade have already taken steps to check the further growth of a tax which is now demanded with confident assurance or humble solicitation, in either case most derogatory to the independence of English artisans. If employers would discourage these appeals, *employés* would soon find more agreeable and manly methods of raising funds for their annual outings.

M.

#### FAIR MEASURE.

SIR,—Will you kindly spare a small space in your valuable columns for the suggestion measure for measure, which I think has long since been lost sight of among the many supporters of your paper? It is well known that a builder's rod is 2*ft*. 2 in., nor is he spared if it be any less; but too often quantities delivered are much less than their proper measure. It has been the custom of lime merchants long since to deliver lime in sacks at the works of builders, and supposed to be for their convenience, and frequently seven sacks comprise the yard. Now, should these sacks be imperial ones, and contain 3*qt*. 8*lb*. of a yard, there would be no reason to doubt the lime merchant's consideration for the builder for so delivering the same; but when the sack measures 3*ft*. 6 in. by 4*in*. in girth, it is quite clear that

there are not 27 cubic feet in seven sacks, and the so-called yard is a mere delusion; and to prevent any further delusion I beg to offer this suggestion. Suppose the sack be 48 in. in girth and 3*ft*. 10 in. in height, seven will then hold the yard; or if a box, 1*ft*. 3 in. by 1*ft*. 3 in. and 2*ft*. 2 in. in height, be kept on the works, I see no difficulty in turning the sack's contents each time into the box, which will give one-eighth of a yard when filled, and spare the yard measure, which is frequently too bulky to find space for. It is quite certain there is no reason why 27 cubic feet should not be served to the yard, as well as 272*ft*. to the rod. If this suggestion be carried out, I feel persuaded that builders will not be "sacked" any longer, but look to their yards, and have measure for measure.

J. ROBSON.

#### THE SLADE PROFESSORSHIP, LONDON UNIVERSITY.

SIR,—I think you will be sorry to hear that they have elected M. Legros, a-Guscon, who cannot speak English, who has deserted his own country, whose painting and drawing are eccentric, and who has never shown that he is a master of the theory of art, or that he can lecture. The Slade Professorships are now filled by two amateurs and a foreigner. Could this be in any other country? In blinking the wrong of these things, art and the country are injured.

There is an affected jargon about art being cosmopolitan. Are not all the professions cosmopolitan in the same sense? But let the council of the same college propose to elect a French Professor of Medicine, and what would be the result? To be cosmopolitan in the true sense would be to elect a foreigner if there were no Englishman fit for the post. As you know, there was, at any rate, one thoroughly fitting candidate.

SHADE OF SLADE.

#### SURVEYORS AND LOCAL BOARDS.

SIR,—"One of the Craft, &c.," seems much put out because Local Boards and their surveyors do the duty assigned to them. At the same time he, I think, should have refrained from heaping abuse upon his brethren who are in office, and whom he appears to accuse of "borrowing" the efforts of his brain.

Much has been said lately about the deposit of plans, and more about the deposit of elevations.

I am aware that this latter entails a little more trouble on the part of the architects (but for which they can fairly charge their clients); the submitters of drawings, however, must be treated impartially, and in many cases it is quite necessary to study the elevations, in order to see that all the requirements of the Act and bye-laws have been complied with.

Were an experienced architect (as I take "One of the Craft" to be) employed on all occasions, this, perhaps, would not be necessary; but I can assure him that very odd arrangements are sometimes presented for approval by builders, amateurs, and others, which could not be understood without elevations.

As to drawings deposited being used, I doubt if there ever really was such a robbery perpetrated. In my district the tracings (on linen or paper) are examined numbered, submitted to Board, passed (or otherwise), and filed away, to be looked at again when notice is given of the completion of the structure, when, if all is right, I give a certificate that the house, &c., is fit for habitation, and the drawings are seen no more.

I have held an appointment under the Local Government Acts for ten years, and have also been in private practice for over twenty years, but I certainly have never been asked to work for members of the Board for "next to nothing," or for anything less than the usual professional charges. It is true mine is not a "rough district," still I expect the members of my Board are a fair sample. All Local Boards have bye-laws, which are printed, and may be had for the asking. If my friend will carefully comply with these, give the proper notices, and conform to the Public Health Act of 1875, he will have nothing to fear; and if, after having done so, he has his plans returned, he will be at liberty to proceed with the work, and no judge will decide against him.

MEM. M. E. & S. ASSOC.

#### SALT IN SAND.

SIR,—In reply to "I. O. U.'s" inquiry in your last week's issue,—"Shake up a portion of the sand with pure distilled water in a perfectly clean stoppered bottle, and allow the sand to settle; add a few drops of pure nitric acid, and then a few drops of solution of nitrate of silver. A white precipitate indicates a tolerable amount of salt. A faint cloudiness may be disregarded."

It is only fair for me to state that I have made the foregoing extract, as some of your readers will know, from Mr. G. G. Hoskins's book, "The Clerk of Works," just published.

U. O. I.

To detect salt in sand.—Taste it.

SETTLED.

**Hawick Archaeological Society.**—The June meeting of this society was held on the 27th ult., Mr. Robert Murray in the chair, when a paper was read by Mr. D. Watson, secretary, entitled "Notes of an Excursion to Hexham and the Roman Wall."

### THE ATKINSON ART GALLERY COMPETITION, SOUTHPORT.

COMPLAINTS reach us as to this matter. Mr. William Atkinson, of Southport, having offered to the town 6,000*l.* for the erection of a Library and Art Gallery, competition was invited, and a number of designs were sent in, the expenditure being limited to the sum named. The committee selected a design by Messrs. Waddington & Son, and on inquiry found that to carry it out would cost 8,000*l.* After some endeavours to reduce the cost, Mr. Atkinson again came forward and increased his gift to that amount. The contention, of course, is that by this mode of proceeding great injustice has been done to those competitors who restricted their expenditure to the sum originally named.

The style of the selected design is described as Composite Italian. A central composition, with coupled turrets, has been inserted to relieve the severe line of the parapets required to hide the gallery skylights. The pediment will contain an allegorical group of figures, with medalion of "Inspiration" over the door. The side and back elevations are finished in brick, relieved by stone dressings. The internal treatment generally is of a plain substantial character. The general reading-room is to the left, as needing most light. As it is intended as a lecture-room, it has been designed as large as circumstances would permit, averaging 63 ft. by 24 ft. It will be lighted from two sides, the darker portion being assisted from the area. The general library (inclusive of screened passage, over which is a book platform) is 44 ft. by 25 ft. 9 in. The reference library and reading-room is 53 ft. by 24 ft. The news-room is placed next the entrance, and is 39 ft. by 24 ft., having glazed screen, in order that the attendants at the general counter may see when their services are required.

The first-floor plan of the art gallery provides main picture gallery, 67 ft. 6 in. by 26 ft. 9 in., and two other galleries, each 44 ft. 9 in. by 25 ft. 9 in. Two galleries are also provided for sculpture casts, reliefs, &c., each 21 ft. 9 in. by 18 ft. All these rooms are lighted from the roof.

### CHURCH-BUILDING NEWS.

**Atherstone.**—The new church at Atherstone-on-Stour, near Stratford-on-Avon, has been opened by the Bishop of Worcester. The church replaces a dilapidated structure, which, although possessing some features of interest, had fallen into such decay that restoration was entirely out of the question, the area of the old structure being insufficient for the required accommodation. The new church, which is built as nearly as possible upon the site of the old one, consists of nave, chancel, with vestry on the north side, and porch, with tower and steeple over, at the south-west corner of the nave. The style is Decorated Gothic, harmonising with several features of the old church in the shape of windows and a door that have been retained and embodied in the new work. The walls are of Whimpstone stone, lined with brick and plastered internally. The dressings of the doors and windows, and the spire, tracery, and ornamental portions, are of Bath and Campden stone. The roof is open-timbered, the principals having curved ribs, and springing from moulded and carved corbels, the woodwork throughout being suitably stained. The roofs, which are plastered and coloured between the rafters, are covered with slating of a sea-green tint. The three bells from the old church have been re-hung in new framework in the new tower, at a cost of about 50*l.*, by Messrs. Barwell, of Birmingham. The work has been carried out under the architect's supervision by Messrs. Collins & Cullis, of Tewkesbury, at a cost of about 1,700*l.*, Mr. Holland acting throughout as their foreman. The architect was Mr. John Cotton, Birmingham.

**Tudely.**—The ancient church of Tudely has been re-opened, after being closed for a twelvemonth for restoration. The interior arrangements of the church have been entirely altered, the west gallery alone being retained. A new north aisle has been added, and, as well as the rest of the church, has been filled with open seats, to replace the old and unsightly pews. Four windows have been placed in the new aisle, filled with cathedral glass. The chancel arch has been cut back, and the chancel itself raised many feet. A new east window has been added, and four small stone windows have

been restored, which are shortly to be filled with glass. The restoration has been carried out under the superintendence of Mr. E. Medley Fulford, architect, Exeter.

**Uplyme.**—The parish church of Uplyme, which picturesquely stands upon a knoll at the entrance to the village, situated upon the borders of Devon and about a mile from Lyme Regis, having been restored, has been re-opened. The restoration has been confined to the interior. The church consists of nave, chancel, north aisle, and a chapel on the north of the chancel, known as the Ware Chapel, now used as an organ chamber. There is a porch on the south side of the nave. Formerly a gallery ran across the western end of the nave, blocking up the west window and door. This gallery has been removed, a new west window constructed, and the doorway thrown open. The gallery in the north aisle has not been removed, the accommodation not being sufficient without it. The nave has been filled with seats of pitch pine, with a flooring of tile. New choir stalls have been added in the chancel, but the old carved oak stalls remain. The screen dividing the chancel and nave has (says a local journal) been "lightened," and the stone hammer-dressed. Alterations have been made in the centre panel of the reredos, which has been "touched up." The bells—six in number—have been re-hung by Messrs. Hooker & Stokes, of Woodbury. The restoration has been carried out by Mr. Lockyer, of Uplyme, from plans prepared by Mr. Bather, architect, Shrewsbury. The cost is about 750*l.*

**St. Nicholas-at-Wade (Thanet).**—The work of restoring the parish church has been commenced. All the high pews have been removed, and are to be replaced by benches of the modern style. Some of the memorial stones in the nave, one with a brass of the Emptage family, dated 1642, are to remain. The tower of the church is 75 ft. high, and commands a fine land and sea view, and contains a fine peal of bells. The arches in the nave are of two different dates—the south Early Norman, the north Pointed, or Early English.

### Books Received.

*Sanitary Work in Villages and Country Districts.* By GEORGE WILSON, M.D. London: Churchill. 1876.

THIS is a reprint with enlargements of a paper by Dr. Wilson, read before the Society of Medical Officers of Health at the beginning of the year. If largely circulated amongst proprietors and occupants in the country, it would do good by suggesting what they should look for and seek to improve. Some of our valued friends, the doctors, seem (by the way) to be strangely ignorant, or to desire to seem ignorant, of the length of time during which existing sanitary evils have been pointed out by ourselves and others.

*A Manual of Design: compiled from the Writings and Addresses of Richard Redgrave, R.A., &c.* By GILBERT R. REDGRAVE. Chapman & Hall.

WHATEVER be the merits of this treatise or compilation, there can be no doubt that its title is incorrect. A manual of design, if words mean anything, implies a book teaching the art of designing; that is, of drawing, more or less, or giving examples of the leading schools of design and their chief characteristics. Designing is not talking, but drawing; but here is a book calling itself a manual of design, in which there is scarcely a stroke of drawing, only two or three stray illustrations of objects referred to. If it had been called "Thoughts on the Principles of Design," it would have been all right; as it is, the title is totally misleading.

We do not know that we have any fault, however, to find with the volume, further than professing to be what it is not. The editor tells us in the preface that it was proposed to him by the Lords of the Committee of Council on Education that a compilation from his father's numerous addresses on Art at South Kensington, chiefly on the occasion of presenting prizes and medals to the students, should form one of the South Kensington Handbooks; and no one will quarrel either with their lordships for wishing to put in a permanent form the criticism and advice of a thoughtful and cultivated man in regard to the matters specially entrusted to his oversight, or with Mr. Gilbert Redgrave for the

interest and satisfaction which he must naturally have felt in undertaking such a task on such recommendation. The book takes the form of chapters or lectures, as they might be termed, on principles of ornamental art, grouped under three heads: Six chapters on "The Principles of Ornament"; five on the application of these principles to manufactures; and two on "The Teaching of Ornament, and the education of the Designer." Of the opinions and principles laid down it may be said that they are nearly unimpeachable; it cannot be denied, however, that a great deal of this correct principle has been repeated and repeated, sometimes in nearly the same words, till it tends to become mere common-place. At the same time we must consider Mr. Redgrave's remarks in connexion with the date and the place at which they were spoken, when some things which now appear hackneyed may have seemed less so; and they are certainly more true in taste, better expressed, and far less pretentious, than some utterances which have come from the regions of South Kensington. Among remarks which are more out of the beaten track, we notice some observations in the first chapter on the pervading love and desire for ornament among the French lower and middle classes as by no means necessarily evincing the prevalence of a true taste; as proceeding rather from a desire to have in their own homes, if possible, something of the glitter and brilliancy of the places of public amusement, which in turn have taken their cue from, and try to vie with, the style of the palaces and other national buildings of Paris. The flat system of dwelling-houses, too, renders possible a greater degree of decorative treatment without proportionate expense to the tenant than is the case with us. But the art employed for this purpose is gaudy and brilliant rather than tasteful and homelike. It is the national taste, but a taste may be national without being pure or good. The chapter on "the source of style" contains a good deal that is suggestive; and in referring to Japanese art we are glad to see Mr. Redgrave had the courage (for it almost requires courage at present) to say that the absence of symmetry in this art, however piquant and interesting at first and as a novelty, is felt in the end to be an error in principle. In the following chapter, on "Elements of Style arising out of construction," the degree in which the faults of bad styles arise out of false construction is duly brought out; and the short chapter on "Fitness of Ornament to the Material to which it is applied" includes enough of important truth to make in itself a radical change in a large proportion of our ornamental manufacture, were the principles laid down here understood and carried out by the designers and manufacturers of decorative articles or materials.

In the chapter on the decoration of buildings, which comes under the second general division, we are fully in sympathy with what is said as to what Mr. Redgrave called "the *appliqué* work of the plasterer and decorator," part of the remarks on which we may quote as a specimen of the tone and style of the book:—

"A cornice so many inches in depth is found to be needed, and from a well-filled storehouse of such works in every style the plasterer, disregarding every other consideration, seeks the pattern which most readily complies with the necessary conditions of depth and projection. A centre flower for the ceiling, so many feet in diameter, is the next requisite, and the labours of the plasterer at an end, the decorator and the upholsterer step in, and the former touches up his work with colour, applied with no regard to relative fitness and appropriate gradation, while the upholsterer sends in the hangings and furniture suited to another country and another age. Scale seems to have been quite disregarded in the work of the plasterer, since the fruit and flowers, the birds and game of one part, are different in size from those of another part. The style, again, is mixed, one part being two centuries earlier than the other. There is, besides, far more pains taken with the exact rendering of 'fur or a feather,' than in perfecting the form of a moulding, or the shape of a panel. The architecture has, in the designer's mind, been subordinate to the ornament, and an ill-formed ellipse, or a coarse and unrefined moulding, appears of less importance to him than the mere imitation of the feathers of his birds or the fur of the animals of which his ornament consists. Carry this treatment a little further, and it will result in having the game, the fruit, the foliage, and the flowers not only modelled to the exactest imitation, but the skill of the painter called in to add to its naturalism, and the whole painted with the colours of nature: thus decoration will be thought perfect only when it competes with that strange group in relief which sometimes find framed to form a picture."

The remarks on the right principles of stained glass, in the same chapter, embody in a clear form what we have repeatedly urged here as to the necessity for a flat and conventionalised treatment, and the undesirability of a pictorial style in this art; and we call attention to some comments (p. 127) on the preference given, in much modern silver work, to mere glitter and finish

of the material rather than artistic design, "objects being loaded with toolings and burnishings, and matted and frosted, and every other expedient attempted, to show the silver rather than exhibit the art." This, undoubtedly, is true, and is what gives a great deal of vulgarity of manner and style to silversmith's work; but, on the other hand, it must not be forgotten that design carried out in any specially costly and beautiful material ought to exhibit its special beauties as a material, although not so prominently as to put the artistic interest in the background.

The two concluding chapters on education are thoroughly sound in principle, and contain some speciality in the way of putting things, and in the main we may see that for good taste and true critical sense this compilation from Mr. Redgrave's addresses is quite irreproachable as far as it goes.

#### VARIORUM.

THE current number of the *Popular Science Review* includes an interesting and valuable article on "Aquaria: their Present, Past, and Future," by Mr. W. A. Lloyd, of the Crystal Palace Aquarium. The writer says in conclusion:—"There are few things more trying to that great virtue,—patience,—than a large public aquarium, especially in its preparation, before it is ready for the reception of animals. It is to this lack of patience on the part of the directors of the Royal Westminster Aquarium, and to their absolute refusal to allow me to have proper engineering assistance during its construction, and to general mismanagement, that its present confused state, and its unsatisfactory condition in every way, is due. On this account I resigned my post of adviser to the society, as I found it useless to advise when advice was recklessly disregarded. Aquarium work, being hydraulic engineering on a small scale, is essentially the work of an engineer, and not that of an architect, unless he is also an engineer and a mathematician. There is for aquaria a great and important future, both as regards their influence on science, and as pecuniary speculations, if indeed, as I much doubt, there can be any real severing of these two interests. Success, however, must always be the result of a careful study and representation of what nature does, and of a strict avoidance of the recent heresies to which I have in this communication adverted."—"Old and New London" is getting on fast to an end. Here is a sentence from the current number as to *Hyde Park*:—"In remote ages the tract of land now enclosed as Hyde Park was bounded on the north by the Via Trinobantina,—one of the great military roads,—now identified with Oxford-street and the Uxbridge-road. On the east ran another Roman way, the old Watling-street which crossed the other at Tyburn, and sloped off to the south-east, in the direction of Park-lane. On the west and south its limits were not equally well defined. Under the Saxon kings, it would appear that the Manor of Eia, of which it formed a part, belonged to the Master of the Horse; and Mr. Larwood most appropriately observes, 'Could the shade of that old Saxon revisit the land which he held when in the flesh, no doubt he would be satisfied, for nowhere in the world could he now find finer horses and better riders than those we daily see in Rotten-row.'"—Looking through the current No. of Cassell's "Technical Educator" (amongst a pile of other useful serials from that firm), we find a reminder as to the Menai Suspension Bridge:—"The most stupendous undertaking in which Telford was engaged, and perhaps the most imperishable monument of engineering fame, is the Menai Suspension Bridge over the Menai Strait, one of the most magnificent works in the world. It was full time that some such means of crossing the strait were constructed, as between the years 1664 and 1842, no less than 180 persons had been drowned at the Ferry of Moel-y-don. So early as 1810 more than one design for a bridge had been designed, and rejected as impracticable; and it was not until the completion of the great Holyhead road by Telford that he saw the absolute necessity of devising some safe means of crossing. He selected a spot called Ynys-y-moch, where the bold and rocky shores on each side gave opportunities for a lofty roadway, which was carried 100 ft. above high-water mark, so as to allow vessels of the largest size to pass underneath. It is difficult for the eye to estimate the colossal proportions of this wonderful bridge in the air, and it is only after attentively observing the vehicles and human

figures crossing it, and looking in the distance through the high trellis-work of iron like flies in the web of a spider, or sparrows flitting in a net, that it is fully appreciated. A sensible vibration is produced by the passage of a vehicle, or even a man and horse; but it has withstood the greatest storms of wind almost without injury. The weight which the chains support is calculated at 489 tons, and that which they are capable of supporting at 2,016 tons, leaving the available power of 1,520 tons to resist the unusual strain. The total cost of its construction was 120,000*l.* The masonry is of hard limestone from Penmaen, in Anglesea."

#### Miscellaneous.

**Importance of Architects.**—There is a story on record of an architect repudiating any connexion with the building fraternity, in the case of the late eminent Mr. Alexander, architect of Rochester Bridge and other fine buildings in Kent. He was under cross-examination in a special jury cause at Maidstone, by Sergeant—afterwards Baron—Garrow, who wished to detract from the weight of his testimony, and after asking him what was his name, proceeded:—"You are a builder, I believe?"—"No, sir, I am not a builder. I am an architect."—"They are much the same, I suppose?"—"I beg your pardon, sir, I cannot admit that; I consider them to be totally different."—"Oh, indeed; perhaps you will state where this great difference consists."—"An architect, sir, prepares the plans, conceives the design, draws out the specifications—in short, supplies the mind; the builder is merely the bricklayer or the carpenter—the builder, in fact, is the machine; the architect the power that puts the machine together, and sets it going."—"Oh, very well, Mr. Architect, that will do. And now, after your very ingenious distinction without a difference, perhaps you can inform the Court who was the architect of the Tower of Babel?" And now mark the reply, which for promptness and wit is not to be rivalled in the whole history of rejoinder:—"There was no architect, sir,—and hence the confusion!"—*Extract from a Letter by the Rev. J. Jessopp.*

**A Legal Refinement.**—According to the decision of Mr. T. K. Kingdon, the judge of the Bristol Tolzey Court, machinery used in wood-working is not mill-gearing within the meaning of the Factory Acts. The case of *Wilson v. Brown* was brought under the Factory Acts of 1844 and 1856. The plaintiff, Edwin Eland Wilson, brought the action by his next friend, Charles Henry Wilson (he being legally an infant), against Archibald Douglas Brown. The defendant carried on the business of a cabinet-maker, in Bread-street, Bristol, having about sixty persons in his employ, and the plaintiff was apprenticed to him. The action was brought to recover damages in consequence of an accident which occurred June 16, 1875, whereby the plaintiff's arm was so injured that it had to be amputated. Damages were laid at 200*l.*, but it was agreed between the parties that in case a verdict was given for the plaintiff, the amount of damage should be 100*l.* For the defendant it was submitted that the plaintiff was not entitled to recover in the action, inasmuch as the machinery was not, in any sense of the term, mill-gearing within the meaning of the Act. The judge thought this contention was right: that the machinery in question was not mill-gearing within the meaning of the section; and that, if it were mill-gearing, there could be no exemption, and that it must be fenced. The plaintiff was accordingly nonsuited.

**The Devonshire Baths, Eastbourne.**—The directors of these baths, with a view to giving even better accommodation to the public, have recently carried out extensive alterations and enlargements. The most important alteration consists of the work done at the swimming-baths. The gentlemen's bath, which, as first constructed, was of a total length of 60 ft., and a width of 30 ft., has been increased in length to 155 ft. The ladies' bath has been increased from 57 ft. to 120 ft., with a width of 24 ft., these lengths being not from wall to wall, but the surface of the water, and to each are added two shower-baths of fresh water, a life-buoy, and other apparatus necessary for saving life. The whole of the works have been carried out by Messrs. Wallis & Co., Mr. G. A. Wallis being the engineer in charge.

**Curious Wages Case.**—On the 24th ult., at the County Petty Sessions, Warwick, Samuel Borton, labourer, of the Commercial Buildings, sued Mr. G. F. Smith, builder and contractor, Milverton, for 1*l.* 8*s.* 9*d.*, wages due. Mr. R. C. Heath defended. The defendant is the contractor for the Hasleley Waterworks under the Town Council, and the complainant was working for him up to the 17th ult., when he went to receive his money along with the other men. The wages are paid through a small window, and the workmen are all called up, not by their names, but by numbers. The complainant's number was "12," and his statement was to the effect that he heard 11 called up, and 13, but that 12 was missed. After all the men had been paid he went to the window and stated that he had not received his wages, but defendant referred to the pay-sheet, and finding that 12 was crossed off he refused to pay again, on the ground that complainant ought to have presented himself at the window so that it could have been found out who had his money. Defendant affirmed that the money was paid, and said that the number 12 was called out. The Bench dismissed the case.

**The Warwick Military Depot.**—The new barracks and other buildings which are to form the new Military Depot at Warwick are nearing completion. They are situated in the parish of Budbrooke, about two miles from Warwick. The site was purchased from Lord Dormer by the Government, and on the 3rd of August, 1874, the works were commenced by Messrs. J. & T. Davis, of Banbury, whose contract amounted to above 40,000*l.* The various buildings have been erected on the four sides of an open space of ground, which will form the parade when laid out. Already the soldiers' quarters, the canteen, drill-shed, married soldiers' quarters, hospital, infection ward, officers' quarters, quartermaster's quarters, and the guard-room have been put up, and the armoury is up to the first-floor level. The structures are all of red brick, with bands of blue brick, and dressings of stone. The only attempt at ornamentation is in the officers' quarters, the material of which is the same as that used in the other edifices. The barracks will accommodate about 300 men, and it is expected that they will be so far finished as to admit of their being occupied by the end of next month.

**An Unhealthy Area.**—According to the *Staffordshire Advertiser*, there is "ample scope and verge enough" for the application of the Artisans' Dwellings Act to Netherton. That that is "an unhealthy area" of the borough of Dudley, inspectors, Government and local, abundantly testify. The Local Government Board have called upon the town council, as the sanitary authority, to remove the dwellings *en masse* as unfit for human habitation. The local inspectors say it is impossible to purify them, medical men testify that good health cannot be enjoyed in such bad places, and the ministers of morality and religion declare that mental and moral degradation must needs go hand-in-hand with such material ruin. But the soil is rich in coal and ironstone, and the Earl of Dudley, the owner, has informed the town council that he does not feel called upon to surrender the right to work the mines. As building new dwellings while the mines are reserved appears to be out of the question, the town council have sought the advice of the Local Government Board.

**Sewage Experiments at Aston.**—Mr. D. A. Wilks has patented a method of treating sewage by which he proposes to filter a disinfectant composition, which turns the solid faeces into a manure, and decomposes the liquid matter for after-treatment. This manure is stated to be of considerable commercial value to farmers. On the 25th ult. Mr. Bloor, chairman of the Aston Local Board, spent several hours in investigating the chemical and mechanical arrangements of the system. The experiments which Mr. Wilks has conducted are said, from a sanitary and chemical point of view, to promise good results, but the *Birmingham Gazette* would like to see them fairly tested in the presence of impartial authorities on the subject.

**The Drainage of Hawick.**—The Hawick Town Council have received a report from Messrs. J. & A. Leslie, engineers, and Mr. J. Falconer King, city analyst, Edinburgh, on the drainage of the burgh. The estimated cost of the purifying works is 4,000*l.*, and from 2*l.* 10*s.* to 3*l.* would be required per day for working expenses.

**Working Boys' Home, Hereford.**—The memorial stone of a new building in Bath-street, Hereford, which is intended to be the Herefordshire and District Working Boys' Home, has been laid by Mrs. Atlay, wife of the bishop of the diocese. The premises occupy a site near the Model Farm. The principal entrance will be approached from Bath-street through a framed timber porch into the hall, on the left of which will be the visitors' room, and the waiting or committee room, and on the right will be the master and matron's sitting-room, the master's office and store-room being adjacent thereto. In the rear there will be a spacious school and dining-room, capable of being divided off into a class-room by a patent movable partition. The cost will be about 1,650*l.*, and it is expected that the work will be completed by the close of the present year. The contractor is Mr. Thomas Lewis, of Hereford, builder; and the honorary architects are Messrs. Haddon, Brothers, of Hereford.

**To Write upon Glass.**—M. Terguem has communicated to the *Société industrielle du Nord*, of France, a process which permits of very permanent writing being done on glass with ordinary or India ink. For this purpose, the surface of the glass is gently heated over an alcohol lamp, or Bunsen gas-flame, until the vapour of water ceases to condense upon it, when it is to be coated with a varnish made after the following recipe. The materials are, 80 grammes of alcohol (90°), 4 grammes of mastic, and 8 grammes of sandarac. This mixture will be dissolved by heating it over the water-bath in a flask well stoppered and tied. This varnish is very hard, and ought to be completely transparent; if the surface over which it is poured is cold, it becomes opaque. The glass surface coated in the manner described, may now receive any design or sketch drawn upon it with ordinary ink or India ink. It is then covered with a film of any non-alcoholic varnish.

**Memorial Font, Wath-upon-Dearne.**—A new font has recently been erected in the parish church of Wath-upon-Dearne, by Mr. W. S. Cadman, of Millfield, York, as a tribute of affection and respect to the memory of his father, Mr. Wm. Cadman. The new font is executed in Houghton stone, and is designed to harmonise with the choir fittings and reredos. It is hexagonal in form, and, with the base upon which it stands, is 5 ft. in height. Each face is panelled with traceried work and carved label mould, and has buttresses and crockets supporting each corner. The cover is 5 ft. high, and has a carved and traceried spire. The stonework is from the workshop of Mr. William Earp, of Lambeth and Manchester, and the oak cover was made by Mr. William Tomlinson, of Leeds. The whole of the work has been designed and carried out under the superintendence of Messrs. Hadfield & Sons, architects, Sheffield.

**Church Decoration at Banbury.**—The work of decorating the chancel of the parish church, Banbury, is now actively going on. The designer is Mr. Blomfield, the architect, who has been entrusted with the whole of the alterations which have been made in the chancel. The three wall panels will contain the twelve apostles in groups of four in each panel, the figures being more than life-size. The dome will be richly decorated, the subject being taken from the 11th chapter of Revelations. The pilasters between the panels, &c., are being richly ornamented in gold and colours. The work has been entrusted to Messrs. Heaton, Butler, & Bayne, by whom the other decorations of the church and the painted windows have been executed.

**University Buildings for Edinburgh.**—A deputation from Scotland has waited upon the Prime Minister to urge that grants should be made out of the Imperial Exchequer to extend and improve the buildings of the University of Edinburgh. They presented a memorial showing that this was very much wanted; that Scotland had already subscribed 81,000*l.* out of a total of 100,000*l.* required; that the University conferred benefits upon the whole country, and on that ground they asked for Imperial funds. Mr. Disraeli said the subject should occupy the thorough attention of Her Majesty's Government.

**Health of Hastings.**—The Medical Officer of Health reports that the death-rate in Hastings for the past quarter amounts to 16·4 per thousand, against 17·7 in the quarter ending March. This cannot be considered other than satisfactory.

**The Artisans' Dwellings Act and Wolverhampton.**—The Artisans' Dwellings and Streets Improvement Committee of the Wolverhampton Town Council submitted a report on Monday last, the 10th inst., stating that they find that the area of the town reported on by the Medical Officer of Health on the 13th of March is an unhealthy area, and that the Corporation have a sufficiency of resources for carrying out a scheme proposed under the Artisans' Dwellings Act by the committee for rendering the area healthy. Notice has been given of a resolution adopting the draft scheme, and empowering the committee and town clerk for obtaining its confirmation by the Local Government Board, a provisional order, and a confirmation of the order by Act of Parliament.

**Building Operations in Warrington.**—We learn from a local paper that, notwithstanding the dulness of trade in most parts of the country, and the corresponding distress caused by depression, the activity of trade in Warrington is as great as ever, and the building operations of the town are especially noticeable. At the last meeting of the Town Council a matter calling for special remark was the fact that during the past month plans for the erection of no less than 240 dwelling-houses had been passed by the Council, and this remarkable state of activity has existed for some time past. Then there are a number of large buildings on hand, some of which are nearly completed, and others are being just commenced.

**River Pollution in the Potteries.**—Some twelve months ago the Duke of Sutherland announced his intention to secure as far as possible the purity of the river at Trentham by compelling the towns above that spot to abstain from polluting the Trent and its tributaries. Longton came to terms with his Grace at an early stage, but the authorities of Tunstall and Newcastle have been brought by the Duke's solicitors into intimate if not agreeable relations with the High Court of Justice, and now the Burslem Board of Health is threatened with an injunction. The Sanitary Committee of the Board have been considering for some time past the best mode of dealing with the sewage.

**Co-operative Stores at Spennymoor.**—New co-operative stores have just been built at Spennymoor, from plans prepared by Mr. W. V. Thompson, architect, of Bishop Auckland. Contracts for the building were let in the spring of last year, the contractors being, for mason and brickwork, Mr. Thos. Winstone, Spennymoor; joiner work, Mr. Thompson, Bishop Auckland; painting, glazing, and plumbing, Mr. Almond, Durham; slating, Mr. Mascal, Bishop Auckland; heating, Messrs. Walker & Eimley, Newcastle. The premises consist of shops, warehouses, stables, and house for the manager.

**A Chinese Magazine.**—Messrs. Bourne & Co. have sent us a copy of the *Chinese Industrial Magazine*, published monthly in Shanghai, and which circulates widely throughout China. Its object is to impart to the Chinese information regarding the arts, sciences, and production of European nations, and, partly from the example of Japan and partly from other causes, the Chinese have now become sensible of the value of such information both to their individual profit and national welfare. The cuts which illustrate the magazine are obviously English, and have a trade bearing.

**Civil and Mechanical Engineers' Society.** The annual meeting of this society has been held. The names of gentlemen elected to the various offices during the ensuing session are as follow, viz.:—President, Mr. Robert M. Bancroft, C.E. Vice-presidents: Messrs. Henry Valpy and Charles Henry Driver. Council: Messrs. Percy Burrell, F. E. Cooper, Henry Ellis Hill, Christopher Kingsford, Alex. Payne, Edward Perrett, Robert E. Pownall, and Robt. Harkness Twigg. Hon. Treasurer: Mr. William C. Street. Auditors: Messrs. Joseph L. Anderson and James Hutt. Secretary: Mr. W. Williams Thomas.

**Means of Exit from Factories on Fire.**—The recent terrible calamity at Ayr, by which twenty-nine millworkers were burnt to death, is attracting much attention in the North, and Lord De la Motte, of Glasgow, has directed that an inquiry shall be at once made regarding the means of exit provided in all the factories in and around Glasgow. At the last ordinary meeting of his Court, Mr. King expressed the hope that the millowners would generously assist him, and regard the inquiry as "neither inquisitorial nor purposeless."

**New (R. C.) Seminary, Westminster.**—Cardinal Manning laid the first stone of the new seminary for the diocese of Westminster, on the 7th. The building is to be a quadrangular arrangement, of large dimensions. Red brick is to be used for the facing, with Chilmark stone dressings, and tiles for the roof. The amount of the first contract is 17,000*l.* Mr. Bentley is the architect.

**The Liverpool Water Supply.**—At the special meeting of the Liverpool Town Council on the 26th ult., it was resolved that in view of the imperative necessity of an ample supply of water for sanitary and trade purposes, the water committee should in future base their calculations on a supply of thirty gallons per head per day upon the estimated population. The calculations have hitherto been on the basis of twenty-five gallons.

**The Persons Employed by Messrs. J. W. Bird & Co., the Emporium Marble Works, Euston-road,** supped together on Wednesday evening, the 5th inst., on the occasion of the fiftieth anniversary of the birthday of the principal, Capt. J. W. Bird, 1st S.A.V.B., when the opportunity was taken of presenting him with a testimonial, subscribed for by the permanent staff, with a congratulatory address.

**The Horsham Waterworks.**—The Horsham Local Board have resolved to accept the offer of the water company to sell the whole of their works, materials, &c., for 7,000*l.*, subject to the approval of the Local Government Board.

**Abingdon.**—Mr. Charles Claridge, builder and contractor, of Banbury, is engaged in erecting extensive malting premises in this town, for Mr. Walter J. Powell, from designs by Mr. W. Jenkins, architect, Birmingham.

## TENDERS

For stabling and garden-walls, at Wandsworth, for Mr. Robert Jones. Messrs. A. & C. Harston, architects:—

Bangs .....	£1,645 0 0
Ennor .....	1,632 0 0
Baker & Son .....	1,591 0 0
Tilley .....	1,467 0 0
Adamson (accepted) .....	1,345 0 0
Hill, Higge, & Hill .....	1,340 0 0

For shop and three houses, in Wilford-road, Nottingham. Mr. T. G. Alderson, architect:—

Johnson .....	£208 0 0
Middleton .....	890 0 0
Mason .....	812 0 0
Farnall .....	800 0 0
Sharpe .....	726 0 0

For Congregational School Chapel, Woodley, near Stockport. Mr. W. Ranger, architect:—

Warren .....	£320 0 0
Hague (accepted) .....	464 0 0

For forming a new road and sewer, at Balham, for Mr. S. W. Causton. Messrs. E. Habershon & Brock, architects:—

Loat .....	£698 0 0
Bloomfield .....	616 0 0
Mattock, Brothers .....	568 0 0
Neal .....	336 0 0

For a pair of semi-detached residences, at Sudbury, Middlesex. Messrs. E. Habershon & Brock, architects:—

Mattock, Brothers (accepted) .....	
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For painting, &c., at the Poplar and Stepney Sick Asylum, Bromley, Middlesex. Messrs. A. & C. Harston, architects:—

Cocks .....	£554 0 0
Derby .....	430 0 0
Selby .....	369 17 6
Vigor (accepted) .....	270 0 0

For business premises and residence, at Haverfordwest, Pembrokeshire. Mr. Gaskell, architect. Quantities supplied by the architect:—

Lawton .....	£10,000 0 0
Stephens & Bastow .....	9,110 0 0
Jones & Co. .....	8,732 0 0
Thomas, Watkins, & Jenkins .....	8,793 0 0

For rebuilding a warehouse, Goldsmith-street, Messrs. Ford & Hesketh, architects:—

Merritt & Ashby .....	£2,244 0 0
Downs & Co. .....	2,160 0 0
Mark .....	2,166 0 0
Kilby .....	2,135 0 0
Hobson .....	2,124 0 0
Newman & Mann .....	2,123 0 0
Browne & Robinson .....	2,097 0 0
Brass .....	2,097 0 0
Crabb .....	2,069 0 0
Lawrence .....	1,909 0 0
Boyce (accepted) .....	1,912 0 0

For an additional story to a warehouse, in Wood-street, Messrs. Ford & Hesketh, architects:—

Downs & Co. .....	£726 0 0
Newman & Mann .....	711 0 0
Brass .....	711 0 0
Merritt & Ashby .....	687 0 0
Browne & Robinson .....	682 0 0
Mark .....	676 0 0
Lawrence .....	636 0 0
Hobson .....	636 0 0
Kilby .....	645 0 0
Boyce .....	622 0 0
Crabb .....	613 0 0

For public offices, Tipton, Staffordshire, for the Tipton Local Board of Health. Messrs. Charles Round and Henry Beddoe, joint architects. Quantities supplied:—  
 Millard ..... £3,250 0 0  
 Nelson ..... 2,080 0 0  
 Round & Bagnall ..... 2,890 0 0  
 Mallin ..... 2,878 5 0  
 Stockton & Son (accepted) ..... 2,657 0 0

For a cottage and offices, at Tipton-green Furnaces, for Mr. W. Roberts. Messrs. Round & Beddoe, architects. Quantities supplied:—  
 Nelson ..... £1,041 0 0  
 Holland & Sons ..... 1,021 0 0  
 Adams ..... 894 0 0  
 Tranter ..... 865 0 0  
 Stockton & Son ..... 863 0 0  
 Grosvenor & Sons (accepted) ..... 748 0 0

For a residence and outbuildings, Dudley-road, Tipton, Staffordshire, for Mr. W. Lowe, Messrs. Round & Beddoe, architects. Quantities supplied:—  
 Burditt ..... £3,167 0 0  
 Adams ..... 2,359 0 0  
 Millward ..... 2,305 10 0  
 Stockton & Son ..... 2,268 0 0  
 Bagnall & Round ..... 2,104 0 0

For alterations and building shop additions to Nos. 152 and 154, Salmon-lane, Limehouse, for Mr. Bebrouth. Messrs. A. & C. Harston, architects:—  
 Abrahams ..... £302 0 0  
 Bulford ..... 364 0 0  
 Johnson ..... 336 0 0  
 Harris & Wardrop (accepted) ..... 318 0 0

For addition to No. 181, Salmon-lane, Limehouse, for Mr. Steil. Messrs. A. & C. Harston, architects:—  
 Johnson ..... £169 0 0

For model building, to be erected at Hampstead, for the Wells Charity Trustees. Mr. Henry S. Legg, architect:—

Nightingale ..... £5,595 0 0  
 Brass ..... 5,301 0 0  
 Sewell ..... 5,262 0 0  
 Manley & Rogers ..... 5,239 0 0  
 Browne & Robinson ..... 5,193 0 0  
 Burford ..... 5,132 0 0  
 Allen & Son (accepted) ..... 4,630 0 0

For Board schools and teacher's residence, at Michelmersh, Hampshire. Mr. W. H. Mitchell, architect:—  
 Stevens ..... £970 0 0  
 Chapman ..... 968 0 0  
 Rowland ..... 938 0 0  
 Crook (accepted) ..... 929 0 0

For alterations, &c., to Clare Lodge, Clapham Park, for Mr. C. Alcock. Mr. W. Newton Dunn, architect:—  
 Clemence ..... £750 0 0  
 M'Lachlan & Son ..... 695 0 0  
 Smith (accepted) ..... 561 0 0

For new factory, Nag's Head-court, Golden-lane. Mr. Finch Hill, architect. Quantities supplied:—  
 Thoms ..... £1,463 0 0  
 Pocock ..... 1,455 0 0  
 Eaton ..... 1,394 0 0  
 Moreland & Nixon ..... 1,381 0 0  
 Lawrence ..... 1,359 0 0  
 Sabej ..... 1,350 0 0  
 Ebbage ..... 1,247 0 0  
 Hobson ..... 1,222 0 0  
 Bays (Brothers) & Hanneu ..... 1,150 0 0  
 Grover ..... 1,146 0 0

For Wesleyan Chapel, at Brookley. Mr. Banister Fletcher, architect:—

Brick. Kentish Rag.  
 Taylor ..... £7,350 ..... £7,700  
 Slade ..... 6,816 .....  
 Bishop (accepted) ..... 5,580 ..... 5,580

For repairs at Hobson's-place, Spitalfields. Mr. B. Fletcher, architect:—  
 Hodges ..... £320 0 0  
 Bushell ..... 188 10 0  
 Single ..... 179 0 0

For the erection of a villa, Peckham-rye. Mr. B. Fletcher, architect:—  
 Weeks & Son ..... £591 0 0  
 Brevitor (accepted) ..... 450 0 0

For Alterations at Monmouth-court, Dudley-street. Mr. Fletcher, architect:—  
 Hobern ..... £375 0 0  
 Robson (accepted) ..... 300 0 0

For Aston and Handsworth combined sewers. Contract No. 1. Mr. W. Humble, engineer. Quantities supplied:—  
 Nowell, Brothers ..... £39,977 5 0  
 Palmer & Lee ..... 39,531 15 0  
 Young & Co. ..... 34,961 4 0

For a house, to be erected on the Chelsea Embankment, for Mr. J. J. Lowndes. Mr. A. W. Blomfield, architect. Quantities supplied by Mr. S. Tucker:—

Messrs. Dove ..... £4,325 0 0  
 Langelles ..... 4,177 0 0  
 Messrs. Adams ..... 4,023 0 0  
 Gregory ..... 4,019 0 0  
 Gillow & Co. ..... 3,720 0 0

For alterations and additions to "Longcroft," near Hayes, Kent. Messrs. Tress & Innes, architects:—

Stimpson & Co. ..... £6,242 0 0  
 Asby, Brothers ..... 5,591 0 0  
 Sewell & Son ..... 5,467 0 0  
 Payne & Balding ..... 5,243 0 0  
 Fish ..... 4,913 0 0

For new offices and County Court Office, Reading, for Messrs. H. & G. Collins. Messrs. W. & J. T. Brown and B. W. Albury, architects:—  
 Elliott (accepted) ..... £1,774 0 0

For rebuilding the Saracen's Head, at Reading, for Messrs. H. & G. Simonds. Messrs. W. & J. T. Brown and F. W. Albury, architects:—  
 Dodd (accepted) ..... £1,023 0 0

For the erection of new Congregational Church, in Friar-street, Reading. Messrs. W. & J. T. Brown and F. W. Albury, architects:—  
 Elliott (accepted) ..... £2,850 0 0

For additions and alterations to The Gibraltar Tavern, Tidal Basin, Victoria Docks. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—  
 Manning & Dowdney ..... £930 0 0  
 Taylor ..... 807 0 0

For alterations and additions at St. Cuthbert's, Bournemouth. Mr. T. S. Archer, architect:—  
 Dashwood ..... £425 0 0

For alterations and additions at Montague House, Bournemouth. Mr. T. S. Archer, architect:—  
 Hoare, Brothers, & Walden ..... £139 10 0  
 Carpenter ..... 116 10 0  
 Dashwood ..... 115 0 0

For the erection of a range of vineries at Kelsey Manor, Beckenham. Mr. T. S. Archer, architect:—  
 Messenger (accepted) ..... £518 0 0

For alterations and additions to school buildings, Sutton Valence, Kent, for the Clothworkers' Company. Mr. F. W. Porter, architect:—

	Additions.	Laboratory.
Holland & Hanneu	£4,709	£249
Avard	4,689	223
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# The Builder.

Vol. XXXIV. No. 1746.

SATURDAY, JULY 22, 1876.

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### Agra, Delhi, and Lahore.



SO much has been recently written, so many sketches, prints, and photographs have lately been made, of the great cities of Mogulsovereignty and fame, that we may well apologise for attempting to prolong an interest in India with reminiscences of a spot of earth, certainly less known, and perhaps more valuable and interesting, to the practical architect than any other region, except Greece and just a corner or two of Western Europe. The descriptions given of Mogul Capitals by early and rare travellers founded the well-worn and sometimes derided faith of the West in the splendour and magnificence of the "gorgeous East." Yet the three cities, the names of which we have linked, are even now little known even to the majority of those whose youth and prime are being expended in India; and they are totally ignored, except by an infinitesimally small number, by those who have never crossed to the eastern side of the Indus. These cities are now lying open to any diligent book-maker who is competent to read what scattered monuments of architecture are able to tell; and although the traditions of true construction are said to be now understood by all and practised by none in Europe, within and around Agra, Delhi, and Lahore, there are still rising tombs and palaces constructed upon something of the principle, or rather absence of affectation, which distinguishes the best temples and cathedrals of classical and mediæval Europe.

But if individual cities in India are actually waiting for a bookmaker, what may not be the reward of him who shall write a popular treatise or handy-book upon Indian geography?—not only for the use of those who travel by land and by water, but also for that large section of the English community which stays at home or at most ventures to cross the Seine or paddle upon the Rhine. Before people can safely be taught the Indian method of combining white marble, red sandstone, and Persian tiles, perhaps a knowledge concerning the position of the divers centres of art and industry, the names of which they are to read, might be advantageously acquired. Thirty-six years ago, Macaulay, in his essay on Lord Clive, maintained that hardly one cultivated man in ten could tell "whether Sujah Dowlah ruled in Oude or in Travancore, or whether Holkar was a Hindoo or a Mussulman"; and at the present hour a person bound for Allahâbâd, via Suez and Bombay, is not unfrequently asked by pertinaçious friends to leave a parcel with a missionary in Mysore, or to call upon a doctor at Darjeeling. The deplorable disregard for exactness—

not to say ignorance—shown by educated Englishmen as to what is comprised under the head of Bengal, or similar geographical distinctions of political or other origin in India, is only equalled by the admitted incapacity of Parisians to understand the language and locality of any city but their own. At the same time this absence of knowledge lends something of mystery and romance to the subject. To hear, correctly enough, that Mr. Fergusson journeyed upon the back of a camel while collecting notes for his famous books about Indian architecture, increases the interest which they afford. To imagine, not unnaturally, from the surfeit of elephants with which artist-correspondents in the jungle have lately favoured the British public, that those quadrupeds are constantly passed and repassed upon every trunk road, and at every turn of a high street, is, of course, eminently attractive. But depressing as the truth frequently is, it is an absolute duty to say that the great Indian routes, especially those of the North-west Provinces, are now prosaic thoroughfares, on which may be encountered some of the comforts, and few of the discomforts of modern travel. There is really no reason why, during the winter months, English gentlemen and ladies should not see the new world of an old civilisation. It would not cost very much more than shutting themselves up, as they often do, in Nice and Hyères. After three short sea-passages they can land at Bombay, to find hotels, quite as good as any French ones out of Paris, and society far better than that usually encountered at a Mediterranean sanatorium. The plains of Delhi, seen from the summit of the Kûtab-Minar, are necessarily a more impressive sight than that vast expanse of nothingness to enjoy which travellers flock to Cairo and climb the Great Pyramid. Although Bombay and Calcutta are more than 1,400 miles apart, travelling between them in winter is by no means hard work, at least to a tourist; and although Delhi is 1,235 miles by rail from Bombay, and 955 from Calcutta, the three Mogul cities are comparatively close together. Agra and Lahore are nearer to each other than London and Edinburgh; and Agra and Delhi are only separated by a distance of 127 miles. You may take your railway ticket at any of these places with far greater ease than is possible in England or France; and, in so doing, you will be treated with respectful consideration, singularly different from the good-natured roughness of the one and the polished incivility of the other. You will travel in carriages as roomy and comfortable as those on the great lines of Europe are crowded and confined; and in the city of Shâh-Jehân your address, if you so choose, may be St. James's-place, near St. James's Church, Delhi!

Much as the Anglo-Saxon tourist has been reviled by smart writers for eccentricity in sight-seeing, it is he, nevertheless, who has helped to make archæology popular, by "doing" the principal historical buildings of Europe; and until the plains of Delhi are systematically "done," the best examples extant of Patân and Mogul archi-

ecture will not be permanently added to the store of archæological treasure which has been amassed during the last fifty years. Brown, Jones, and Robinson, who have already got as far east as Pera, Cairo, and even Jerusalem, must be induced to take the great plunge of the Red Sea and Indian Ocean. Not that some of their better-class connexions have not already done so, sometimes under leading-strings, sometimes under mutual protection. We remember to have met members of these great tourist families at the Kûtab, where they shot wild turkeys, fired at a female pig, and towards sunset—at the halfway house known as Safdar-Jang's tomb—they were destroying tame pigeons under an Indo-Saracenic arcade, as a happy mode of relaxation on their way from the ruins of old Delhi to the new city of Shâh-Jehân, now our Delhi. That same cold season there were some of the American branch of the same families, whose chief delight and constant occupation consisted in urging too-eager native athletes to jump from the tops of minarets and domes into the tank beneath. Of course these are the travellers whom the pure and simple archæologist would shun, but whom wiser men would encourage, because they require hotels and dâk-bungalows, carriages and ghâris, guide-books, and the like. All these modern necessities they ask for, but do not always get. Yet, without them travel is difficult and irksome; and then even the archæologist—the pure and simple one aforesaid—forgot to tell his friends that the North-west Provinces of India possess some of the finest bits of natural and artistic scenery, and in November, December, and January, the finest climate, in the world.

When all sorts and conditions of rich people have done this, have grumbled over their journey, and written all kinds of complaints to the newspapers about the want of really-consumable ice at Agra, of torn mosquito-curtains at Delhi, and the absence of comfortable hotels at Lahore, we shall probably get what we want, in the way of archæology, concerning these Mogul cities. Perhaps some excursionist, wiser and more practical than his fellows, may remain to commit to paper, in the shape of plans, sections, elevations, and details—the tombs, palaces, and mosques he went to "do." We remember seeing a few years back at the Dalhousie Institute, in Calcutta, some lithographed instalments (to scale) of a book upon these buildings. They were prepared by Mr. R. R. Bayne, a gentleman who distinguished himself as a student in London before he removed to India, and we have waited to hear if the publication of his book be already commenced, or if it remains still in the throes of preparation. At present there are no really technical works for students upon the architecture of any part of India. Such books as the "Sacred City of the Hindû," by the Rev. Mr. Sherring, as the descriptions and photographs of Ahmedâbâd and Bijapur,\* as even Mr.

\* The mode of spelling Indian names is in a state of transition. To be correct Lahore should be spelt Lahur, the river Hooghly should be Hûgli. But it is difficult or

Fergusson's "Indian and Eastern Architecture," are often difficult to understand by practitioners, and entirely puzzling to the student. What is really wanted is the careful representation upon paper, and to an English scale, of the best Patán and Mogul ruins of the older cities of Delhi—of the mosque of our Delhi, of the Taj Mahal at Agra, and perhaps as a foil to earlier work, of the mosque erected by Aurangzeb at Lahore, in 1674. Scattered over India there are a few Englishmen—and some of these are even reviled officers of the Department of Public Works—perfectly competent to undertake the task; and it cannot be too often repeated that such a task, although it may be aided by sketches and photographs, can only be effectually accomplished by the scientific use of square, compass, and foot-rule. According to the opinions of those who know the difficulties usually encountered in India, no books of the kind we name can possibly be made until the Government of that country organises a special service of measurers and draughtsmen to prepare the necessary drawings. At present, even guide-books to the principal cities are rare; and while the majority are useless to the traveller, none are of any great archaeological value. There is, it is true, a well-written and well-illustrated "Agra Guide," by Mr. H. G. Keene, the genial and accomplished judge of that station; and this gentleman has also compiled, from Captain Harcourt's and other writer's pamphlets, a very tolerable guide-book to Delhi. At the beginning of this year a small book on Lahore was also published under the auspices of Mr. J. L. Kipling, a sculptor, and pupil of the late Mr. Birnie Philip. This guide-book describes the city as it is and as it was; the second part of it being to a great extent a reprint of an excellent pamphlet by Mr. Thornton, C.S. Although new to Lahore, Mr. Kipling is no novice in Indian art, for after nearly ten years' artistic service in Bombay he has become the Principal of the Lahore School of Art, and Curator of the Museum, which now contains so large a collection of recently-discovered Greco-Buddhist antiquities.

Those who, without having seen, wish to understand something about the architecture of this small portion of Hindústan, must be good enough to remember that, although the Great Mogul was sovereign of India, he ignored Buddha and Bráhma as thoroughly as the Brahmins ignore the former; that he felt not the smallest religious sentiment for the waters of the Ganges and the Jumna; that he planted a big mosque in the very heart of Benáres, where devout Hindús still aspire to die and be burnt; that he used the stones of desecrated Hindú temples for the construction of his palaces and mosques,—taking care to conceal whatever sculpture was upon them in the inside of his walls,—more ruthlessly and far more completely than the Hindú had previously attempted with the monuments of Buddhist architecture; and that, far from coming of an old family, his best buildings, which are on the plains of Delhi, are contemporaneous with the best works of mediæval Europe. In the city, which is now called Delhi, there is nothing older than the days of Sháh-Jehán, 1628-1658. Although the empire was founded by Báber, in 1494, the Mogul style did not take its distinctive character in architecture until after the death of Akbar, in 1605. This monarch's principal seats of government were Agra and Lahore; and then the latter city was described as "the grand resort of people of all nations," its glories having been sung 200 years previously as "a city great among the cities of India." The Emperor Akbar's favourite residence was at Fatehpúr Sikri, about twenty-two miles from Agra, and it had been erected under his own direction. In the time of his son, the Emperor Jehángir, in 1626, two Englishmen paid a visit to the Punjab, and passed over the high road from Lahore to Agra. It then consisted of a loose avenue of trees, extending from "the town's end of Lahore, twenty days' journey to the town's end of Agra." Most of these trees bore a kind of mulberry, and, in our countrymen's words, "every five or six koss there are faire serais of the kings and nobles . . . where you may have a chamber and a place to get your horse." Fifteen years later a Spanish monk passed that way, and thus described his arrival at Lahore:—"On the 21st day from our departure from Agra at sunrise we

came in sight of the city of Lahore . . . but large as it appeared, there were not houses enough for the accommodation of the people, who were encamped for half a league outside the city. . . . I entered . . . a very difficult undertaking, on account of the number of people, who filled the streets, some on foot, some on camels, some on elephants, and others in small carts, jolting one against another as they went along. . . . The second city of the Mogul empire (as well on account of riches as its size) is ornamented with fine palaces and gardens, also with tanks and fountains. As for the abundance of provisions it would be unnecessary here to describe it. The principal street shown to advantage would equal the richest European mart." This prosperity occurred in the time of Sháh-Jehán, but it was not destined to continue. Disgusted with Agra, where a tomb was rising to perpetuate the memory of his lost wife, he had ordered the erection of a new palace, a new mosque, and new gardens in the neighbourhood of Delhi. The foundation of this city, in 1635, was a turning-point in the history of Lahore, which, on the accession of Aurangzeb, in 1658, had greatly diminished in wealth and population. When, in 1664, Bernier, a French physician, passed through it, some of its houses were dilapidated, others in ruins. This traveller, who landed in India in 1655, and stayed there some years, described the new colony of Sháh-Jehán, who had made it the capital of the empire instead of Agra, where the summer heats were too violent. "The ruins," he said, "of old Delhi have served to build a new city; and in the Indies they scarce speak any more of Delhi, but only of Jehánábád." With the death of Aurangzeb, in 1706, the Mogul empire practically perished; and, ten years later, in that palace with which Sháh-Jehán had enriched his new city, an event occurred, small enough in itself, but pregnant with the seeds of great changes. A Scotch surgeon, Gabriel Hamilton by name, cured the then emperor of an illness, and was rewarded by "that permission for his employers to establish a factory, and to maintain a territory of thirty-eight towns on the banks of the Hooghly, which was the foundation of the presidency of Port William." Less than a hundred years after, an English officer described his visit to the ruins of Lahore in his diary, 24th May, 1809:—"Here the lofty dwellings and mosques which, fifty years ago, raised their tops to the skies, and were the pride of a busy and active population, are now crumbling into dust. . . . In going over these ruins I saw not a human being,—all was silence, solitude, and gloom."\*

Mr. Keene, in one of his guide-books, calls the plains of Delhi, which cover an area of about ten miles by six miles, the "Rome" of Asia. The comparison is a little inappropriate, seeing that the oldest remnants upon them are not older than the eleventh, perhaps even the twelfth century. The Rome of Asia is the sacred Hindú city; and although successive Indian dynasties have aimed at the historical effacement of their predecessors, there are still in Benáres buildings, portions of which stood *in situ* while Rome was celebrating a triumph to Cæsar, or awaying to and fro under the influence of Cicero's eloquence.† But nothing in Benáres is so fertile in suggestions to the architect, or, as he is represented in India, to the officer of Public Works, as Indo-Saracenic architecture. It was made suitable to the exigencies of climate and local materials by Hindús working in accordance with their own traditions of indigenous art. There is nothing barbarous about it, as in the remains of Buddhist topes and monasteries, or in those of Hindú temples and shrines. The construction of Tuglak Sháh's castle, and also his tomb in the middle of what was once a lake, three miles from the Kutab-Minar, betrays a stern simplicity worthy of Greek builders before they attained the refinement of Athens in its prime. The word of the Korán forbids the introduction of images of either men or brutes upon the walls of Mahomedan edifices, both sacred and domestic, and thus all ornament became forcedly useful, or of a literally descriptive character. The Mahomedan gospel

was cut in Arabic upon the external face of the red sandstone walls, and forms, perhaps, an incised ornament more beautiful than any similar decoration of either natural or conventional origin. It attracts the spectator, because, although he may not understand it, he is able to feel that it must mean something. The three divisions of an Indian mosque are covered each with a dome, the largest being in the centre. They are entered under a big central archway, and a smaller one on either side, all open to the air, without doors or windows. The mosque itself forms one side of a courtyard open to the sky, with generally a fountain in the middle, and the other three sides are enclosed by covered arcades and sometimes cells. The entrances to the courtyard, generally three in number, resemble triumphal archways; and whether the buildings be the work of men who lived in the days of Ala-ud-dín, or of Shír-Sháh, or of Sháh-Jehán, the system is always the same. There is always enough of truth and science, even in the later buildings in which traditions have not been strictly preserved, to keep them "alive" as examples of architecture. The great mosque of Delhi now stands isolated upon an open square, or more properly a wide plain,—the houses which encompassed it before the Mutiny having been pulled down. It stands alone, a more perfect specimen of refined building than any other work of its own time throughout the world. Begun by Sháh-Jehán in 1644, it was completed in 1658, the same year that its founder was deposed by his son and successor, Aurangzeb,—seventy-eight years after the death of Palladio; eight years before the death of François Mansard; and one year after Christopher Wren had been appointed, at the age of twenty-five, a Professor of Gresham College. Bernier, the French traveller, whom we have already mentioned, described it as "standing upon a rock flatted to build upon, and to make round about a large place for four long and fair streets to end upon, and answering to the four sides of the mosque. . . . The three entries are stately . . . and their large gates are covered with copper. . . . That in the middle is much bigger and higher than the two others." Bernier, who saw it a few years after its completion, and who had doubtless seen the brand-new Chateau of Maisons, admitted that the Delhi mosque was not built according to the ordonnances of architecture; but he was wise and honest enough to observe that nothing in it offended the eye. "I rather find it," said he, "to be well contrived and well proportioned." In our own time a pilgrimage to this mosque formed the limits, so says Mr. Keene, to the extramural movements of the once Great Mogul; and here, on a Friday in September, 1857, the fatal year of the Mutiny, was read the last litany of the House of Timur.

Agra, which, like Delhi, is situated on a bank of the river Jumna, has been called Akbarábád, the city of Akbar; but there is little left in it older than Sháh-Jehán. Although it is known to have been occupied by Báber in 1526, it is probable that the Agra of his time was on the opposite bank of the river, the side on which the railway station is situated. The earliest portions,—mere remnants,—of the palace are attributed to the Emperor Akbar because of their similarity in construction to Fatehpúr Sikri; but they are by no means proved to be the work of the sixteenth century. The fame, however, of Agra, rests less upon its palace than upon the streets of the native city, and upon some of its public buildings; but, most of all, upon the celebrated tomb of Sháh-Jehán's wife, whose name in the vernacular will add no lustre to our description, although she was called "The exalted one of the Palace." This tomb of white marble inlaid with precious stones,—the astonishment and delight of all who visit it, and the paradise of foliage which leads up to it,—is the Taj-Mahal. It is compared by Mr. Fergusson, after a preliminary sentence of apology, to the Parthenon; and on the strange plea that its exquisite inlay suffices to raise it almost to a level æsthetically with the Grecian masterpiece. It is perhaps hardly fair to quote a single passage from one chapter of his book, because other portions of the text in other parts of it balance or soften the argumentative statement to which we allude. A comparison, by means of section and elevation, between the Parthenon and the Taj will suffice to show those who have not seen them that, although they may not be unequal in superficial beauty, yet in every utilitarian view of constructive principle and all æsthetic appro-

\* The population of the city of Lahore, according to the census of February, 1875, is 92,035; of whom 47,774 are females; while that of the suburbs is 36,498, of whom 13,785 are females. Of all these, only 1,373 are English. The city contains 19,930 houses, and in the suburbs there are 6,617 houses. See an account of Lahore, 1876. It is printed at the Government Civil Secretariat Press of that city, and prepared by the joint labours of Mr. T. H. Thornton and Mr. J. L. Kipling.

† Mr. Fergusson maintains that there are no authentic architectural remains in India older than 261 B.C.

us to alter established home orthography. We would merely add that the short "a" is pronounced as the English "u"; that Akbar is pronounced Ukbar, and the term Mogul has the accent on the first syllable.

ciation of the same, they are manifestly distinct and opposed. It is impossible not to feel, and even see, that the upper portions of the four great entrances to the Taj are as "backless" as any modern imitation of the Greek pediment in London or Calcutta; that the dome, though not a sham like that of St. Paul's, or an utterly false excrecence like that of the "Invalides," is built up for show alone; is full of emptiness, or at best the home of birds and insects; and merely marks a vaulted structure, smaller than itself! The useless upper story or dome is half as big again as the lower one which it covers; while the real tomb, where the fair lady's body lies, and that of the Emperor's beside it, is beneath both in a basement,—on a level with the soil, if not a little below it. We leave any one, who has studied Mr. Fergusson's valuable theories upon the principles of beauty in art, to say whether Athenians of the time of Pericles would have loaded the earth so uselessly even to obtain an outline so beautiful as that of the Taj-Mahál.

Delhi and Lahore contain each a museum; and three years ago there was a small collection of antiquities and local curiosities in a building at Agra; but these, we believe, have been removed to Allahábád. To the Lahore Museum have been consigned many of the justly-celebrated sculptures recently dug from the soil of the Panjáb. These are remarkable, as evincing the influence of Greek culture upon Buddhist art. Among them are capitals of the Corinthian order, which Mr. Fergusson, judging from photographs, describes as more Greek than Roman in their foliage, and more Roman than Greek in their volutes. There are also fragments of the human form, carved in a soft micaceous sandstone, all referring to Buddha, but unmistakably Greek in inspiration and character. They are described by some who have seen them as "architectonic and conventional," but never monstrous, like ordinary Buddhist and Hindú sculptures. Mr. Fergusson considers that it would be correct to call them Byzantine; but he significantly adds, and we sincerely hope that the authorities will afford an early opportunity,— "till we have detailed drawings, and know more of their surroundings, it is difficult to give a positive opinion as to their age."

The characteristic craving of the Tartars for tomb-building and garden-planting was very powerful in these Mogul cities; and under English rule there seems to be every disposition to encourage the development of the latter, or rather perhaps to revive it. The Emperor Báber began his improvements at Agra by laying out a garden which was long a subject of wonder to the natives, who chose to call it Kabul. "God Almighty," said Bacon, "first planted a garden"; and while tradition has assigned that of Eden to the Kabul valley, living men are ready to point out the exact spot in the island of Ceylon! It is certain that the Hindús have no native term for a garden, and that their common word "bágh" is Persian. "Coming," says Mr. Thornton, "from the well-watered valleys of Ush and Andeján, Báber regarded with almost European disgust the dusty, treeless, plains of the Panjáb." At the present day, however, Lahore, Delhi, and Agra are studded with public and private gardens. To all outward appearance they seem to be charming abodes, and in December are undoubtedly so in fact. Spreading as the English portions of them do for miles in all directions,—into cantonments for the military, into lines for the police, and into civil lines for the Government functionaries, high and low,—they resemble somewhat the picture which has been prettily drawn of Babylon. They are small fortified provinces rather than large cities, and consist of country-houses, with farms and gardens attached. The last King of Delhi, who, after the Mutiny, solaced himself with poetry, wrote in Urdu:—

"Call not Delhi a city,—call it rather a garden,—  
The abode of perfect peace;  
But the book of its past is blotted out,  
And nought remains but a desolated village."

Although no one probably is unwilling to admit that under English rule the cities of India form "the abode of perfect peace," it is faint justice to the royal poet to confess that, as far as Indian architecture is concerned, "the book of its past is blotted out." It behoves us, therefore, to help the natives of the North-west Provinces at least,—for our own more than for their sakes,—to re-write it; and afterwards to apply its teaching, with the broader experience and more powerful instruments of our own more progressive civilisation.

#### PROFESSIONAL CHIVALRY.

A good deal was said, not long since, and well said, by a respected member of the architectural profession, on the subject of professional *esprit de corps*, the want of it in our profession as compared with some others; the value of such a fellow-feeling and sense of common interests in binding the members of the profession together, and in raising the status and tone of feeling of the whole body corporate. And it would be difficult to over-estimate the value to the members of a profession, or the gracefulness in the eyes of the rest of society, of that sort of spirit which leads men of the same pursuit to stand by each other as natural allies, and to combine in keeping the standard of professional conduct up to a high point of honour and integrity. These considerations, valuable as they are, refer, however, mainly to the profession regarded in its practical and business relations, and as comprising a society of men governed, or who should be governed, by a code of honourable dealing in regard to each other and the public which is to be rigidly maintained. Without pausing here to inquire how far this desirable ideal of professional *esprit de corps* has been and is realised, we may remind each other sometimes that there is even a higher standard than that which may be aimed at, and which perhaps affects individual character rather than that of the profession *en masse*, but the effect of which would be, if it were more generally kept in view, to raise not merely the status of the profession morally and socially, but that of architecture itself, in its results, and in its character as an intellectual and artistic occupation. What we mean is that kind of feeling which leads a professional man, more especially an artist of any class, to aim, in the first instance, at doing the very highest work that he can get, and doing the very highest with his work; which would lead him to prefer carrying out a few works, and those of a high class, really well, even at no great pecuniary gain, to "getting on" and making money by a more promiscuous practice carried out on less uncompromising principles; an end which, if steadily and firmly kept in view, results perhaps in something as near what may be called "chivalry" of principle and aim as more professional life in modern times can very well attain.

Some reflections of this kind are suggested by the prefatory remarks to the interesting and agreeably-written memoir of three deceased French architects, read at a recent meeting of the Institute. Speaking at the outset of the pleasure which he had derived from the process of collecting information for the paper of "Biographical Notices of Deceased Foreign Members," Mr. Cockerell observed that this pleasure arose from the contemplation of the high qualities of the subjects of his notice. "I find," he said, "in a remarkable degree in the lives of these French artists a quality which, if it is not peculiar to the French as a nation, is at least one of their very marked characteristics, and has shown itself in other walks besides intellectual ones; in war, in missionary enterprise, in the relation of the affections. I mean a certain chivalry and self-sacrifice, which in its various spheres of action amounts frequently to heroism. In the subjects now under consideration I find a high ideal involving a high ambition, pursued with a singleness of aim and an untiring energy and devotion which is quite unalloyed with any taint of greed. The early ambition of these men, whether they are born to ease or to toil, is not to rush into practice and to secure commissions, but to distinguish themselves in the schools, and to gain its honours and their prize,—the Grand Prix. When they achieve professional success, their ideal is not to multiply jobs, but to carry out with conscientious perseverance some one or very few works. When we consider the time occupied in one of the great public works, and learn that their authors have scarcely any others simultaneously, we may judge how great is the sacrifice which they make of comfort and luxury to the attainment of perfection." These remarks are exemplified more or less in the lives of the three French architects which formed the subject of the paper here quoted from,—Duban, Vaudoyer, and Labrouste. The first of these spent some of his best years in studies which brought him honour, and gave him proficiency, but for a long time no other result; and he never carried out one building entirely from the first conception; for even the École de Beaux-Arts did not fall into his hands till its main plan was

arranged, and the foundations laid. It is impossible to suppose that one who had acquired the reputation which he had, at an early period of his career, might not have had more work to do, had he been disposed to take what offered itself. That he had not more we must apparently attribute to a high ideal of his profession which induced him to decline any chance of occupation in its every-day walks, and rendered him, indifferent to anything except the class of building in which he could carry out and illustrate his own aspirations. His high sense of professional dignity and responsibility was shown in his retiring from the position of architect to the Louvre rather than yield to Governmental and public opinion in a point where he believed himself to be right. Vaudoyer, after pursuing the same kind of hard study in pursuit of honours in the early part of his career, adopted in his professional practice the same uncompromising principles which Duban appears to have acted upon. He commenced by opening an *atelier* for pupils, and contented himself with this until work came which he thought worthy of his exertions. He rejected, throughout his life, all private work "which might subject him to the caprice of clients, or force him to devote to sordid and trivial considerations the time which he could so much better employ in the advancement of art and of his own reputation." It is true that Vaudoyer had independent means; but even under such circumstances this high ideal of professional practice is unusual, to say the least, in our own country. Of Labrouste we are told that "he regarded his art as a thing sacred, and not to be profaned by superficial treatment, or by application to sordid and common purposes; and to this must be attributed the fact that he never sought or obtained success in ordinary practice." Almost his first practical work in building was the Library of Ste. Geneviève, which was not undertaken till he was forty-two, and to which he devoted seven years almost exclusively, giving attention to every detail both of design and practical construction throughout the building. And in contemplating this kind of principle of carrying out architectural work, one cannot but echo Mr. Cockerell's observation,— "These lives may, indeed, put us to the blush, and I cannot but feel with humiliation how great is our need of the study of them."

All professions in all countries of course include those, often a majority, who enter them and continue in them with nothing but the most sordid and what might be called beggarly views and aims. The sort of man who says, on being convinced of some serious defect in a building he has recently completed, "Never mind, I have got my commission," or he who openly avows that he cares for nothing but what will pay (and we have heard both these statements made in sober earnest, and by educated men), are not, perhaps, worth any serious arraignment. They have their reward, and may be left to enjoy it. But among those architects in this country who have a higher ambition than that, who wish to produce something that will bring them fame, who have even acquired reputation and some degree of wealth, the idea of refusing anything either because they have not time to give proper attention to it, or because it involves what, on their own principles, they ought to disapprove of, seems hardly to be contemplated as a possibility. We remember a case that happened to come to our knowledge some little time since, when a point was raised in reference to the restoration of an old building, in regard to which the architect stated in writing his opinion that a certain method of treatment demanded by his clients was contrary to true archaeological principles, and to all that he had been advocating himself for years back. The point was nevertheless insisted on. Did the architect (a man in large practice and presumably in no absolute want of one particular commission) decline to stultify himself and withdraw? By no means: he put his principles in his pocket, and did the wrong thing while he protested against it:—

"And there it stands unto this day,  
To witness that he lied."

as practically he certainly did, against the highest interests of the art and the profession. But we fear the course was only what almost every English architect would have pursued; grumbling, perhaps, but avowing that he could not do otherwise. The case of some large public buildings, carried out by a eminent architect in a style opposed to his expressed convictions, because Government would have that style and no other, will bear to many. We have no wish in one

sense to bear hardly on such cases, because they, in fact, result from following the usual standard of professional architectural morality in England, in which it is regarded as a rule of business and common sense not to refuse work. And in the case of men in small practice and struggling for their daily bread we hardly know what other rule can practically be applied. Nor in the case of those who are better off do we wish to say that there is anything absolutely or morally wrong in such a proceeding (though we can quite conceive some high-minded people thinking that there is). But what is pretty evident is, that the course which a successful and eminent English architect would feel himself quite at liberty to take in such a case, a French architect of the same standing would consider beneath him, and a degradation of himself and his art. This is a matter worth very serious consideration. It is recorded that a certain sprig of German royalty brutally told Humboldt, whom he objected to have to meet on equal terms at Court, that "there were two sorts of persons who could always be had for money, authors and —," a certain even less respectable though more ancient class. It would be very sad to add architects to such a category; nor will any impartial person, we think, assert that the architectural profession in England is more gripping than other professions; it is certainly worse paid than most, as a rule. But we fear it must be accepted as a fact that English architects are willing to undertake, from ordinary motives of business, commissions which involve a departure from their acknowledged principles or which should be beneath their ambition, and that French architects of the same relative standing will not do so. And this is hardly a satisfactory reflection to have to make.

There is another point of view in which the question of the highest professional principle, or what we have called architectural chivalry, comes in, and which is directly forced upon us also by the biographical notices we have referred to. This is as to the degree of attention which a large and important work ought to have from its architect, and the artistic morality of accepting a multiplicity of smaller commissions when a man has one great and important work to which he ought to give all possible attention. Here again we shall be flying in the face of business principles and what in England is called "common sense," which seems often to mean merely looking out for "number one." We suppose an English architect who refused two or three smaller things because he considered his undivided attention was claimed by a large and important work, would be considered Quixotic and neglectful of his own interests. It is the fact, however, as we see, that in France this is rather the rule than the exception among architects of the highest order, and that it is not uncommon for a man to devote years to elaborating a single building. Whether this be Quixotic or not, we have no hesitation in saying that this is a principle that ought to be more acted upon in England than it is. There are two or three great buildings now in progress in this country which, in order to be carried out in a really satisfactory and complete manner, ought to claim the undivided attention of their architects, who, in fact, are responsible perhaps for two or three score of smaller works at the same time. It is not surprising under such a system that architectural design comes to have such a look of mechanical repetition, and such a want of thought and refinement in detail, and that the evil of designing and drawing by proxy is continually on the increase. The love of money in this country is demoralising all classes, and it can hardly be expected that the architectural profession should have escaped the contagion; but, whether the reminder be of any avail or not, we cannot help asking them to look for a moment at the evidence of the existence and acceptance of a very different theory and principle among their French brethren which has recently been laid before the Institute, and to consider whether there is not possible in architectural practice such a thing as "chivalry," the essence of which quality lies in the abnegation of mere selfish ends, and the postponing of material success to the greater aim of doing as well and as nobly as possible that which we have undertaken to do.

**Quebec Harbour.**—The Quebec Harbour Commissioners have instructed Messrs. Kinipple & Morris to prepare contract drawings for proposed improvements.

#### THE INSTITUTE SOIRÉE.

THE annual entertainment of the Institute of British Architects was held on Friday, the 14th inst., at the Rooms in Conduit-street, and may be considered a very successful one, more especially in regard to the appearance of the rooms. In the upper room, where the guests were received by the president, Mr. Charles Barry, there was the usual array of objects lent for the evening, including artistic furniture, water-colours, paintings on china, designs for ornamental work of different kinds; and we should be disposed to say that there was a larger amount of objects possessing special interest than usual. A model of the new Opera-house on the Thames Embankment was exhibited; and in the Library some curious old volumes of illustrations of the principal towns of Europe were turned over with a good deal of interest. We noticed some of Mr. Pullan's oil sketches of architectural remains in the East, and some fine architectural views by the late D. Roberts.

In the downstairs room there was a certain novelty of effect, in comparison with what we have been used to at the recent soirées. Usually there has been some exhibition of paintings going on in this room, and these have been left in their situation to form part of the decoration of the evening. It is not, however, possible to look at pictures with much satisfaction when they form the background to a row of heads of persons occupying the seats against the wall; nor in most cases have the pictures which have happened to be present been much worth looking at. It was therefore an agreeable surprise to find, instead of this exhibition of doubtful art, that the walls were hung with strips of decorative carpet and curtain stuffs, of very good character in detail, and presenting a very satisfactory ensemble; and one effect, as it seemed to us, was to make the room appear considerably larger than when the walls were crowded with gilt frames.

The Royal School of Art Needlework at South Kensington was represented by some beautiful examples of curtains, and a screen, executed for the Duke of Westminster from designs by Mr. Walter Crane. Messrs. Trollope contributed from their Museum of Decorative Art numerous costly objects, including specimens of modern French *cloisonné* enamel, alabaster and onyx, ancient tapestry, &c. Of English ceramic art and decorative pottery there were some fine examples executed by Mr. J. Mortlock, and several pieces of modern "lustre" ware, cleverly reproduced from old designs of Mr. W. de Morgan. In addition to several choice cabinets of rich workmanship and other decorative furniture exhibited by Messrs. Jackson & Graham, the same firm sent a large quantity of Oriental pottery, fine Japanese lacquer, and articles of bric-à-brac. The Persian, Indian, and other textile fabrics (some of them very rare and costly), and which lined the walls, as already referred to, were contributed by Messrs. Gillow and by Messrs. Farmer & Rogers, together with a selection of Morris & Co.'s quaint and boldly designed curtains. Mr. Holbrooker's woven fabrics and similar specimens of textile art,—all showing the advance which has been made of late, both in taste and execution, by English looms. In the department of artistic metal-work, a similar improvement was noticeable in the productions of Messrs. Benham & Froud, and of Messrs. Hart, Peard, & Co. A conspicuous object in one of the rooms was a pulpit executed entirely in decorative stoneware and glass mosaic, by S. Belham & Co., from the design of Mr. J. P. Seddon.

The band of the Coldstream Guards was in attendance in the downstairs room, and contributed in the usual form to the entertainment of the evening. Some of our readers may remember that a question was raised the other day as to the suitability and merits of the musical part of the entertainment by a correspondent, whose letter was inserted, as it appeared that the subject was open to consideration, though without the idea that any decided improvement could be organised in time for the present occasion. We have reason to believe, however, that the opinion expressed by our correspondent met with a good deal of concurrence, and that some improvement may very well be made, and, in fact, ought to be made, next year, upon the present somewhat old-fashioned style of thing. The band did better, we recollect, when a gallery was available for its accommodation. On the floor it is universally found to be too noisy,

independently of the musical question. But we think the latter should be considered. To go on always in the same way, saves a good deal of trouble, no doubt; but is not always the best way of, keeping up the interest of an entertainment, seeing that tastes and habits change very much. In a general way the Institute *soirée* is, on the whole, hardly so brilliant an entertainment as one might expect from the means and influence of the Institute; and one or two happy innovations, to put a little new life into it, might very well be welcomed, and may perhaps be looked for from the new administration.

#### NORTHUMBERLAND AVENUE.

THE statement which has been published as to the letting of the "leg of mutton" plot, as it has been called, bounded by Charing-cross, Northumberland-street, and the Avenue, was premature. An offer to the tune of 15,400*l.* per annum is before the committee, and if that should fall through there are others from responsible persons to very nearly the same amount. The rent offered is equal to 8*s.* per foot superficial. Plot 24 has been let for 500*l.* per annum (5*s.* per foot); and plots 9 and 10, together, for 1,620*l.* per annum. These large prices give good grounds for the belief that the improvement will return a money profit to the ratepayers.

#### THE LIVERPOOL ARCHITECTURAL SOCIETY AT SHREWSBURY.

ON the 8th inst. the members of the Liverpool Architectural Society held their annual excursion, when Shrewsbury was visited. The gathering of members was not so large as anticipated, but the entire excursion from beginning to end was a success. The members were accompanied by their president (Mr. J. A. Picton, F.S.A.), their ex-president (Mr. J. Boulton), and one of their vice-presidents (Mr. Henry Sumners), Messrs. Aldridge, Herbert, Fry, &c. The church of St. Mary was first visited, and here Mr. Edmund Sharpe met the members, and discoursed on the several gradations and varied styles this church has passed through since its foundation. This church is said to have been founded by King Edgar about the year 980, but since that date it has passed through many vicissitudes. It was very rich in the time of Edward the Confessor. It stands upon a commanding position, and, together with that of St. Alkmund,—which church was founded by Ethelfleda, daughter of Alfred the Great,—their spires can be seen almost from any part of the county of Shropshire within ten miles of the capital town. Mr. Sharpe lucidly pointed out the many points of construction at the hands of successive architects at different times, until at last came the restoration of Mr. S. P. Smith, of Shrewsbury, at whose hands most of the churches and ancient buildings throughout this district have been almost reproduced. The abbey was next visited, noting on the way the half-timbered houses, the old market-hall, and other objects of interests, and the fine old pile, or rather that which remains of it, received due attention. Here also Mr. Sharpe gave a descriptive lecture, and the interior was pronounced by all well worth examination. After leaving the abbey the members separated, some visiting Haughmond Abbey, Battlefield Church (originally built to commemorate the victory of Henry IV. over the Earl of Northumberland and his son, Percy Hotspur), others finding their way to Quarry Avenue, one of the most celebrated promenades in the kingdom. The company afterwards dined together in the Lion Hotel, and returned to Liverpool in the evening.

**Proposed Modification in Asphalt Road Pavement.**—Admirable as is asphalt as a road material in point of smoothness and cleanliness, it has, as it has been hitherto laid down, the great disadvantage of being exceedingly slippery, and therefore dangerous, at certain seasons. It is said that there is now a fair prospect of this difficulty being overcome, the Val-de-Travers Company having recently introduced slabs of their asphalt, upon the surface of which are studs of chilled iron. These studs are starlike in shape, and are distant about 3 in. from each other. It is claimed that these give absolute security against slipping, and that consequently the slabs are specially useful within, and at the sides of, tramway rails. They can, it is stated, be laid down at the same cost as granite setts.

## THE RAILWAYS OF BELGIUM.

THAT illustration of the working of the railways of the United Kingdom which may be afforded by a comparison with the systems adopted in other countries, is a subject not unfamiliar to our readers. It is to the accounts of the French railways that our attention has been chiefly directed hitherto, as it is in this case that the fullest information has been accessible to the student of the subject. Without inquiring how far the tone and temper of a nation, and the general tenor of the laws and institutions of a country, may render different modes of executing and conducting public works advisable in different States, it is possible to form a judgment as to the superiority of system considered with reference to its professed object alone. Thus, it is possible that the French system may be, considered in itself, better than our own, while yet invincible obstacles may exist to its introduction into this country. It is with the prime question that we alone concern ourselves at present. In the French lines there has been a degree of State interference which has resulted in a good distribution of railway network over the country, regarding the requirements of the several districts as more important than the sole question of remunerative traffic in the first instance. Again, in consequence of the guarantees afforded by the Government, it has been possible so far to raise capital at the ordinary rates of interest as to secure to the original shareholders an average benefit of more than ten per cent. on their investments. Finally, it has been arranged that the entire property of the lines of railway shall, at a definite period, return to the State.

A condition of things so contrary to that which has prevailed in this country has been pretty generally understood to exist in France, although the details may have been less familiar to our knowledge than was desirable. In Belgium there exists an organisation of the railway system which differs as much from the French method as from our own. But the facts regarding the Belgian lines are far less known, and far less easy to ascertain, than those relating to either the French or the English railways. It is not a matter of detail alone that this difference exists. It is a profound difference of principle that is involved. It is conceivable, at least in theory, that it might be worth while for a State to provide gratuitous means of transport for passengers and for goods over its territory. It cannot be said that this experiment is actually in progress in Belgium; but there is, at all events, a certain approach to it. The Belgian lines are worked at tariffs so low that where they are adequate to cover actual working expenditure they still leave interest on capital to be borne, at all events in great part, by the tax-payer. In a country in which taxation is more complicated than perhaps in any other, it has proved comparatively easy to adopt a system of which the results demand very careful study.

The public accounts of Belgium are to a great extent smothered under their own fulness and multiplicity of detail. As to audit, it is said that the perfection of system has been attained. But for that clear, incisive statement which the general reader can at once comprehend and remember, we look in vain. Thus as to the railways, which now form a portion of the public service of that country, we find much detail, but no general *resumé*. The estimates and accounts are not only extremely diffuse, but are drawn up in different forms. The accounts of past revenue are all that can be desired; those of expenditure are always imperfect, tardy, and perplexing. No less than three out of the twelve budgets into which the public accounts are divided have to be studied in order to arrive at anything like a railway balance-sheet. The gross receipts on the various lines are given in the Budget of Ways and Means. The working expenses are stated in the Budget of Public Works. The interest on loans is given in the Budget of Public Debt. An estimate of the future year is nowhere given, and can only be made up in an uncertain manner by calculations based on these several budgets.

We are indebted to Mr. Barron, her Majesty's Secretary of Legation at Brussels, for the best guidance available in this perplexing labyrinth. In a report, dated in April last, Mr. Barron has given an elaborate statement of the population, revenue, expenditure, taxation, and debt of Belgium, from which we are able to gather much positive and valuable information as to the Belgian railways.

When it is borne in mind that, in spite of the

elaborate minuteness of the fiscal system of Belgium,—vendors of spirituous liquors, for example, paying sixty-six different rates, varying from 1.06 fr. to 185 fr. per annum,—the national revenue and expenditure are the smallest of any, and the whole incidence of taxation is only 1.463l. per head of the population, against 2.100l. per head in Great Britain and 2.852l. per head in France, it is clear that a system so special deserves study. Regarded in itself alone, as a self-supporting branch of the public service, the railway organisation of Belgium is economically indefensible. What may be its merit as an integral part of a general fiscal and financial system producing such enviable results is another matter. Into that we do not now attempt to enter. But it is needful to bear this in mind in order to show that it is for the sake of analysis, and not for that of criticism, that we investigate the operation of the railway system of Belgium.

The length of the Belgian State railways at the end of 1874 was 698.5 kilometres. That of the connected lines worked by the State was 944.7 kilometres. To the total of this State "réseau" of 1,643.2 kilometres thus arrived at has to be added 309.8 kilometres, being the length of the Grand Luxembourg Railway, purchased by the State in 1873, and that of conceded lines worked by various companies, amounting to 1,478.6 kilometres. This gives a total length of railways worked in 1874 of 3,431.7 kilometres, or 2,128 English miles.

The capital actually expended by the State down to the end of 1874, raised either from its ordinary revenue or from loans, was 382,177,773 francs. Adding the value of three annuities charged on the railway for the purchase of two lines and of certain rolling-stock, the gross capital is raised to the amount of 421,000,000 francs, or 16,840,000l. It is not distinctly stated in the report whether the whole of this sum is chargeable against the lines owned by the State, including the Grand Luxembourg Railway. If this be the case, the nominal cost of construction will average nearly 27,000l. per mile. The capital expended, and thus the price per mile, will be seen to be very considerably in excess of that which is stated in the *Annuaire Officiel* of 1873, as calculated up to the end of 1871. But the price above arrived at is not that of construction alone. It covers all the annual deficits in working since the opening of the lines. In this respect the information supplied by the Belgian budgets is not only imperfect, but misleading. It is desirable to have a statement of actual cost accompanied by a table of annual deficits in working. In the absence of this information, our estimate of cost can be only approximate, whether we rely on the *Annuaire Officiel*, or on the report of Mr. Barron.

The official balance-sheet sets down the value of the railway property of the State at the above figure of 421,000,000 francs regarded as prime cost. This is a mere illusion, as the depreciation of plant and working stock alone would very considerably reduce the value of the assets, supposing all expenditure to have been incurred in *bond fide* construction and purchase. The State owes, on this score, 248,000,000 francs in the form of redeemable debt, and 77,000,000 francs in the way of treasury advances, or 13,000,000l. sterling in all. The principle of the law of 1834 was that the railway should purchase itself from its own earnings, thus finally costing nothing to the State. But no profit thus applicable has accrued. The charge for interest on debt is rapidly increasing, and the net revenue of the line is small and precarious. The sooner the matter is regarded in its true light the less will be the ultimate complication.

The cause of this anomalous condition of affairs is the extremely low tariff in force on the Belgian lines. The gross receipts per mile in 1874 are a little higher than those of the railways of the United Kingdom were in 1870, being 2,871l. per mile. But the working expenses for the same year amount to 1,961l. per mile, or rather more than 68 per cent. of the gross revenue. The passenger-rates are incredibly low. For a single journey they are per mile: first class, 1.088d.; second class, 0.816d.; third class, 0.514d., with a reduction of about one-fourth for return tickets. The average length of a passenger journey appears to be about six miles, as the number of passengers carried in 1874 were 29,457,707, and the receipts amounted to 24,929,327 francs. The proportion of revenue from heavy goods to the whole traffic receipts is about 54 per cent. That which prevails in the United Kingdom is 56 per cent. The goods tariff is proportioned to the distance tra-

velled. Distances are divided into six zones, and goods arranged into four classes. The shortest zone is below fifteen leagues, each league being equal to five kilometres. The longest zone is above forty leagues. For the first set of distances the charge rises from 0.6d. to 1.51d. per English mile per ton. For the largest zone the rates vary from 0.15d. to 0.60d. per mile per ton. Coals for export are carried for one-tenth of a penny per ton per mile. Mr. Barron justly remarks "such freights cannot possibly pay. Under the present tariff heavy goods are carried at a positive loss to the State."

Although the passenger traffic shows a steady increase, both in numbers and in revenue, for the years 1872-73-74, the goods traffic in the last-named year exhibits a falling off as compared with 1873. The respective tonnages were: 1872, 13,076,931 tons; 1873, 13,775,425 tons; 1874, 13,287,652 tons. The receipts for the same years were respectively 47,210,401fr., 48,636,707fr., and 39,329,920fr. The official returns, as before intimated, fail to present any distinct statement of the net income. Mr. Barron has deduced from a comparison of the different budgets that the net revenue fell from 23,000,000fr. in 1871 to 9,000,000fr. in 1873; rising to 12,483,000fr. in 1874. The latter sum represents a return of 2.97 per cent. on 371,969,074fr., the capital spoken of as "utilised" in 1874. This is a sad falling off from the years 1864 and 1871, which produced over 7 per cent. As the interest to be paid on the debt ranges from 4½ to 5 per cent., it is evident that such a net return as a little under 3 per cent. involves a practical bankruptcy. The matter is made apparently worse than the truth by the mode of swelling the capital to which we before referred. But in brief the Belgian Government are now subsidising the travelling and freighting public at the rate of at least 20 per cent. on their actual outlay. The tariff being so fixed as to give a net revenue of 31½ per cent. of the gross revenue, produces a return of 3 per cent. on a capital on which the State has to pay 4½ to 5 per cent. It would require an augmentation of the tariff by at least 20 per cent. to make the railways of Belgium solvent and self-supporting enterprises. To the extent here indicated the traveller in Belgium is subsidised by the State. How far that subsidy is justified by the impulse given to the general industry of the country is matter for very serious consideration.

## ACTIONABLE NUISANCES CAUSED BY BUILDINGS.

THERE are probably few points of greater importance to those who are in any way engaged in the designing or construction of buildings than a clear notion of what constitutes an actionable nuisance. A proper appreciation of the true bearings of this subject would often cause much money to be saved which is spent in expensive litigation or in subsequent alterations consequent upon the decree of a court of law. It is quite true that nearly every such case depends upon the particular facts and circumstances by which it is surrounded. At the same time, if the principles which govern this branch of law are fairly grasped, there is no reason why many cases which are now decided in the courts of law should not be prevented, in the first instance, from arising at all. A nuisance may be defined as anything which annoys a person or is injurious to his property, and which arises from the property of another. A further and important element in a legal nuisance is that it must be a continuing act or series of acts, not a merely isolated and temporary one. English legal writers are very chary of giving precise definitions, and one of a nuisance will be vainly sought for in the textbooks, but the above proposition, in the absence of any definition by leading legal authorities, is given as containing the chief characteristics of a legal nuisance. The element of continuity is of marked importance, for it is this which chiefly constitutes what in legal parlance is termed a nuisance. For if a spout on my neighbour's house suddenly pours a quantity of water on to my roof, and through my roof it penetrates to my rooms below, he is liable, if this accident was preventable, in damages for injury done to my property. Yet it is a simple wrong and in no way a nuisance. But if every time there is a fall of rain this spout pours its contents on to my roof, a distinct element of continuity is introduced, and a legal nuisance is the consequence. But a legal is not necessarily an actionable nuisance, and it is this fact which has

caused many hasty and ill-advised persons to demand redress for what they have wrongly supposed to be an actionable nuisance. An actionable nuisance has been defined by a very able judge to be "an inconvenience more than fanciful, more than one of mere delicacy or fastidiousness, an inconvenience materially interfering with the ordinary comforts physically of human existence, not merely according to elegant or dainty modes and habits of living, but according to plain and sober and simple notions among the English people" (Walter v. Selfe, 4 De Gex & Smith, 315, 1851). If this somewhat involved sentence be carefully considered, it will be found to contain the key to the decision of all questions which may arise upon this subject, the crucial test of all such questions being whether the act complained of materially interferes with the ordinary comfort and arrangements of an ordinary existence. If we judge all the reputed cases by this test, it will be found that it tries them fairly.

Taking this definition as the guiding principle, some cases may be pointed out as examples of it. But questions of nuisance, in so far as they are connected with buildings, arise in comparatively few ways. To group these several ways will further simplify the understanding of this subject. Legal actionable nuisances may arise from buildings in a threefold form, either from position, construction, or use. Every nuisance will be found to be produced by one or some of these causes. To touch briefly on the first head, the position of the building must be such as to interfere substantially with the ordinary habits of mankind, in order to bring it within the scope of the above-mentioned principle. A very good illustration, negative in its character, will be found in a case decided some ten years ago in the Court of Chancery (Smith v. Owen, 35 Law Journal, Chancery, 317). Mr. Smith was the owner of a shop in Bond-street, and Mr. Owen was the owner of the adjacent house. The latter commenced alterations in his premises which would throw the front further into the street, and thus prevent Mr. Smith's shop from being seen so far down the street as it formerly was, and consequently the goods in the window would also not be perceived so soon by the passers-by. Mr. Smith accordingly filed his bill in the Court of Chancery asking for an injunction to prevent the defendant from continuing his alterations. But the present Lord Hatherley, then Vice-Chancellor Wood, held that "there was not such an amount of injury as would induce the Court to grant an injunction: all that could be complained of was that persons could not see the goods as soon as they might if the alterations objected to had not been made." Here it was not a question of ordinary comfort, or of ordinary arrangements being injuriously affected, and it is quite clear that the objection was rather fanciful than real. If the building had been altered in such a manner, had that been possible, as seriously to diminish the plaintiff's custom by shutting out the view of his window, this would have been a very different thing: it would have been a substantial inconvenience. It is at all times a question of degree, but that degree must be tried by the test whether the inconvenience is fanciful or substantial.

The next point is that of the construction of a building.

In some respects construction does not differ very materially, as the example last given shows, from position, but cases may arise which are not so near the border-line as that which has just been touched upon. The most frequent way in which construction causes an actionable nuisance is by depriving a person of light and air. But it must be borne in mind when dealing with this point that the surrounding circumstances will be taken into consideration. What might fairly be considered an actionable nuisance at the West End may not be one in the City, where the size of the buildings and the course of trade necessarily render the same amount of enjoyment of sunshine and air impossible. The case which we propose to use as an example of nuisance arising from construction, again a negative one, will serve also as an instance of the necessity of taking into consideration the place where the nuisance is said to arise. The reversioners in fee of houses on both sides of a court in the City of London sold their reversion of a house on one side of the court to a person who at the same time obtained from the tennor an assignment of his interest. The purchaser cleared the site, and on it and on adjoining land commenced building in such a way as to interfere

with the access of light and air to the vendors' houses on the opposite side of the court. As a matter of fact, the new buildings exceeded by 16 ft. in height the old block. "But," said Lord Justice Turner, "it is not every impediment to the access of light and air which will warrant the interference of this Court. Some material or substantial injury must be established." And, again, "It may well be believed that in such a court as this it would be difficult to find sufficient light to work at all times, or even, perhaps, at any time in the day in the month of November." Accordingly the plaintiffs were unsuccessful in this suit (The Carriers' Co. v. Corbett, 4 De Gex, Jones, & Smith, 764, 1865). When we come to consider the third head, that of nuisances arising from the use of a building, we find that the surrounding circumstances are even of greater importance than when it is a question of construction. Thus among a number of factories the owner of a house annoyed by the many disagreeable concomitants of a manufactory could scarcely obtain relief, but if a noisy factory is placed among a number of dwelling-houses, it is probable that the owner of the factory would be prevented from continuing his operations in the same manner. But a very good instance of the improper or materially inconvenient use of a building will be found in a case decided in the present year (Broder v. Saillard, 45 Law Journal, Chancery, 414). The facts of the case are very clearly related in Sir George Jessel's judgment: "The position of the defendant," he said, "is a remarkable one; the original plaintiffs are the owners of a house in St. George's-terrace, Primrose-hill. The defendant is the lessee of Hill View, a house standing immediately above the plaintiff's house. He is in a very unfortunate position. He seems to be a merchant who has taken a house, with a stable adjoining, at a high rent, and on the usual terms. The plaintiffs find their tenant threatening to go away, on account of the noise which was inflicted upon him by the horses in the defendant's stables." Further on the Master of the Rolls observed,—"I take the law to be this, that a man is entitled to the comfortable use of his dwelling-house. If his neighbour makes such a noise as to interfere with the ordinary use and enjoyment, and to cause serious annoyance and disturbance, the owner and occupier of the dwelling-house is entitled to be protected from it." Of course, this is again, to some extent, an instance of a faulty construction, but it is also an equally good instance of use, because the manner of using the adjacent building was the actual cause of the nuisance. By using it for the same purpose, but with greater care, the noise of the horses might have been considerably diminished. A still more striking instance arose when the ground-floor of a house in Green-street, Grosvenor-square, was used as a stable (Ball v. Ray, Law Reports, 8 Chancery, 467). This was a distinct instance of the use of a building in a special manner being the actual cause of the nuisance complained of, to which the judgment of the Court put an end, and is perhaps a more useful example than the similar yet more recent case decided by the Master of the Rolls. It would be beyond the range of a sketch such as the present to go further into this branch of the law, and into such essentially legal portions of it as have to do with acquiescence in the nuisance, the length of its existence, and so forth. The portions of it upon which we have touched are those which most vitally affect persons engaged in planning or advising upon buildings. If these principles, which have been briefly pointed out, be properly considered and applied either to the examples already given here, or to those which are constantly occurring in the course of professional duties, or which may be found by the dozen in law reports, they will not be without value to all whose work obliges them to consider the subject.

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**Population of the Principal Towns of Scotland.**—The Registrar-General of Scotland reports the following as the estimated population of the eight principal towns in the middle of the year 1876:—Glasgow, 545,144; Edinburgh, 215,146; Dundee, 139,125; Aberdeen, 96,499; Greenock, 70,192; Leith, 52,919; Paisley, 48,679; Perth, 28,535. The total is 1,194,239, or more, by about 18,000, than a third of the population of Scotland. Since the census the registration area of Glasgow has been extended, and that of Edinburgh contracted.

#### MOVEMENT IN INDIA.

It is rumoured that the question of transferring the management of the East India Railway to the Government of India has once more been raised, and, it is said, will be carried into effect in 1879. A report that the Board of Agency has declined to sanction any large outlay for new stations or other buildings has, however, been contradicted.

A grand scheme for the system of canals through Eastern and North-Eastern Bengal has been started. By this means a large portion of the Soonderbuns would be drained, other districts would be supplied with fresh water, while the accommodation for local traffic would be greatly increased. The great cost of any such project renders its execution extremely problematical.

The Punjab Government has sanctioned an expenditure of about 70,000*l.* in improving the water-supply of the city of Lahore, and an annual expenditure of 2,000*l.* for maintaining the new arrangements in proper working order.

The consulting architect of the Tanjore district has been directed to place himself in communication with the Surgeon-General and the Sanitary Commissioner, with a view to preparing and submitting to Government sketch-plans of the Mofussil Dispensaries.

Among the public works just finished in Madras are new Government stores and workshops, and those at present in existence are to be converted into a military hospital. Quarters for the lady nurses have been erected at the General Hospital, at a cost of Rs. 26,162, and a new palace is in course of construction for the Prince of Arcot, which will involve an outlay of 11,000*l.* or 12,000*l.* The zonana has been finished, but the palace-grounds have still to be enclosed, and the durbar-hall has to be furnished.

A movement is on foot to provide a suitable memorial of those who have fallen at Perak, which, if sufficient subscriptions are forthcoming, will take the form of a stained-glass window, in St. George's Church, Penang.

The Station Church of Lahore is about to be restored, pending the building of a new one, which is much needed. The Mahomedans of the city are also collecting subscriptions for the restoration of the Jaina Masjid, and have already gathered over 2,000*l.* for the purpose.

The trustees of the Indian Museum have lately purchased Dr. Dey's large collection of Indian fishes. They are also negotiating for the purchase of the late Mr. W. S. Atkinson's collection of Indian insects. It fills twenty-five large cases, and is particularly rich in Darjeeling lepidoptera.

The death is announced of Mr. James May, C.E., resident engineer of the Madras Harbour Works. He had had considerable experience in this style of construction, having previously been engaged upon the harbour works at Kurrachee, Alderney, and Alexandria. The local Government has telegraphed to send a successor at once.

The French in India are in luck. A native named Soobroya Pillay has left the Pondicherry Government 30,000*l.* by his will, and it is proposed to establish a school of Industrial Arts with the money. There are, it appears, a number of young men, European, East Indian, and native, going about in the French colony without employ, not having the means of earning an honest livelihood, and it is hoped that if such a school were established they would, by learning a useful trade, cease to be a burden on society.

The Government of Bengal have had under consideration projects for the formation of a similar school or workshop for the practical instruction of the passed students of the Civil Engineering classes of the Presidency College; but the expense attending the foundation of a separate institution for this purpose, and the difficulties in organising it, have delayed the introduction of the scheme.

The re-organisation of the Madras Department of Public Works is said to be again on the tapis. An officer from Bengal recently visited the Presidency, and is said to have drawn up a memorandum tending to show that the whole department is far behind the age, and that it must be thoroughly reconstituted on the Bengal model throughout.

Great efforts are being made to push on with the new water-works for the supply of Bangalore, under the control of Mr. W. Henderson, C.E. The project is intended for the collection of the storage of the rainfall on a comparatively high portion of land north-west of the station, and it is estimated that the total cost will be about 70,000*l.*

The native state of Mysore has provided £3,300L for the restoration of tanks, and 30,000L for new roads, in its estimates for the present year. The total estimated revenue is only about a million sterling.

The Forest Department, Burmah, have recently been extracting crude turpentine from two kinds of pine trees—the *Musonia* and the *Khasyana*,—which are found growing abundantly on the Salween hills, and there is some talk of making the product an article of commerce.

The King of Burmah has signed a contract with a Venetian gentleman for the construction of a railway from Mandalay to the British frontier, and Italian capitalists are said to have subscribed the necessary capital. The line is to be completed within six years and a half from the present time, and is to be handed over to the king whenever he is prepared to pay its cost with a fair profit added. Until then it will be worked by the company, 12 per cent. profit yearly being guaranteed by his Majesty.

A selection from the Yasufzya sculptures, weighing about twenty-two tons, has been despatched to England by the Duke of Argyll. It comprises statues, pillars, and carvings of sacred subjects, &c., together with the whole of the carved facings of the steps discovered at Jawalgi, representing various "Jatakas."

General Cunningham has found two dated inscriptions of Asoka, one "when years after the Nirvana of Bhagavat had been fulfilled," only, unfortunately, the middle figure in both is doubtful. The first and the last are, however, almost certainly two and six.

Dr. Bühler has discovered the Sanskrit school, erected by Raja Dhar in the centre of an old mosque, and forming an integral part of the mosque. On one pillar are the Sanskrit conjugations; on another, opposite, the Sanskrit declensions. Round about are quaint punning Sanskrit slokas, in praise of Raja Dhar. The rest of the mosque is built of pillars, &c., taken from ruined temples.

While the archaeological surveys of Bengal and Bombay are being carried out by General Cunningham and Mr. Burgess, very little has been done for Madras. A lengthy correspondence has taken place on the subject between the Madras and the Supreme Governments, and an offer has been made from the India Office of a salary and travelling allowances for a surveyor; but the sum mentioned is so very small that there is no immediate prospect of any competent person being tempted to undertake the duty.

The Conservator of Forests in the Tenasserim Provinces has published a return of the number of teak logs of all descriptions that have been imported into Moulmein from the Shan and Karen States, as also the number of logs which have been brought into the market from our own forests. The whole quantity in the seventeen years, 1859—76, only comes to 237,305 pieces of timber. In 1859-60 only 52,955 logs of all sorts came to Kadoe, the timber station; from that year till 1866-67 the number ranged from about 64,000 up to 95,000. In 1869-70, the supply fell as low as 44,362. During the year 1875-76 no fewer than 138,609 logs came down.

The municipality of Lahore has unanimously resolved that plans for the introduction of a pure water supply and the drainage of the city and suburbs, prepared by Mr. Leslie Clark, C.E., together with an application for a loan of 135,000L to carry out the works, be submitted for the sanction of the Government.

Among the many memorials which it is proposed at present to raise in India, is a little one which it is to be hoped will not escape notice among its more pretentious neighbours,—viz., a small monument over the grave of Captain Butler, of Naga Hills celebrity, at Golaghat; and, if a balance should remain, something to words perpetuating his memory in England.

Recent excavations at a place called Maheshet, near the city of Burampore, have brought to light a number of interesting remains of Buddhist temples, and it is now intended to erect a museum for their reception at Gonda, in Bengal.

Factories for the manufacture of small arm ammunition are about to be established in each of the three presidencies of India. Machinery of the latest pattern has been manufactured for the purpose, and lies at Woolwich Arsenal ready for exportation.

Sir Richard Temple, who rarely mounts a hobby without winning the race, has declared himself strongly in favour of establishing a

hospital for incurables in the neighbourhood of Calcutta. There is not money enough for this new project just at present; but a modest little house has been converted to this purpose as a temporary hospital at Sealdah.

A translation of the "Coppa Sasana," recently placed in the Mysore Museum, has been made by Mr. Rice, the Director of Public Instruction in Mysore. It is dated A.D. 481, and is written in Old Canarese characters; but the language is Sanskrit. It describes the Chora line of kings, whose capital was Talkad (now a deserted city in the Nugur Division of Mysore), and who ruled over the whole of the south of that province from the beginning of the Christian era to the end of the ninth century, or for about 1,000 years. One plate of the Sasana is wanting, and the east side of one plate is illegible; but the remaining plates are in an excellent state of preservation.

#### ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE third annual meeting of this Association was held on the 6th and 7th inst., in the hall of the Institution of Civil Engineers, Great George-street, Mr. James Lemon, president, in the chair. The first day's proceedings were devoted principally to purely business matters concerning the Association, such as the consideration of the annual report (which showed the society to be flourishing), alteration of rules, and the report of the council upon the election of officers, &c.

Mr. Lemon, after thanking the Association for electing him their president, proceeded to remark that sanitary engineering was of comparatively modern growth, as it might be said to have sprung into existence less than thirty years ago, when the investigations of Mr. Edwin Chadwick and Dr. Soathwood Smith into the causes of zymotic disease led to the passing of the Towns Improvement Act of 1847, and the Public Health Act of 1848, which were followed by a host of Sanitary Acts down to the present time. The adoption of the Public Health Act of 1848 necessitated the appointment of surveyors; but though some appointed at that time were gentlemen of ability, the large majority necessarily possessed but a limited knowledge of sanitary science. The demand thus created for special knowledge naturally induced civil engineers and surveyors to devote themselves exclusively to the study of this important branch of the profession, and the result had been the creation of the sanitary engineer. But it was reserved to that Association to take legitimate steps to bring together the official talent of the country, and to adopt means of instruction whereby the standard of knowledge of sanitary science amongst its members might be permanently raised. This brought him to the present position of towns and districts under the Public Health Acts, and the duties of their officers. The first duty of the sanitary authority was the removal of excremental matters, which brought into play the constructive skill of the sanitary engineer, and the chemical knowledge of the medical officer of health. It was satisfactory to know that great differences of opinion now no longer existed on the sewage question, and that there was a healthy tone of general accordance on main points, which augured well for the settlement of the most difficult problem in sanitary science. The more we studied the subject, the more we became convinced that the choice of the system must depend entirely upon local circumstances. Closely allied with town drainage was the disposal of sewage at the outlet, and in this particular all towns were in the same difficulty. Sewage utilisation or purification had been the subject of much controversy, and large sums of money had been expended in the attempts to solve the problem; but the advocates of irrigation, precipitation, and filtration, had come to the conclusion that sewage utilisation did not pay, that the attempts to make a profit out of sewage must be given up, and that it must be treated as something to be got rid of without nuisance. Local Boards must either pay a subsidy to public companies, or they must make an annual loss if they elect to do the work themselves. In either case there must be a charge upon the rates. If the sewage outlet is above the intake of the water supply of another town, then the best means of purification is to apply the sewage to the land. If this condition does not exist, then precipitation or filtration may be resorted to; but in every case the standard of purity of the effluent water should not be lower than that of the river into which it is discharged.

There are many details connected with the drainage of a town to which the attention of this Association should be specially directed, with the view of acquiring by discussion a better knowledge of the subject, and more uniformity in working. Among the many subjects upon which he hoped to hear papers read and statistics given were,—(1) sewage pumping machinery; (2) the separate system; (3) the area of land for irrigation and intermittent filtration per 1,000 gallons of sewage, exclusive of rainfall; (4) the drainage of sewage farms, the formation of the land, and the cost per acre; (5) the cost of precipitation by various processes, and the cost of drying the sludge. At the late Conference at the Society of Arts, strong opinions were expressed in reference to the defective condition of house drainage, and as to the desirability of the work being done by the local authority. This was, in many cases, correct; but we must avoid paternal government in these matters. Local Boards have ample powers to enforce the construction of efficient drainage, but this can only be done by an increased staff of inspectors, involving increased annual expenditure. Whether the inspection of buildings should be paid for by fees, as in the metropolis, was a matter for serious consideration. The Government, as they were aware, were promoting a Bill for the prevention of pollution of rivers, which on the whole was a very good measure; but he considered the 8th clause defective, as it would give encouragement to manufacturers to carry liquids into the sewers, to the serious detriment of the purification of the sewage. The opinion of two such large towns as Wolverhampton and Birmingham might be taken as evidence of the desirability of excluding such refuse from the sewers on any condition whatever, and admitting only the effluent water at such a standard of purity as should be approved by the local authority, with power of appeal, in case of dispute, to the Local Government Board. The next subject to which he would allude was that of water supply. The importance of good water could not be over-estimated. All towns which are without this vital necessity have a high rate of mortality, and a heavy percentage of zymotic disease. Local authorities who take no steps to prevent their constituents from being poisoned by bad water should be held responsible for such neglect, and the Local Government Board should compel such local authorities to provide a constant supply, of a fixed standard of purity, within such time as they might direct. The central authority very properly compel Local Boards to drain their districts, injunctions are easily obtained against the pollution of rivers, and the Government have a Bill before the Commons giving them increased powers; but the supply of one of the necessities of life is left to chance and the voluntary efforts of water companies. Towns should not be left to the tender mercies of public companies, whose chief desire is to keep up their dividends; but the water supply should be in the hands of the local authority, and an analysis should be made by an independent officer under the central authority at least once a year. The influence of this Association had already made itself felt, and last year they succeeded in getting a useful addition to the clause in the Public Health Act in respect of the compulsory supply of water. Further amendment was, however, necessary. Powers are given to the local authority to compel the owners to supply water to their houses at an expense not exceeding the water-rate of the Local Act. But corporations who have constructed their own works are still liable to the limitation of 2d. per week, unless they apply to the Local Government Board. This absurd regulation was no doubt intended to protect the poorer classes, but it is not the occupier who is the objector; it is the owner, who wishes to avoid the expense of laying on water from the main to his houses. Parliament would, he thought, act wisely if they encouraged the acquisition of water-works by corporations, on the basis of annuities equal to the maximum dividends, and not upon the more prevalent system of so many years' purchase upon the dividends or profits. Corporations might also be allowed to hold shares in waterworks by consent of the Local Government Board, by which means they would gradually become the entire owners of the property. The question of water supply naturally brought him to the consideration of public baths and washhouses. The Act passed to encourage the establishment of these, like all permissive legislation, had failed to accomplish the object for which it was designed.

Very few towns have adopted it, from the fear of increased local taxation. In these days of active legislation for the working classes, and for the promotion of temperance, sanitarians should not overlook cleanliness and home comforts. The Artisans' Dwellings Act was a step in the right direction; but, public baths and washhouses should form part of the scheme. If local authorities could see their way to adopt this Act without loss, they would be induced to do so, and it was the duty of that Association to endeavour to solve the problem. Amongst the many duties of the local surveyor there were none requiring more close attention than those in connexion with the maintenance of the public highways. The importance of carefully-prepared statistics as to the cost of maintenance could not be over-estimated. The cost must depend upon local circumstances; but still there were so many conditions in common in all towns that much valuable information could be mutually afforded. Whatever opinions they might have as to the best material for our roads, there could not be a question as to the suitability of asphalt for public footways; but in selecting asphalt, his experience taught him that the best description was the cheapest. He had a preference for the compressed asphalt, as nothing but the genuine rock was used. The cost of new streets should fall upon the freeholder, and not upon the small leaseholder, as he reaped a very large profit by the transfer of his property from agricultural to building land. He had long been of opinion that the incidence of taxation in towns required adjustment, and that the cost of permanent works should be paid by the owner, and the maintenance by the occupier, with power to the leaseholder to deduct the proportion of the rating from the ground-rent, the same as property tax. But as taxation and representation should go together, he would give a vote to the owners in boroughs for the election of members of the Town Council. This would bring about greater interest in local matters on the part of the upper classes. They had lately received an addition to their sanitary legislation which would put local self-government on its trial. He alluded to the Artisans' Dwellings Act of last year. The difficulty which he saw in putting the Act in force was the definition of an unhealthy area, which Clause 3 defined as an area where diseases indicating a generally low condition of health among the population have been from time to time prevalent; and then it went on to state the causes to which these diseases may be attributed. But this was not sufficient. In his judgment, all courts and alleys wanting in light, air, ventilation, or proper conveniences, should be declared an unhealthy area, whether sickness prevailed or not. Sanitary measures, if they are to be effectual, should be preventive, and not remedial. It was, he believed, admitted that small towns required the Act as much as the large ones, and even more so. We have now rural sanitary authorities, who should take up this question and publish to the world how the agricultural labourer was lodged. This would bring out some startling revelations. The preparation of schemes, and the designing of artisans' dwellings, would fall upon the surveyor, who would also have to submit estimates of cost. This would be a work of considerable labour, and he hoped it would be met by Corporations in a liberal spirit. Expenditure and probable receipts should be set out showing the annual loss. That there would be a loss he had no doubt, and from his experience in laying out new streets he should estimate that loss at 50 per cent. at least of the whole cost. But although this loss would fall upon the rates, there would be a gain to the poorer classes living upon unhealthy areas from the decrease in their expenditure in times of sickness, and diminution of enforced absence from their daily toil. The consideration of this important measure naturally led one to reflect as to the causes which led to its passing, and the answer was, *lack of local control over the formation of new streets and buildings*. The Artisans' Dwellings Bill would remove many evils; but how much better it would have been if the minimum width of streets and building regulations had been defined by Act of Parliament, and not left to the local authority to legislate on by means of bye-laws. Two years ago, at the annual meeting at Birmingham, he read a paper on this subject, and the general opinion was strongly in favour of a Borough Building Act in lieu of bye-laws; but as the local conditions vary considerably, an Act of this kind could not be framed to work satisfactorily without the local knowledge and

assistance which an association like that alone could give. He should consider it his duty at an early day to call the Association together to discuss this question, and to prepare suggestions which he hoped would be accepted by the Local Government Board.

The president having concluded his inaugural address, the reading and discussion of papers was proceeded with. The syllabus included the following subjects:—"Street Tramways," by Mr. P. B. Coghlan; "Street Pavements as adopted in the City of Manchester," by Mr. H. Royle; "The Duplicate Mode of Town Drainage," by Mr. H. Jacob; "Constant Water Supply," by Mr. J. E. Greatorex.

In the course of Mr. Coghlan's paper, he said:—"I now come to the construction of the tramways. The introduction of steam power will, in my opinion, give the *coup de grace* to the system of using longitudinal wooden sleepers for the rails. It might be said that this is contrary to our experience on railway permanent way; but I think it is not so. In railway permanent way the block or rigid system was admirably adapted to the traffic expected at the time. It was only the greater speed of twenty and forty miles an hour that showed the necessity for a more elastic road. The jumping and hammering caused by such speeds shook the rolling stock to pieces on a perfectly rigid road, but when the speed is limited to ten or fifteen miles an hour, there is no such vertical motion in the carriage except when the rails are out of level, and except at the joint of the rail. If a perfectly rigid bearing is best for the tramway traffic which does not exceed ten or fifteen miles an hour, there is, no doubt, however, that with steam engines the average speed will be increased, and the joints of the rails laid upon longitudinal sleepers will give way much quicker than they are now seen to give way on the tramways laid on timber. I do not know that any system of permanent way is quite satisfactory, even on railways, and the same remark applies much more forcibly to tramways. In the timber system, as laid in London, Liverpool, Middlesbrough, Dublin, and other places (including part of the Leeds tramways), I think the construction is unsatisfactory, because the road is elastic; and though there are iron plates under the rails at the joints, a depression of the rail and a jolt of the car are generally to be found there, and this would be worse with an increased speed. Besides, I do not think the longitudinal sleeper properly holds the side fastenings generally used to clamp the rails to the sleeper. The alternate wet and dry so near the surface of the road must have a prejudicial effect on the timber, and particularly at the curves, where the timber has to receive vertical cuts, about 1 in. or 2 in. in depth, in order to bend it round, to correspond with the required curvature of the rail. If cross timbers could be used, I should think a satisfactory tramway might be constructed with wood, but, as long as we require the surface of the road to be paved, a difficulty will arise, on account of the impossibility of bedding the paving-stones satisfactorily where the cross timbers occur. Mr. Deacon, borough engineer, Liverpool, has designed a tramway which he considers specially adapted for towns, such as Liverpool, in which the ordinary traffic is very heavy. The advantages claimed by Mr. Deacon are, that a uniform bearing is secured for both pavement and rails, by forming a Portland cement concrete foundation beneath the whole street. The sleepers which are creosoted to the heart, rest upon the smooth surface of the concrete. The rail is of steel, and trough-shaped, and weighs rather more than 60 lb. to the yard, though the width is only 2½ in. (the usual width being 4 in. or 4½ in.). The depth of the flange, and consequent transverse strength, are therefore exceptionally great. The top of the sleeper is formed to fit the trough shaped under side exactly. One of the objects sought has been to connect the rail with the underside of the concrete foundation in such a manner that while full advantage is taken of the rigidity of that foundation, a slight elasticity is secured by the presence of the timber sleeper. With this end in view, a cast-iron washer is bedded in the lower part of the concrete, and from this washer, a bolt is brought up 2½ in. above the concrete, and screwed with a right-handed thread, and the sleeper having first been drilled vertically, so as to admit this bolt, is placed in position. A second bolt, having an eye at its upper end, and being screwed with a left-handed thread, is connected with the lower bolt by a large right-handed nut. Through the side flanges of the rail two opposite holes

are drilled, and the eye of the upper bolt having been placed between them, a three-fourth inch pin is inserted to connect them. By screwing up the nut, engaging the lower right-handed and the upper left-handed bolts, the rail is drawn down to its position, and holds the timber sleeper, which acts merely as a packing piece in position between the rail and the concrete foundation. These fastenings are placed at every 3 ft. The second object claimed was greater uniformity of the surfaces of the rails and adjoining sets. The whole of the sets, with the exception of those immediately adjoining the rails, are laid upon ½ in. of sand. The sets next to the rail are carefully picked, and if necessary dressed, and are alternate wholes and halves. The two extreme ends of the base of each rest upon the concrete. The stability of the whole pavement is further insured, and it is expected that the surface-water will be prevented from penetrating to the sand or to the sleepers, by filling the joints with a bituminous composition. With the object, on the one hand, of obtaining a larger tread for the tram-wheels, and, on the other, of reducing the inconvenience to ordinary traffic inseparable from the existence of a broad iron rail, the groove and wheel flange is placed in the middle, and thus, while the tread and life of the wheel are increased, the width of the rail is, as already stated, reduced to 3½ in. I consider Mr. Deacon's system to be very ingenious; but I do not think a timber sleeper, 3 in. wide (even though it may be 6 in. or 7 in. deep), can possibly make a permanent job, particularly when it is cut about for fastenings and at curves. Besides, it would cost as much to tighten up these fastenings as it would to put in new fastenings on the ordinary system, and I do not see any equivalent advantage in the additional first cost. I should gladly support any scheme for reducing the width of the rail to a minimum, but I am compelled to object to the groove in the centre of the rail, because I do not see that any advantage is given sufficient to compensate for the additional haulage power required for pulling the cars on this form of rail. With the bearing surface of the wheel on one side only of the flange, the groove, to a certain extent, cleans itself, but with the bearing surface on both sides the flange wedges dirt and dust into the groove. I have formed a very favourable opinion of the plan recently submitted by Mr. Souttar to the Manchester corporation.

The first day's proceedings were concluded by a dinner at the Westminster Palace Hotel.

On the second day, Mr. Ellice Clark, of Derby, read a paper "On the Construction and Maintenance of Highways." This was followed by a paper "On the Leeds Sewage Works," by Mr. A. W. Morant, of which the following is an abstract:—

After giving the statistics of area, population, levels, rainfall, &c., he described the steps taken by the corporation to effect the main drainage of the chief part of the borough, the sewage being conveyed to one outfall at Knostrop, about two miles and a quarter from the town-hall. When this was done an injunction to prevent the sewage being allowed to flow into the River Aire until purified was obtained by the riparian owners. The Utilisation of Sewage Committee having visited all the towns where processes for purifying sewage were being tried, finally decided to adopt that of the Native Guano or A B C Company. In 1870 they entered into a contract with that company, and first constructed experimental works, and afterwards permanent works, sufficiently large to deal with the whole sewage of the borough. The length of sewers in Leeds is about 130 miles, and the cost has been 283,266l. Mr. Morant then fully described both the experimental and permanent works, the cost of which has been 57,543l. The quantity of water supplied to the town from the waterworks is about 7½ millions of gallons per day, and the quantity of sewage flowing to the outfall has been found lately, by careful gauging, taken in perfectly dry weather, to be about 9 millions of gallons. It had been considered to be much more. There are about 8,500 water-closets. The outfall works consist of pumping machinery (as the whole of the sewage has to be lifted about 18 feet), machinery for grinding and mixing the ingredients used for purification, twelve depositing-tanks, and a shallow reservoir of about five acres in area. Various processes have been tried for the purification of the sewage, chiefly those of Rupert Goodall, the Native Guano Company, and John Hanson. Each gives a good result, and it has not yet been finally determined which to

adopt. In order to compare the efficiency of these processes, Mr. Morant described the materials used, and the cost, and then showed the analyses of the effluent water and of the sludge. The sludge removed from the tanks, after being dried so far as possible in the air, is made into a powdered manure by means of Borwick's patent drying cylinders, which are found to answer well.

Mr. E. Buckham, of Ipswich, then read a paper on "The Removal of Excrementitious Matter in Towns in Connexion with Sewage Disposal," in which he stated that it was in contemplation to use Morrell's earth-closets at Ipswich instead of carrying out drainage works, which, from the nature of the ground, would be very difficult and costly.

Mr. T. W. Grindle, of Hertford, followed with a paper on "The Cost and Construction of Sewage Tanks," which we give elsewhere.

In the discussion which followed the reading of these papers, the "pail system," as in use at Rochdale and elsewhere, was very strongly condemned by almost every speaker. Reference was made to the recent Sewage Conference at the Society of Arts, it being remarked that the conclusions which had been arrived at by that gathering were devoid of anything like novelty. The principles laid down in the recommendations of that Conference were substantially if not identically the same as those which had been all along insisted on by the Association, and it did not seem likely that much good would result from outside conferences on the subject. It was generally admitted that where the contour of the land allowed of it, irrigation was the best means of disposing of sewage; and next to that, underground intermittent filtration. It was further observed in this connexion that the towns to which one or other of these systems could not be applied were very few indeed. A suggestion of some interest was made by Mr. Lynde (Manchester) on the subject of sewage-tanks. He proposed that instead of the ordinary oblong form, they should be made somewhat in the shape of a wedge, or perhaps in the shape of a fan when about half opened. The sewage was to be admitted at the narrow end, which would be deep, and drawn off in a thin film at the broad end, which should be very shallow, the bottom of the tank sloping upwards as it spread outwards from the narrow to the broad end. Mr. Lynde was of opinion that this form of tank would allow of a much speedier subsidence of the solids, and would result in a purer effluent. Mr. Grindle said he had to make another tank for purposes of experiment, and he was half inclined to adopt Mr. Lynde's suggestion. As to the various chemical precipitating processes of treating sewage, it was pointed out that their great defect was that they largely increased the amount of sludge. Hardly one of these processes was to be preferred to another, and inasmuch as lime formed the basis of nearly all of them, it would generally be found much cheaper, and almost, if not quite as effectual, to use lime only. Mr. Lewis Angell and other speakers, in referring to the pail system as adopted at Manchester, said that any one in the vicinity of the "sanitary depot" where the pails were taken to be emptied would not need to inquire the way to it; his olfactory nerves would prove an unerring guide. The smell was something horrible, and yet, it would hardly be credited, opposite to this depot of filth were the splendid new abattoirs erected by the Manchester Corporation, and on the side nearest the depot the carcasses were hung, when fresh killed, for a day or two, previously to being sent all over the city and the surrounding districts. In face of what Professor Tyndall and others had said as to the "germ theory," a more effectual mode of spreading disease than placing these two establishments together could hardly be conceived. It was a gross blunder, due, he believed, to the ignorance of what other committees were doing. The "sanitary depot" would, he heard, soon be removed, and the sooner the better, for such a state of things ought not to be tolerated a day longer than necessary. In reference to Ipswich, most of the speakers deprecated the dry-earth system proposed to be introduced by Mr. Buckham, and advocated the construction of low level sewers discharging into or near the sea. The sewage of seaport towns generally would be best disposed of by pouring it into the sea, subject to such arrangements as would preclude its being carried back to the shore.

The foregoing summary of the discussion presents the salient points touched upon by the speakers. We may publish abstracts of

some of the other papers read, but the Association seems to be inclined towards the shortsighted policy of giving scant facilities to the representatives of the press.

The Association now numbers 180 members, and an augmentation is expected to result from the establishment of a district branch or section for Bristol and the neighbourhood.

#### THE COST AND CONSTRUCTION OF SEWAGE TANKS.\*

It generally occurs that works for precipitation are in low-lying situations, the difference of level between inlet and outlet regulating the depth of the tanks, if advantage is to be taken of gravitation as a means of emptying. The size of the tanks depends upon the process adopted. Where rapid coagulation takes place, as in the phosphate sewage, "A B C" or M. Hill's process, smaller tanks are requisite. In Hertford, where the lime process was in operation, the size of the tanks (six in number) was 120 ft. long, 20 ft. wide, and 4 ft. 6 in. deep, each having a capacity of 67,500 gallons, the tanks being always in use.

Under the phosphate sewage process, four of these tanks are found amply sufficient, while the fifth is being cleansed of sludge, and the sixth kept in readiness for storm water.

A series of narrow tanks is found preferable to two wider ones.

The division-walls are two bricks and a half in thickness; outer walls, two bricks. The rule adopted to ascertain dimensions of the division-wall is obtained by taking the weight of material used in the construction of the walls, which should be of sufficient weight to resist the pressure of water thrown against them at the maximum height.

All walls should, of course, be perpendicular, so that the solids will more readily fall to the bottom of the tank. In one case, where the brickwork was perfectly dry, I had the interior of the tank tarred. This prevented the growth of sewage fungi.

Tanks containing sewage should always, if practicable, be covered.

Near the entrance to the tanks, a junction with a sump common to all of them is made, into which the sludge is swept, to be lifted to the drying-beds by the elevators. It frequently happens that there is not sufficient admixture of the chemicals with the sewage, to induce which an agitator was designed, consisting of a rectangular chamber at the sewer-mouth, with boards placed alternately at the top and bottom of the tank, at equal distances apart; this causes agitation, and answers admirably.

The cost of constructing sewage-tanks varies with the locality, so that no reliable estimate can be given. At Hertford, the brickwork cost 14l. a rod; Ponder's End, 20l.; Backhurst Hill, 17l. 10s.; at Hatfield, only 12l. 10s. At Ponder's End, 16s. a cube yard was paid for concrete; at Hatfield, only 10s. 6d.; but in the former case, cement was 2s. 6d. per bushel, in the latter only 1s. 9d.

The elevating machinery should be of the simplest description, that it may be worked by unskilled labour, the only kind that can be obtained to conduct operations on sewage works. The sludge should be elevated by the common dredge (chain and bucket). Pumps are cut by the silt in the sludge.

The speaker at some length then referred to sewage filtration, observing that he found granulated coke to make the best filter or strainer, arresting those particles of sewage that are not acted upon by any known precipitant, and which, if escaping into streams, get attached to the sides or bottom, and, though uninjurious, give the appearance of extreme sewage pollution. Before concluding, he remarked that a saving of steam-power in many cases can be made by utilising the outfall of the effluent water. At Hertford, a fall of only 3 ft., with 700 gallons per minute, is found sufficient to drive the whole of the chemical machinery and sludge-elevators.

The paper was illustrated by several drawings of works constructed by Mr. Grindle.

The following is the rule referred to as to strength of division walls.

In estimating the pressure of the water to be resisted, and the requisite strength of the division wall or partition, the following calculations may be used:—

\* By Mr. T. Wilson Grindle, Borough Engineer, Hertford.

P = the pressure of the water in pounds to be resisted.

d = the depth of water = 5 ft.

Taking 62.5 lb. as the weight of a cubic foot of water,—

$$P = \frac{62.5d^2}{2} = \frac{125d^2}{4} = 781.2 \text{ lb. per lineal foot of wall.}$$

M = the moment of water tending to overthrow wall =  $P \times \frac{d}{3}$

$$\therefore M = \frac{125d^2}{4} \times \frac{d}{3} = \frac{125d^3}{12} = 1,302 \text{ lb.} \dots\dots\dots (2)$$

Let w = the weight of a cubic foot of the wall, which may be taken at 105 lb. for brickwork.

h = the height of the wall above the invert = 5 ft.

t = the thickness of the wall, 2 ft. 3 in.

D = the moment of the wall to resist overthrow.

$$\therefore D = \frac{ht^2w}{2} = 1,328.95 \text{ lb.} \dots\dots\dots (3)$$

For safety D should exceed M.

#### MORTUARY FOR THE PARISH OF CLERKENWELL.

THE parish of Clerkenwell has for many years past been unable to provide a proper mortuary, consequent upon the difficulty of obtaining a site for the building. The Marquis of Northampton has, however, come to the rescue by granting the use of a portion of the now disused Spa Fields Burial Ground for the purpose for a term. It is the intention of the Marquis to hereafter lay out the whole of the burial-ground as a garden for the recreation of the inhabitants, and consequently it was desirable that the new building should be somewhat more ornamental than is usual with such structures.

The Vestry have instructed Mr. H. Saxon Snell to design for them a building that should be as complete in all its details as possible, desiring that whilst the strictest economy should be observed, everything should be done that sanitary knowledge could suggest for rendering the place unobjectionable to the inhabitants. The site is about 36 ft. wide and 130 ft. long, and it is situated to the south of the entrance to the burial-ground from Fletcher's-row, and abuts upon the back portion of the houses in Northampton-row.

There are two dead-houses, each 24 ft. long and 12 ft. wide, and a "post mortem" room, 18 ft. long and 15 ft. wide. The walls of all these rooms for 6 ft. in height are lined with Cliff's white glazed bricks; the floors are of asphalt, the coffin tables are of planed slate, and there is every facility for well flushing and cleansing all parts with water. The inquest-room is 22 ft. long, and 17 ft. wide, and the waiting-room for witnesses adjoining is 18 ft. long and 15 ft. wide. There is a separate lavatory and water-closet accommodation for the coroner and jury and for witnesses. The walls of these inquest and waiting rooms are lined with Cliff's buff-coloured glazed bricks and red skirtings.

An important feature in the plan of the building is the verandah, which affords covered access for the coroner and jury to the dead houses when it is necessary to view a body.

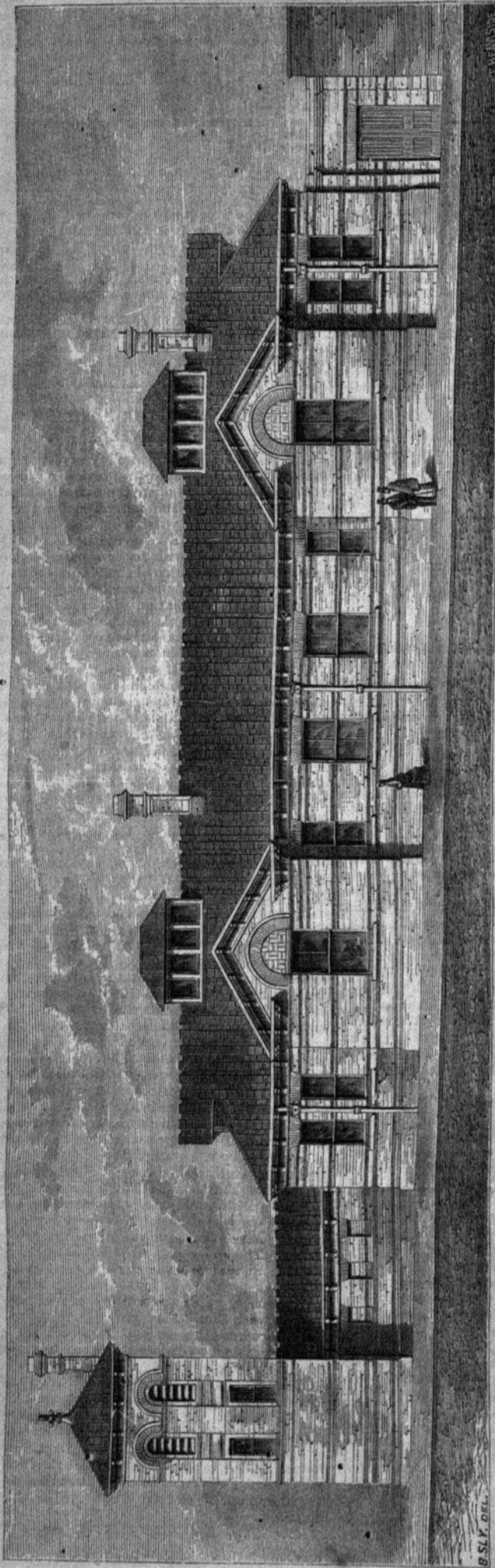
At the north-east corner of the ground is a disinfecting chamber, fitted with Messrs. Fraser's patent apparatus, and over this rises the tower and chimney shaft, with flue for carrying off the offensive odours of the disinfecting closet below. The upper part of this tower contains the cistern, and below is a room for the caretaker.

The roads, yards, and floors are all to be covered with Claridge's asphalt.

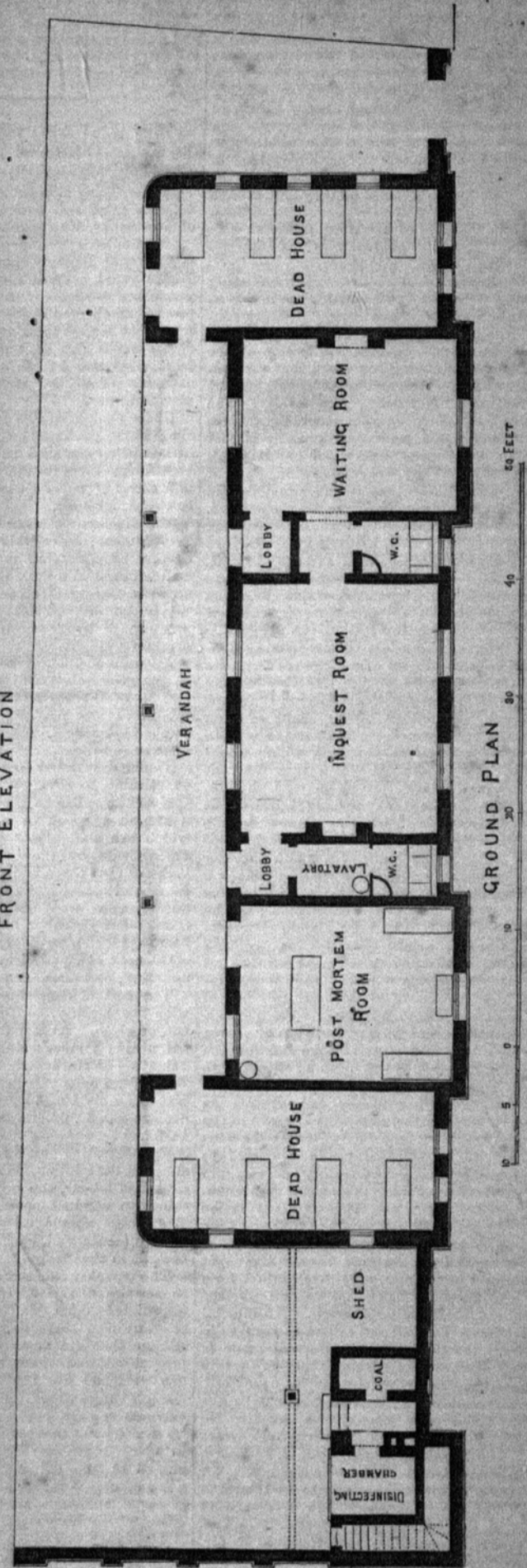
The present entrance from Fletcher's-row can only be reached by foot-passengers; but houses have been purchased in Northampton-road, and arrangements are being made for forming therefrom an entrance for hearses and other vehicles.

The builder, Mr. Patten, has undertaken to complete the whole of the work, including fittings of every description and gas and water, for the sum of 2,260l. Mr. Herbert, the clerk of works, superintends the erection of the building under the direction of the architect, Mr. H. Saxon Snell.

**Loan Collection of Scientific Apparatus, South Kensington Museum.**—Explanations of apparatus in action, lectures, and so forth, are still going on. Programmes should be looked at.



FRONT ELEVATION



GROUND PLAN

MORTUARY FOR THE PARISH OF CLERKENWELL.—MR. H. SAXON SNELL, ARCHT.

THE NEW TOWN HALL OF  
PHILADELPHIA.

VISITORS to the Centennial Exhibition will find occasion for admiring Philadelphia as one of the handsomest of cities. The buildings of the city, as is well known, bear favourable comparison with those of the Old World; and it is to be regretted that the edifice forming the subject of one of our illustrations could not be finished by the 4th of July. Philadelphia is building herself at the present time her town-hall, after the designs of the architect, Mr. John McArthur, and under the supervision of a German, Herr F. Loenholdt, of Frankfurt. The building, of ambitious design, is placed on a plot of ground 1,000 ft. square, situate at the crossing of two wide thoroughfares,—Broad-street and Market-street,—and covers, not reckoning the courtyard, a space of 4½ acres. The north and south façades measure 470 ft., those of the east and west 486 ft. 6 in. The four fronts are treated in a similar style; the centre of each is formed by a pavilion 90 ft. broad, and rising 200 ft. Gateways, 18 ft. broad and 36 ft. high, form the principal entrances, and at the same time passages leading to Market and Broad streets. The outside of the substructure is of fine white granite, and forms a firm basis for the colossal superstructure. The granite alone for its construction costs \$550,000. The rooms of the principal story over the basement have a height of 36 ft.; over this is a second story, 31 ft. high, and a garret story, 30 ft. high. The whole façade over the granite structure is of white Massachusetts marble, with elaborate details. The marble used for it cost \$5,800,000. The building surrounds a courtyard of 200 ft. square, on the north side of which rises an imposing tower. Its foundation is concrete; its walls are 20 ft. thick, and formed of blocks of stone weighing from 2 tons to 5 tons each. The tower measures at its foot 90 ft. square, and tapers to an octagon bearing a cupola, surmounted by a statue, 35 ft. high, of William Penn. Altogether, the tower will have a height of 510 ft., and will consequently be the highest in the New World. The whole building numbers 520 rooms. Four great lifts lead to the different stories, communication throughout the building being, besides, made easy by all possible means.

## THE ETHICS OF TASTE.

Good taste is in reality a matter of deeper significance than may at first sight appear; it is, indeed, a matter of principle affecting the mind and character, an essential element towards the formation of excellence.

In the construction of a building it is not sufficient that the material employed is sound, and the workmanship good; something more than mere utility is required to satisfy the demands of good taste,—the material must also be arranged and adjusted in a pleasing and artistic form. The material must be good, the workmanship good, the form good; a deficiency in any of these respects detracts from the good taste of any work of man.

Shabbiness is one of the most contemptible of qualities, and indicates a certain narrowness and meanness of mind which displays itself in the effort to do things by halves, and to make things appear better than they are. The love of display which results in vulgar ostentation is the result of selfishness, of a desire to excite the envy of others rather than the wish to share benefits with them,—an effort to appear great, without striving to be great in reality. The works of a man are not to be estimated by their intrinsic value only: the richest material may, by great labour, be tortured into the most repulsive form, but it does not gain in value thereby, whereas material which in its natural condition may be of trifling value, may, under proper treatment guided by good taste, be made to assume a form which renders it of priceless value.

Profuseness of ornament unregulated by good taste is the counterpart of extravagance. The separate items may each be good of their kind, but too much of a good thing is destructive alike to mind and body. Misapplied wealth is more dangerous than poverty. Ornament rightly applied should help the design, not overlay and obscure the form; it must be applied with discretion and forethought, not profusely and at haphazard. Eloquence does not consist of loud talk and extravagant gesticulation; however high-sounding the words, unless they convey ideas, they are worse than useless,—an annoy-

ance and source of weariness and disgust to those upon whom they are inflicted.

An illusion prevails, even amongst people of intelligence, that good taste is intuitive, and does not require study or thought. The germ of good taste must doubtless exist in the mind before, and can be cultivated, but, like every other mental quality, it must be trained and carefully nurtured if it is to be productive of good results. The people of this country are generally in a condition of simple ignorance in relation to the fine arts. The benefit to be derived from the study of art seems vague and illusory to those whose artistic instincts are weak; they cannot see that a careful study of works of art is worth the trouble,—that any benefit to be gained thereby is worth striving for unless it be the sordid one.

The eye must be pleased and the sense of beauty gratified wherever man is raised above the lowest stage of barbarism, and this sense of beauty will be displayed in every direction if it is real and genuine, and not affected and superficial. Common sense is often lugged in as an excuse for the neglect of art; the absence of good taste in the exterior of a house is spoken of as a merit, and an appeal is made to the alleged fact that it is perfect within. But upon analysing this alleged perfection, it is found to consist of common-place elements, and that neither art nor good taste is amongst them. We have heard a man boast that his garden would compare with any he had ever seen, but take merit to himself for having built an ugly house in the midst of it. "The house was built to live in, sir,—not to look at." The absurdity of this is surely obvious. Need the house of necessity have been ugly in order to be a comfortable residence? Did the ugliness of the house add to the beauty of the garden? or was the good taste (if there was such, which is questionable) displayed in the one a complete compensation for its absence in the other? An ugly object in the midst of a beautiful one is certainly out of place. An idea seems to have taken possession of some minds that an artistically-designed house must be a gimcrack affair. "A plain, square, substantial house" is talked of as the acme of perfection, as if a house of that description must necessarily be substantial, and one of a more artistic description flimsy. The much-boasted-of common sense, if it really existed, would suffice to destroy this illusion. Beauty of form is not incompatible with usefulness, but, on the contrary, true beauty is an essential element of genuine usefulness. An ugly object may be useful, but it would certainly be more useful if of good form. Superadded ornament is not by any means essential to beauty, but good proportion is; a well-proportioned object is always beautiful, although unadorned by detail. Manufactured articles which are cast from a mould, for example, vary considerably in appearance, although they bear a decided resemblance to each other; but the sharpest casting is the best in quality as well as the most beautiful in appearance. The workmanship of a skilled hand, again, is superior to that produced by a mechanical operation; superfluities are got rid of, and imperfections carefully avoided, and variety and effect are produced which cannot be attained by the use of unintelligent mechanism. Thus it is that the skilled hand is called in to overhaul and remedy the defects left by the machine, and to make the object more beautiful and useful.

There are men so constituted that they cannot comfortably hold an independent position; they lean for support upon authority, and that too often without any attempt to inquire into the right of the authority to the position held. There are doubtless many so weak and ignorant in regard to certain matters that they never go safely unless in leading-strings, and it is well that they should be safely guarded, but it is requisite that the guides should be trustworthy and capable. In matters of taste there are men who adopt the character of guides, who act without authority and without sufficient knowledge of the position. They have no fixed object in view, but are swayed by every change in the wind of fashion. At one time they point to a newly-opened and distant land as the only place worth looking at, and at another they say you need not go beyond the next street in order to see what is really beautiful. These beauties they never discovered till other men of keener perceptions pointed out that something good was to be found in that direction, and forthwith they declare that everything there is admirable. These men are not devoid of knowledge, but "a sane mind does not always escape an epidemic

folly any more than a sound body escapes an epidemic disease."

"To understand and to perform are two very different things." There are "mute inglorious Miltons," who feel the afflatus stir their souls, but the power of expression is denied them; a seal is upon their lips which forbids utterance; they see clearly the object of their admiration, but have not the power to grasp it. The man who feels thus, who understands but knows he cannot perform, is certain to place himself under proper guidance if left to his own choice,—he employs one who can extract poetry from form, and is rewarded by becoming the possessor of an admirable work of art.

It is a comparatively recent discovery that no inconsiderable number of people are colour blind, and it is a remarkable fact that it is very difficult to convince them that they are so. Not only is this the case, but there are others who do not labour under this defect, but who, from not having cultivated the eye, do not perceive the existence of certain colours, and cannot distinguish a variety of tints. The instructed eye of the artist who sits down to sketch a landscape perceives numerous tints on a grass field where the uninstructed eye sees only one or probably two. So, too, much that is beautiful, both in mind and manner, is unperceived by those of grosser nature, they are unable to discern the delicate refinement and sensibility which cause the finer natures to shrink from all that is base and unlovely.

There is a consistency in Nature which applies to the noblest work of the Creator, the mind, the soul of man. The *suaviter in modo* and the *fortiter in re* must be combined where there is good taste; good taste is ordinarily allied with generosity and manliness of character and amiability and gracefulness of manner. And what are these but the outward expression of that charity, without which we are nothing worth,—the chief item in the formation of "the beauty of holiness"?

THE CIVIL AND MECHANICAL  
ENGINEERS' SOCIETY'S VISIT TO  
MR. D. KIRKALDY'S WORKS.

THE members and friends of this Society paid a visit to the above works, on Saturday last, by the kind permission of the proprietor.

Upwards of thirty gentlemen availed themselves of this favourable opportunity, and each, upon signing the visitors' book, was presented with a programme of the different contents of the establishment. The past-presidents of the society, who attended, and took a special interest in the visit to these testing and experimental works, were Messrs. Eachus, Mem. I.C.E.; B. Haughton, M. I. Ingénieurs Français; C. W. Whitaker, and G. W. Willcocks, Assoc. I.C.E.; and amongst other visitors and friends were Messrs. J. B. Costello, Toplis, Groves, Gill, Barfield and Humby, of the G.N.R. engineer staff; H. Valpy, Mem. I.C.E.; H. Ellis Hill, Assoc. I.C.E.; &c., &c.

The first object of interest to catch the eye in the office is the coloured drawing, by Mr. Kirkaldy, of the steamship *Persia*, which was in the Royal Academy Exhibition 1861, being the first, and as yet the only, engineering drawing admitted to that institution. It is a good specimen of draughtsmanship, and was admired by many present.

On the ground-floor are to be seen the testing-machine and its arrangements for applying the different stresses; also the great variety of tools necessary to meet the diversified requirements in testing materials; the steam-engine and boilers for working the hydraulic pumps and other machinery; three travelling cranes, for moving girders and other heavy articles; machines and instruments for accurately weighing and measuring specimens.

In the first-floor, or machine-room, there are turning-lathes; planing, shaping, slotting, and drilling machines; tools and standard gauges for accurately preparing such specimens as require it, previously to their being tested; also for making additional apparatus if required.

The second-floor is reserved for additional machinery, &c.

On the third-floor, or museum, are so many thousand broken specimens which have been tested at this establishment that it is almost impossible to enumerate them; suffice it to say there are columns of bricks, stone, and wood; bars and plates of steel, iron, and bronze; railway rails and girders; samples of cloth, canvas,

Not far from the centre of the estate a new church, dedicated to St. Jude, has just been opened. It is in the Norman style of architecture, and is built of white brick, with red brick and Bath stone dressings and facings. Four gables rise above the lean-to aisles, both on the north and south sides, and at the north-west and south-west ends there are lofty Gothic porch entrances, deeply recessed, with a smaller entrance at the south end. There is a prominent bell-turret, with a coping of stone, at the west end. Internally, the church is 120 ft. in length, and a little more than 50 ft. in width. The interior walls are faced with white cement, relieved by red brick bands, and the arches of the arcades which divide the nave from the aisles, as well as the circular window-heads, are

similarly faced. The flooring of the body of the church is of a peculiar red concrete, which has been recently patented by Messrs. Wilkinson, of Newcastle; whilst that of the chancel, which is raised several feet above the nave by a flight of six steps, is laid with encaustic tiles in varied patterns and colours. There is a clearstory, with a range of ten windows on either side, above the nave; and the church has an open ceiling in pitch pine, stained. The font at the west end is a prominent feature in the church. It consists of a solid block of pure white marble, supported upon four coloured marble columns. It is octagonal in form, and in the central panel is a representation of Christ blessing little children, sculptured by Mr. Earp, of Kennington-road, who has also executed the whole of the work. Mr. A. Blomfield is the architect, and Messrs. Adamson & Son, of Putney, are the contractors.

### THE LATE LADY SELWYN, OF RICHMOND.

INAUGURATION OF A DRINKING-FOUNTAIN.

CAPTAIN HUGHES HALLETT, the husband of the late Lady Selwyn, of Selwyn Court, Richmond, has erected a drinking-fountain to the memory of his wife, who died last year, and it was inaugurated last week by Dr. Selwyn, Bishop of Lichfield, who is brother-in-law to the deceased lady. The fountain is situated in the Kew-road, not far from the Richmond railway station. It is in the form of an obelisk, and consists of a needle, in polished Cornish granite, 10 ft. 6 in. in height, mounted on a die and base, 5 ft. by 4 ft., also in granite. This rests on a double platform of two steps, also in granite. On each of the four sides of the die there is a basin of pure white Sicilian marble. The outer face of each basin is carved with acanthus-leaves, supported by shafts of polished red granite, which rest on moulded bases of the same white marble let into the large granite base. Over each basin is fixed a lioness's head, in bronze, and the water flows into the basin through a jet from the lioness's mouth. On the two plinths forming the base of the needle is engraved the inscription, as follows:—"This drinking-fountain is erected by Frank Charles Hughes Hallett, late Captain of the Royal Horse Artillery, in affectionate memory of his wife, Catharine Rosalie (Lady Selwyn), and is presented by him on the first anniversary of her death to the parish of Richmond, in remembrance of the deep and lively interest she took in everything that concerned the parish welfare during a residence of twenty-one years." The fountain was designed and executed by Messrs. Farley, of the Goswell-road.

### THE NEW CADOGAN PIER AT CHELSEA.

THE new pier which has been constructed on the Thames at Chelsea, in lieu of the old Cadogan Pier, which was removed when the Embankment and the Albert Bridge were completed, has just been opened for the traffic of the river steamers. Owing to some differences between the Steam Boat Company and the Thames Conservators, the reconstruction of the pier has not been carried out until within the last few weeks, the consequence being that for more than eighteen months past the steam-boats have not been able to land or take on board passengers at Chelsea except at the old bridge opposite Chelsea Church. The differences between the River Conservators and the Steam Boat Company having, however, been adjusted, the new pier just opened was proceeded with.

The new structure, from its light and ornamental character, compares favourably with the unsightly appearance of most of the piers along the Thames, whilst it is constructed on a new and improved principle, one feature of which is that there is additional security for the landing-stage being kept in its place without the aid of moorings. At each end of the stage iron cylinders, about 8 ft. in width, have been sunk into the bed of the river for a depth of several feet, the upper surface of these cylinders being about low-water mark. In order to strengthen the foundation and secure a solid base, these cylinders have been loaded with concrete to the upper surface level, and upon them rests a circular framework of iron, of a cone or pyramid shape, carried to a height of upwards of 20 ft. above the average low-water level. This framework secures and keeps in its place, at either end of the stage, a massive timber

upright, in which there is a groove into which a projection at each end of the stage is fitted, the stage being thus secured during its rising and falling with the ebb and flow of the tide. The stage is about 150 ft. in length and 50 ft. in width, and is approached from the Embankment by a light iron lattice bridge, about 200 ft. in length, with a roadway of 15 ft. wide. The shore portion of the bridge approach, to the extent of one half its entire length, is on a level with the Embankment, and is supported by framework of iron columns sunk a considerable depth into the bed of the river. The remaining portion of the bridge, connected with the stage, rises and falls with the tide. The new pier, which is situated several yards to the eastward of the old structure, has been erected under the superintendence of the Thames Conservancy Commissioners.

### THE ARCHITECT AND THE PUPIL. ARCHITECTURAL ASSOCIATION.

In the discussion which followed the reading of Mr. Blashill's paper,\*—

Mr. MacLachlan, in proposing a vote of thanks to Mr. Blashill, said he could not say that he had come out of his pupilage altogether dissatisfied, although he was not afforded all the opportunities which he thought ought to be possessed by a pupil. In reference to Mr. Blashill's remark as to agriculturists being generally the sons of agriculturists, and that few or none succeeded who were not so born, he believed that as a rule it was best for the son to be brought up to the father's business, unless he showed some marked predilection in another direction. When it was intended that a boy should follow the profession of architecture, the latter years of his school-life should have some bearing on his future pursuit, and it might often be found advantageous to substitute for Latin and French a good grounding in the elements of science. When they entered an office pupils were very rarely able to learn the methods of professional practice as well as the science of construction. In some offices it was considered a very great favour to allow a pupil to go over any works at all, and his chances of seeing practical work were therefore very small. The first thing he was set to do was tracing, followed by a course of inking-in details, and that, again, by inking-in elevations and plans. If he was very clever he learnt a little about planning and designing before his term of pupilage was up, but he would learn nothing of the practical part of his work. Mr. Blashill had recommended that pupils should be allowed to copy documents, and to be present at business interviews between their masters and their clients. As to the latter recommendation, he thought some architects would hear it with great astonishment; and as to copying documents, a man might go on copying specifications and never know the meaning of the terms employed, unless he had some one whom he could ask. If he asked an assistant, he might be met with the rebuff, "I don't come here to teach you"; if he wished to ask his master, he might be engaged with a client, or even if alone in his *sanctum sanctorum*, he might not like to be disturbed. Certainly the information to be gained during pupilage was not sufficient to fit a man to enter upon the full exercise of his profession. Pupilage required to be supplemented by private work on the part of the pupil after office-hours, and, as a matter of fact, most pupils were fully alive to this matter. But three years' pupilage, even in conjunction with private study, would not suffice, in ordinary cases, to fit a man for practice. Assuming that he would have to serve for a few years in the capacity of assistant, even then every opportunity of private study should be taken advantage of. Mr. Blashill appeared to deprecate the spending of time upon such small matters as furniture, metal-work, &c., but he conceived that if a pupil showed taste in such matters he should not be discouraged, for a knowledge of treating such subjects was always of use to the architect.

Mr. R. E. Pownall said that the members of any particular profession were generally apt to consider that that profession had grievances beyond those of any other profession. He could not at all see how the architectural profession, so far as regarded the education of its members, had any paramount grievance. Was it to be supposed that the solicitor took more pains to teach his "articled clerks" than an architect in

extensive practice took in teaching his pupils? Certainly not. The articled clerk of the solicitor had, as a rule, not much longer time in which to learn his profession than the architectural pupil had. It was true that at the end of his term of articles the embryo legal practitioner had to come up to a certain standard of knowledge, and that he must pass an examination before he would be allowed to practise for himself. But, then, there was such a thing as "cramming" for an examination; and even after the law-student had passed his examination, he had generally to be content to serve as an assistant in some office. Mr. Pownall proceeded to draw an analogy between the work of the architectural and the law pupil, maintaining that the phases of progress step by step were similar in each case. He agreed with Mr. Blashill in regarding a knowledge of shorthand as of great value to the architect: it would save much valuable time in taking notes. On the whole, he believed that the present system of pupilage was the best suited to our requirements, and whatever deficiencies it might possess could always be easily supplied by the pupil, if he were so minded.

Mr. Leonard, in seconding the vote of thanks, said he agreed with Mr. Blashill on a great many points, and he was especially struck with the conciliatory spirit in which the paper was written, for Mr. Blashill had neither "sat upon" the pupil nor the architect. He (Mr. Leonard) thought that a great deal of mischief was done in the present day by sending pupils from architects' offices practically uneducated as to the real work of their profession. Their parents, anxious to bring them up to a "respectable" profession, were partially accountable for this, for even though they might determine years in advance what their sons' profession should be, they seldom or never sought to make their school education take some bearing on the nature of their profession. Thus it happened that, partly from the fault of the master, and partly from the fault of the parents, pupils concluded their term of pupilage with a very indistinct notion of the nature of their profession. Such young men, after flitting from one office to another, and perhaps picking up very little by the way, rushed into a competition, and on the strength of getting the first premium, set up in business, all-incompetent as they might be. Even when they succeeded in winning a premium, however, such men were never selected to carry out the building, and if their designs were made use of, they were considerably modified by some one else. It was this class of young men who were always eager to lower the dignity of the profession by entering upon a competition, however humiliating the terms. If such young men had inducements held out to them to pass the Voluntary Architectural Examination, it would be much better for them and for the profession at large.

Mr. Aston Webb said that he was certainly of opinion that the system of pupilage was best suited to English requirements; but Mr. Blashill had not entered upon the question of the length of time over which the "articles" should extend. Should it be seven, five, or three years? If either of the longer terms, he thought that three years was quite long enough to stay in one office. In discussing this question, regard should be had to the requirements of the architectural profession rather than to the conditions which obtained in the study and practice of the law. He agreed with Mr. Blashill that pupils and assistants should have access to all business correspondence; unless, indeed, this was the case, they would not be of much use.

Mr. J. Douglass Mathews said that the system of pupilage was based on the old system of apprenticeship,—a system which had of late years undergone a great deal of modification. As Mr. Blashill had pointed out, in former times apprenticeship was the only means of learning a trade, although now there were opportunities of picking up knowledge in a less regular manner; but he preferred the old-fashioned way, as it was better that a man should enter upon his trade or profession through a front door rather than a back one. There was a kind of *prestige* about apprenticeship or pupilage which should not be lost sight of. It was often assumed, in discussing the question of architectural pupilage, that the architect was to be looked upon as a school-master; but an architect who had been plodding on for a number of years to get together a decent practice did not suppose that when he took a pupil he was taking a dolt, incapable of picking up knowledge for himself. On the other hand, it was to the interest of the master no less than to that of the pupil

himself, that the latter should be directed in his work in such a manner as that, if in earnest, he would soon be of real value in the office. But even with the most complete office-direction, and with the utmost desire to profit by what took place in the practice of the office, no young architect must expect to succeed (unless exceptionally gifted) without having recourse to work and study after office-hours. As to pupils not understanding the technical terms which they were continually copying in specifications, &c., he believed that as a rule it was their own fault for not seeking information; he could not think that a master would object to impart such information. As a rule he was convinced that masters did their best to advance their pupils, especially when the pupil manifested a lively interest in the work of his profession. He agreed with Mr. Webb that it was possible for the pupil to remain in one office too long. As to opportunities being afforded to pupils to see works in progress, he thought that such opportunities ought to be given, or the master failed in his duty. As a matter of fact, he believed that when such opportunities were accorded, the pupil did not always take advantage of them.

Mr. W. W. Robertson expressed his pleasure at listening to Mr. Blashill's very able and moderate paper. The author had carefully avoided partisanship, and had therefore been able to show the mutual obligations of architects and pupils. The subject was an inexhaustible one; and while it might be true that the pupil could not in fairness expect his principal to be a schoolmaster, he might justly claim that he had a right to be taught his profession. It would not suffice to say that the master afforded the pupil facilities for seeing what went on in the office; the master ought to direct the pupil's labour and study into proper channels. In reality, the interests of architect and pupil were identical. If at the end of five years a pupil had learnt nothing, both master and pupil were probably equally blameworthy. He was rather inclined to think that the pupil fared better, on the whole, if articulated in a small office,—especially if he was his master's sole assistant in office-work,—than in a large office; for he had the great advantage of the direct supervision of his principal, who would be anxious to make his pupil of real value to him at the earliest possible date.

Mr. Pratt asked what number of pupils Mr. Blashill would think it reasonable for an architect to have in his office at once?

Mr. Clarkson having said a few words.

The President (Mr. Quilter), in putting the vote of thanks, said that in discussing the subject raised by Mr. Blashill's paper, it was necessary to start with a negation of the aphorism applied to poets, for that *architectus nascitur, non fit*, could not be truly said. They were obliged to start with the assumption, then, that the architect had to be made. He agreed in thinking that the education of a youth intended for the architectural profession should bear some relation to his future pursuit. He also agreed in thinking that where a pupil showed any marked predilection for designing furniture or metal work, the bent of his talent should be encouraged. The importance of the pupil being allowed to see works in progress was beyond question, and the master who wished to do his duty by his pupil would give all reasonable facilities in this respect.

The motion having been put and carried, Mr. Blashill briefly replied on the discussion. He said that while he did not wish to be understood as depreciating real efforts in design, whether of furniture or metal work, he did wish to discountenance the pupil's time being wasted in mere pretences. Directly a pupil entered an office, he should be made to work; nor need the principal feel any compunction in exacting such work; for if trained to steady work while young, the pupil would find himself more easily able to apply himself in future years. Pupils should never be backward in asking for information. His (Mr. Blashill's) master used to say that questions were the keys of knowledge. The question as to length of pupilage was a difficult one, and depended more on the capabilities of the pupil than upon anything else. As to the number of pupils any one architect should have at one time, he knew of no rule on the subject; there was no restriction, so he might have as many as he could attend to. But when a pupil came out of his articles, he ought to be able to say he was an architect, if not an experienced one.

The meeting then terminated, and with it Session 1875-76 of the Association.

#### NORTHAMPTON GENERAL BUILDERS' ASSOCIATION.

A SOCIETY bearing the above title has recently been formed in Northampton, with the object of promoting and protecting the interests of the building trade of Northampton, by the following amongst other means:—Unity of action in the settlement of all questions arising between employers and their workmen, with a view to prevent injustice against individual members of the Association. 2. The general adoption of equitable conditions of contract, such as those agreed to by the Royal Institute of British Architects. 3. The interchange of information and mutual co-operation when desirable with other kindred societies throughout the country. 4. The assistance of each other by grants of money or advice in case of accident or loss by fire, or in any other matter the committee may think deserving of assistance.

On the 12th inst. the Committee appointed to organise the Society invited all those connected in any way with the building trades of the town and neighbourhood to a general meeting. There was a fair attendance. Mr. Thomas Cosford presided. The business of the meeting was of a formal character, consisting of the adoption of rules and the election of officers. The principal regulations of the Society as adopted by the meeting, after full discussion, were as follow:—

The Association shall consist of employers of labour connected with the building trade in Northampton and its neighbourhood duly elected. The members shall pay an annual subscription apportioned according to the number of men employed by each, for fewer than ten, 10s. 6d., and for more than one hundred, 5l. 5s. The business of the Association shall be conducted by a president, vice-president, and twelve members, to be elected at the annual general meeting, five to form a quorum; two auditors shall also be elected at the same time. Every member shall strictly conform to the trade rules and rates of wages agreed to by the employers and workmen, but in case of any demand being made by the latter, not consistent with the rules, the employer shall immediately inform the secretary, who shall bring it before the next meeting, or before a special meeting if desirable, and as far as possible common action shall be taken in such matters.

The following were chosen the officers of the Society:—President, Mr. Hy. Smith; vice-president, Mr. Thos. Cosford. Committee, Messrs. H. Martin, J. Watkin, G. Heap, D. Ireson, and J. Brown (general builders); Messrs. Cleaver, Tucker, Goy, and Alsop (painters); Messrs. Banks and Woodford (plasterers); and Mr. G. Belton (stonemason). Messrs. Higgins and Tones were elected auditors; and the trustees appointed were, Messrs. H. Smith, T. Cosford, and J. Watkin.

#### THE INSTITUTION OF CIVIL ENGINEERS.

The originality, labour, and ingenuity displayed by the authors of some of the communications submitted to the society during the past session have led the Council to make the following awards:—

*Telford Medals and Telford Premiums* to Walter Raleigh Browne, for "The Construction of Railway Wagons, with special reference to Economy in Dead Weight"; William Cawthorne Unwin, B.Sc., for his "Investigation of the Motion of Light Carriers in Pneumatic Tubes"; Gilbert E. Redgrave, for "Sewage Interception Systems, or Dry-Sewage Processes"; W. Shelford, for "The Treatment of Sewage by Precipitation."

*A Watt Medal and a Telford Premium* to Gabriel J. Morrison, for "The Ventilation and Working of Railway Tunnels."

*Telford Premiums* to C. Bontemps, for "Experiments on the Movement of Air in Pneumatic Tubes"; R. Spelman Culley and R. Sabine, for "The Pneumatic Transmission of Telegrams"; J. G. Gamble, B.A., for "The Brighton Intersecting and Outfall Sewers"; Wilfrid Airy, B.A., for "The Probable Errors of Levelling, with Rules for the Treatment of Accumulated Errors"; Sidengham Dyer, B.Sc., for "The Hydraulic Canal Lift at Anderton, on the River Weaver"; G. J. Symons, for "The Floods in England and Wales during 1875, and on Water Economy"; C. Greaves, for "On Evaporation and Percolation"; W. Sugg, for "On Estimating the Illuminating Power of Coal Gas"; J. Nelson Shoolbred, B.A., for "The Changes in the Tidal Portion of the River Mersey, and in its Estuary." *The Manby Premium* to D. Alan Stevenson, B.Sc., for "The Dhu Heartach Lighthouse."

**Horsham Drainage.**—The Local Board have resolved to carry out the plan marked "A. B." sent in by Messrs. Gotto & Beesley, subject to the approval of the Local Government Board being obtained to the scheme.

#### STUDENTS, ROYAL ACADEMY.

The following admissions to the Architectural School of the Royal Academy have just been made:—

*Students of First Class.*—Henry Branch, E. E. Sayer, S. Vacher.

*Students of Second Class.*—W. H. Berry, G. W. Browne, J. H. Ince, F. W. Kite, F. A. Powell, W. Stevens, A. H. Tiltman, W. E. Wallis, W. H. Wood, T. C. Yates.

*Probationers.*—R. S. Allen, H. Bradfield, H. W. Barrows, H. B. Callerne, W. S. Fraser, A. J. Gale, F. Hemings, J. F. Hennessey, A. S. F. Kirby, W. Millard, R. J. Morris, H. A. Pelly, G. H. T. Prynnne, J. Robbins.

#### THE AMALGAMATED SOCIETY OF ENGINEERS.

THE annual report of the Amalgamated Society of Engineers, Machinists, &c., for the year 1875 has been issued. At the end of 1875, there were 44,032 members. During the year there had been admitted 3,210 new members; but over against this accession of recruits or conscripts, must be set the death-list of 570 members, and the "black-list" of no fewer than 1,627 members expelled the Society in twelve months for sundry offences against its rules, chiefly for arrears in the payment of contributions and for misdeeds vaguely described as "acting contrary to the Society's interest." These deductions by death and default reduce the net increase of the Society in 1875 to 882 members. The total of the Society's income for the year was 120,024l. About 114,000l. of this total are the receipts from members' contributions, propositions, and entrance fees. At an average payment of 1s. per week, 44,032 members would yield a revenue of 114,478l. Thus it may be taken that 1s. per week is somewhere about the sum paid by each member on the average for his share in the advantages the Society offers, and the provision it makes for the various contingencies of a trade unionist workman's life,—want of work, suspension of work on account of trade disputes, accidents at work rendering the sufferer temporarily or permanently unable to labour, superannuation by old age, sickness, and death. The Society makes stipulated pecuniary allowances to its members in each of these casualties, and completes its undertaking to every member by paying to his family after his decease a sum not exceeding 12l. for his funeral expenses, and for other purposes of family necessity. The Society's expenditure in 1875 was 94,371l.; or nearly 26,000l. less than the income; and consequently the balance of the reserve-fund or accumulated assets of the Society was raised in twelve months from 238,989l. to 264,641l. This fund amounted at the close of the year to about 6l. for every member entitled to benefits. Six years ago the Society had in its treasury not more than 2l. 5s. per member. The improvement of its financial account has therefore been marked in the interval. Its expenditure last year under the several heads amounted to 2l. 2s. 9d. per member.

#### CASES UNDER BUILDING ACT.

##### BUILDING WITHOUT NOTICE.

On the 18th of July, 1876, George Tolfree, of No. 8, Queensbury-street, Essex-road, Islington, and J. Digby, of No. 28, Queensbury-street, Islington, were summoned at Clerkenwell Police Court before Mr. Hannay, by Mr. Rowland Plumbe, district surveyor, South Islington, for that they did in May and July erect certain buildings in the rear of No. 310, New North-road and in rear of No. 10, Queensbury-street, without giving him, as the district surveyor, any notice.

The District Surveyor stated that, in consequence of a written complaint sent him, he went to the rear of No. 310, New North-road, and found that a building 15 ft. 10 in. by 9 ft., and 7 ft. to 9 ft. 6 in. high, had just been erected; it was enclosed nearly all with wood, had a tiled roof, and it adjoined and was nailed to another wooden building in rear of No. 10, Queensbury-street without any party wall being built between them. Both had flues in them, and if a fire occurred in one it would extend to the other. He (Mr. Plumbe) ascertained the defendants had erected them, and on the 5th of July served them with a notice requiring them to remove the wooden enclosures, and enclose them with walls constructed of brick, stone, or other hard and incombustible substance. This had not been done, and he now summoned them for the penalty for not giving him, as the district surveyor, any notice, and also for noncompliance with the notice of irregularity.

Mr. Hannay fined them each 4/6, and costs, and made an order for the buildings to be enclosed with walls, &c., according to the notice of irregularity.

## MUSEUM OF HYGIENE.

At a meeting lately held at the residence of Mr. Erichsen, at which were present many of those who were associated with Dr. Parkes at University College, it was resolved,—

"To establish at University College, London, a permanent memorial of the late Dr. Parkes, in such a form as to aid scientific investigation and practical study in the subjects to which Dr. Parkes's life was especially devoted." It is hoped that a sufficient sum may be collected to establish a Museum and Laboratory of Hygiene similar to those now existing at the Army Medical School, Netley. There is at present no Museum of Hygiene or Sanitary Science in London, and it is felt that the establishment of such a museum would prove a great boon to the members of the medical profession, and to engineers, architects, and others, who are interested in sanitary progress. The promoters say it should be borne in mind that University College is a place for the education, not only of medical men, but also of architects, engineers, and others, on whose thorough instruction in sanitary details the health of the public so largely depends. Subscriptions may be sent to Mr. Erichsen, 6, Cavendish-square.

## MASTERS AND MEN.

Bristol.—A new code of rules has just been agreed to and signed by the representatives of the Bristol Master Builders' Association and the local branch of the operative Stonemasons' Society, for the guidance of both employers and operatives. Most of these rules are substantially the same as before, but there are two or three important alterations and additions. One rule enlarges the city boundary, and another provides "that no employer of masons sub-let any mason's work, and no mason work by piece or sub-contract with or for any employer of masons.\* The present custom as to worked stone is not to be interfered with by the operation of this rule." The rule was formerly worded, "No master mason or builder shall," &c., but under that regulation persons engaged in extensive building operations, who employed a clerk of works to manage affairs, were exempt, and hence alteration. The latter sentence as to worked stone is an addition. The wages rule reads, "That the wages shall be 8d. per hour throughout the year, fifty-four hours per week to be worked from the first Monday in March to the second Monday in November, and forty-eight hours per week from the second Monday in November to the first Monday in March." The rate of pay is thus  $\frac{1}{2}$ d. per hour more than before. It was for this advance that the strike recently took place, and the increase was given on the men agreeing to the new regulations. The last rule on the list is as follows:—"That six employers and six operatives act as a standing committee to hear and determine any minor disputes that may arise from time to time as to the intention and working of the foregoing rules, and their decision shall be regularly binding on both parties, and that no suspension of labour shall take place pending the decision of the conciliation committee." It is to be hoped that the existence of this committee will prevent trade disputes taking place so frequently as in the past. We understand that during the past week the masons in the employ of Messrs. Brock & Bruce, one of the largest firms in the city, have struck work because those gentlemen had some non-society hands in their service.

## TEMPLE COWLEY, OXFORD.

The foundation-stone of a school-chapel for the above district was laid on Monday, July 3rd, by the Venerable Archdeacon Clarke. The new buildings, when completed, will accommodate 150 persons, when used for divine service, and 96 children, when used as a school, will comprise chapel-school and class-rooms, shut off when used for school purposes from each other by folding-doors, lavatory, and cloak-room, with porch adjoining, and the necessary offices. The plans, which also include the necessary buildings for teachers' residences, are estimated to cost about 1,450*l.*, which includes, also, all necessary drainage, fencing, &c. Mr. Henry Castle, of Cowley-road, is the builder; and Mr. A. Mardon Mowbray, of Cowley Lodge, Oxford, the architect.

\* The workmen thus shut the door through which so many of their class have from time to time passed into the class of employers.

## LEAD IN AMERICA.

THE production of what the *Iron Age* (New York) terms "domestic" lead in America has so greatly increased during the past few years that, for general purposes, there is no longer a large demand for imported metal. Since the development of an extensive lead mining interest in Utah and Colorado, the domestic production has been greatly increased, and promises a development in proportion to the consumptive requirements of the country. When Missouri was the principal source of supply the annual consumption was about 60,000 tons, and 40,000 tons of common were imported, in addition to a production of 20,000 tons of soft for corroding purposes. Since then the domestic production has increased and the importation fallen off, and the bulk of the lead consumed in the country is now produced at home. The statistics of domestic production are at all times difficult to obtain with accuracy, owing to the great extent of the lead-producing territory of the West: hence it has not been easy to judge of the position of the metal. This, in connexion with the uncertainty which has existed with regard to the probable future requirements of the building trades, has been instrumental in causing many otherwise causeless fluctuations in the lead prices. The perplexities surrounding the course of lead were further increased by doubts as to the course the Government would pursue with respect to the stock it still held, and which was to be turned over to consumption. Under these circumstances it was to be expected that attempts would be made to control the metal by large speculative purchases, and although speculation has at no time since 1873 been assisted by a large consumptive demand, they have nevertheless, exercised at times an important influence on the course of prices. Of the lead consumed in America about 30,000 tons are absorbed for general uses, such as plumbing, shot, &c., and the remaining 30,000 tons are taken by the manufacturers of white-lead. In Missouri, great efforts have been made to produce all the soft lead needed for corrosion, and thus dispense with foreign lead altogether. Ability to do this as yet may be doubted, and this adds another element of uncertainty to the future of the metal. Taking advantage of the situation, the speculators have organised a movement during the past few weeks which has resulted in advancing the price of lead considerably, including pretty much all varieties.

## PROPORTION IN THE FINE ARTS.

SIR,—The *Builder* of last week contains some strictures on my lecture on "Proportion," which I believe would be answered by a careful perusal of the lecture in its entirety.

In consequence of previous lecturers complaining of being baited by a number of debaters who, instead of listening to the lecturer, are pondering over their own speeches, it has recently been enacted by the council of the Society for the Encouragement of the Fine Arts that the talk after the lecture should be limited to that of asking questions. Nevertheless, and contrary to the new rule, discussion at my lecture was invited. To this invitation, however, only one or two responded, and therefore the chairman closed the evening by expressing a favourable opinion on the views I had brought forward. For my own part, I can only say that I am exhilarated by free debate, and was not in the least aware that any of my audience desired to break a lance with me. It is not every lecturer, however, who, immediately after his lecture is over, likes to be told by his audience that they know more about the subject than he. If I rightly understand the writer of the article on "Proportion" in last week's issue, he agrees with me that the human canon of beauty must be the mean of the measurements of a great number of individuals. Both Hogarth and Sir Joshua admitted the golden mean to be the metrical expression for beauty; but I believe I have been the first in recent times to point out the practical method of obtaining it. Dryden most comprehensively expresses himself when he says, "There is a mean in all things, and a certain measure wherein the true and the beautiful consist, and out of which they never can depart."

It is a great mistake, and a very prevalent mistake, to suppose that all art must be beautiful. The essential condition of all true art, as that of all true nature, is, that it shall be adapted to its purpose. There are wonderful forms of being, all admirably adapted to their purposes, but

which are nevertheless absolutely hideous to human beings. It is a certain conformity to our human nature which constitutes beauty.

The Greeks sought above all things the beautiful, but the moderns have other leading motives, and the adaptation of art to these motives, or by these motives, has superseded the pursuit of the beautiful.

The writer of the article referred to admits that the method of averages is that which should guide us to the measures of beauty, and yet repudiates the same method when applied to architectural forms. But is not the human figure itself a glorious piece of architecture? This is a house too—"The House of the Soul." And if the method is applicable to this, why not to the lower and inferior kind of architecture? It is not all human beings that are formed in the beauty of the mean. All other individual or special forms are adapted to a special purpose, and depart from the mean or mid-form in various degrees into ugliness, as your special forms and adaptations in architecture do. If you call these adaptations "beautiful," it is in a rigorous sense a misnomer. I should never expect to find the ratio of mean variation, 1 : 2, in Gothic architecture. Grecian architecture stands, as it were, as a *mittel-punkt* between your Egyptian and your Gothic. It is the architecture in perfect accord with the beautiful humanity, and therefore exhibits a moderation in its proportions. The Greeks considered the ratio of 1 : 4, as scientifically it is, extreme.

The science of art is but a science of the human nature—perfect nature works according to just instincts. Our metrical science, our science of proportion, is but a measure of these. But as rational beings we desire to add knowledge to feeling.

There is a certain rhythm or music in all fine works of art, as may readily be discovered by attempting to change those proportions which the consummate artist may have in any case determined.

The symbols 4 : 8, 8 : 16, and 16 : 32, are only different modes of writing 1 : 2. They are, in fact, the same ratio. But of all detail I shall have more to say elsewhere.

I might tell a great many people that they had much better do anything but write. It is, however, but common courtesy in all public correspondence to leave the reader to judge whether the writer is speaking to the purpose or not.

W. CAVE THOMAS.

## ST. SWITHIN'S CHURCH, EAST GRINSTEAD.

SIR,—In your number of January 9th, 1875, you mentioned some differences of opinion respecting alterations in this parish church.

Now that eighteen months have elapsed, and good feeling prevails, I venture to say a word as to the present and future. We are now actively engaged in pointing the walls, and erecting a new nave roof in accordance with the style of the church. The roof is from the plans of Mr. J. M. Hooker, architect, of Sevenoaks and London, who designed the oak seating, of which one-third remains to be completed.

The acoustic properties of this large church are greatly benefited, as well as the appearance improved, by the removal of the ceilings, and this is now generally admitted. Moreover, the present roof is unsound. As you will see by the enclosed papers, a further sum of 500*l.* is required to finish the roof, and complete reseating; and most happy shall I be to show the work, give any information, and receive contributions from any liberal friend of church restoration for a much-needed work.

DOUGLAS Y. BLAKISTON,  
Vicar of East Grinstead, Sussex.

## ROMSEY ABBEY.

SIR,—With regard to the remarks in the *Builder* on the east end of this most interesting building, I think there can be no doubt whatever that the lady-chapel was originally completed, and that it was destroyed in comparatively modern times. The two geometrical windows, which appear now to fit so well under the Norman arches in the east wall, were, a few years ago, at a higher level. When the lady-chapel was pulled down, these windows, taken, no doubt, from the outside walls, were very clumsily erected within the Norman arches, without properly calculating their height. There was

not, in consequence, room for the point of the tracery and the key-stones under the arch, and they finished in a very rude and unsightly manner. The vicar, the Rev. E. L. Berthon, who is a very clever mechanic (as well as astronomer), skilfully lowered both windows bodily, without taking them to pieces, and inserted key-stones, so as to give them their present complete appearance. C. H. P.

#### CONCRETE FLOORS.

SIR,—I have read with much interest the discussion in your paper on "Concrete Floors," and have been surprised no mention has been made of the concrete and rolled-iron joist floors in the Ecoscephoron, by Victoria Station, Pimlico. These floors must have been designed to carry the heavy weight of furniture which would have to be stored upon the same, yet, soon after they were finished, nearly the whole of the floors fell in about six weeks since, fortunately after the men had left, or, I understand, about fifty men would have been killed. Can the architect or builder of the job give some information as to the construction, or any explanation as to the cause, and who was liable? I am of opinion all who feel any interest in concrete floors and iron joists should survey at once the Ecoscephoron, for their future guidance. CONCRETE.

#### ENDOWMENT OF GENIUS AND RESEARCH.

SIR,—“Meter’s” letter teems with truth in every line. I have waited to see a reply from an abler pen than mine.

Sir, allow me to enter the arena, not to gain applause, but to point to the waste of lives, and millions, in foibles, squabbles, wars. Work at home we have in plenty to employ our men, and wealth in a hundred ways that pay to promote the public weal and health, viz., ships can be made unsinkable and unflammable when cut on the rolling deep. We want structures that will not carbonise contents or immolate inmates when asleep; also safety on the iron road, not hurry-scurry dash, that too oft ends in railway jam,—I mean a railway smash.

O, potentates and magnates! devote your means and time to the many thousand miners that are yearly blasted in the mine; and, Genius, you may solve the sewage problem, or burn the smoke of town; though you will never gain a diadem,—perhaps, not half a crown. “Meter,” you laid and fired the first gun home, and true; if I can’t hurrah with idle crowds, I’ll doff my cap to you. R. T.

#### HASTINGS BATHS.

SIR,—In the notice of the Hastings Baths contained in your issue of the 5th inst. (p. 661), I observe a statement that “some misunderstanding seems to have arisen between Mr. Adeock and the directors of the company as to his liability, and failing to arrive at an amicable settlement, he threw the contract up.”

As this statement is calculated to injure me, I shall be obliged if you will put before your readers the whole truth, which is as follows:—

In the latter part of last year the work was advertised for tender, and two tenders were received, which were not considered satisfactory. The architects applied to me for a tender, and supplied me with bills of quantities for the work, in which there were no conditions.

I sent in a tender for the work early in December last, and enclosed in the same envelope was a letter in which were the following words:—“The only condition I wish to make is, that I must not be held responsible for the damage done by the sea,—I mean with respect to any part of the sea-wall being washed away by storm. I do not mean small damages, which may occur, more or less, every tide; I will be responsible for them. I do not think there is any risk; but I should not be willing to carry out the work with the unpleasant feeling that I might be ruined by a single storm.”

This condition was, of course, a part of my tender. I afterwards attended a meeting of the directors, and was told by the chairman that my tender was accepted, and that I could commence at once.

When the draft contract was sent for my approval, I found, to my astonishment, that I was to be held responsible for all damage that might happen “by inroads of the sea, high tides, storms, or tempests.”

As your readers will at once see, it was impossible for me to agree to this, as it was a direct variation of the terms upon which my tender was accepted. Considerable discussion took place, but the directors insisted on the altered terms, which I could not agree to. I have always been ready and willing to commence the work upon the terms of my accepted tender; and as new terms were sought to be imposed by the directors after such acceptance, I think you will agree with me that it is hardly correct to say that I threw up the contract.

W. J. ADEOCK.

**Fall of a Wall.**—About 20 ft. of wall, 18 ft. high, fell in Sheffield on Monday, killing a labourer named Langfoot, and burying and severely injuring several others. The road by the side was being lowered, and this caused the wall to tumble.

#### BREACH OF CONTRACT BY A WORKING BRICKMAKER.

At the Staines Petty Sessions, on the 10th inst., James Regan was summoned for 4l. damages, for breach of contract in leaving the service of Mr. Catling, brickmaker, of Shepperton:—

William Catling, jun., said he was foreman to his father. On the 4th of March an agreement was entered into with the defendant to work as a temperer. The agreement was read to him, and 6s. paid as hiring money. It was agreed that 1½d. per 1,000 bricks should be retained as security for the fulfilment of defendant’s agreement, which was to be returned at the end of the brickmaking season. On Monday, the 3rd of July, defendant had some words with the moulder and left his work. Witness saw him, and after an explanation defendant said he would return to his work on the following day. He did not come till the Thursday, and then only worked for about an hour. Through the defendant’s leaving, the whole “form” of seven men were unable to work. He estimated that through the defendant’s conduct there were 8,000 bricks less on the week’s return, which caused a loss to them of about 2l. They also had to pay another man a fee of 2l. to take defendant’s place. They had put defendant on a month before he was wanted, on purpose to retain his services during the brick season.

Edward Catling also gave evidence in the case. Defendant was ordered to pay the sum of 4l. as compensation to Mr. Catling, and 11s. 6d. before the 15th inst., or a distress warrant to be issued.

#### CHURCH-BUILDING NEWS.

**North Petherwyn.**—The parish church of North Petherwyn, near Launceston, was reopened on the 22nd ult., after restoration under the superintendence of Mr. J. P. St. Aubyn, architect. It exhibits work of almost every century since the Norman conquest. Originally it was a Norman cross church, and of this period the massive polyphant columns of the south aisle, and some of the work in the tower, remain. Opposite the columns were found the foundations of similar supports. Over the two columns that remain spring arches of the Transition period, with two lights of a later clearstory. The north aisle, beyond the Norman work, is continued, at a greater width, by post-reformation arches of granite, this part of the aisle occupying the site of the chantry chapel of the old Norman building. The great part of the wall of the chancel is Early English work, and the south aisle, divided from the nave by an arcade of four granite arches, almost semi-circular, is believed to be fifteenth century work. The many interesting features of the church were all but lost to view in the church in its pre-restored state. Much of the woodwork of the roofs was lost in plaster, the columns were covered with innumerable coats of white-wash, many of the windows had been partly built up, the pillars of the south aisle were from 15 in. to 18 in. out of the perpendicular, and the church was so damp that the walls were a bright green, and in a state of general decay. The restoration has been accomplished at the sole cost of the Duke of Bedford, the owner of most of the land in the parish. At first it was intended to substitute pointed wind-brace roofs of pitch-pine; but when the roofs of the chancel and aisles were uncovered it was found that they were of the wagon pattern, although lath and plaster had long covered up all but the ribs and bosses. In consequence of this discovery it was resolved to restore the work. The old open roofs are accordingly now seen, with new bosses and wall-plating richly carved in imitation of the old, wherever decay had set in. The roof of the nave was found to be modern work, and beyond repair; and it has been replaced by a strong hammer-beam and king-post roof of pitch-pine, with couplings between, resting on moulded corbels. Additional strength was here required to keep the south aisle in its place. The arcades on either side of the nave have had the whitewash removed, the stones repaired and re-axed,—in fact, restored to their pristine condition. A new east window of fair proportions has replaced a very mean opening, and the ancient window on the south side of the chancel, partly built up, has been restored to its original dimensions. Both the south wall and porch and the west end of the south aisle had to be taken down and rebuilt. The north porch has been rebuilt with the old material, the new roof being an open one of pitch-pine. Both porches have been fitted with heavy oaken doors. The tower has been opened up to the massive moulded girders of the new belfry floor of pitch-pine, and has been thoroughly restored. The whole of the work has been carried out by Mr. P. Blowey, of Buckland Monachorum, the cost being about 3,500l.

**Northenden.**—The parish church of St. Wilfrid, Northenden, Cheshire, has been consecrated, after

having been entirely rebuilt, with the exception of the tower. It is believed that the present building is the fifth which has occupied the same site. There is thought to be no doubt that in Saxon times the church was dedicated to St. Wilfrid, and this, the original, church, was followed by a Norman structure, and in after ages by others. The new church is a faithful copy of the old one, and is in the Perpendicular or Third Pointed style. The old tower still remains, but it is to be hoped, according to a local paper) that although the energies and resources of the parishioners have been severely taxed already, this will soon be rebuilt, and the restoration made complete. The pews are open, of pitch-pine, stained and polished. The architect is Mr. Crowther, Manchester, and the contractors were Messrs. Clay & Sons, of Audenshaw. The cost of the new edifice will be about 8,000l. The nave and aisles have been erected by the parishioners, and the ancient chantry and chapels of the Tatton family have been rebuilt at the expense of the lord of the manor, Mr. T. W. Tatton, while the chancel has been restored at the sole cost of the vicar of the parish, Archdeacon Johnson.

**Maud (N.B.).**—A new Established Church has been erected in Maud, near the railway station, within the boundary of Old Deer. The church was opened on the 22nd ult. It was designed by Mr. James Laing, architect, Old Deer, and has been erected by tradesmen of the district. The mason’s work was done by Mr. John McKnight, New Maud; the carpenter’s work, by Mr. W. Jack, Bulwark; the slater’s work, by Mr. James Brown, New Maud; and the plasterer’s work, by Mr. D. McPherson, Old Deer. The contracts for the building were,—for mason’s work, 480l.; carpenter’s work, 386l.; slater’s work, 130l. 10s.; and plasterer’s work, 58l. 10s., giving a sum of 1,055l. The cost of enclosing walls and gates has to be added, making the total outlay 1,200l. The church is in the Gothic style. It is wholly of stone of the district. The outer walls are partly in dressed block granite, and partly in blue whinstone. The principal elevation is the gable fronting the public road. The length of the church is 75 ft.; height of side walls, 20 ft.; and from ground to apex of gable, 47 ft. The church is seated for 420. The whole fittings are of pitch-pine.

**Clapham Junction.**—St. Peter’s Church, Clapham Junction, was consecrated by the Bishop of Winchester on the 29th ult. The style of architecture adopted is Early English, and the church has been built of coloured bricks, with Bath stone and red-brick dressings. There is a nave, north and south aisles, and apsed west end, north-west porch, south chancel, chancel aisles, two connecting vestries, with organ and choir-vestry over them, and a south-west tower and spire. The tower is of brick, and the spire is of Bath stone, intercepted by bands of brick, and terminating by a vane at the height of 150 ft., and is a striking object from whichever point it is seen. The north-west porch forms an annexe to the main building. A sculptured figure of the patron saint—St. Peter—occupies a position in a niche in its gable. The nave is exceptionally wide. The lean-to aisles are divided from the nave by arcades of five bays, and these are supported by clustered columns of Pennant stone, surmounted by richly-carved capitals. The arches are of moulded bricks. Above these is a clearstory. Springing from carved-stone corbels is an open-timbered roof of massive construction. The interior walls are of red bricks, save in the sprandrels over the arcades, which are plastered. The avenues and chancel are laid with encaustic tiles by Mr. Minton; amongst them seven large subject tiles are introduced. Under the seating, the floors are formed of herring-boned wood-paving. The open benches are of deal, stained and varnished. “The minstrels’ gallery,” wherein is the organ, corbels out over the vestry in the south side of the chancel, and has a front of open and carved work. The altar-desk is of brass, and is a present to the church by the clerk of the works, Mr. W. H. Williams. The font is situated upon a raised platform and base, consisting of several steps. These are in Forest of Dean, Dumfries, and Painswick stone, used alternately, and they are enriched by inlaid tiles and marbles. The font itself—that is, the stem and bowl—is made from one block of pale alabaster. The pulpit has a base of Forest of Dean and Dumfries stones. It is seven-sided on plan, and the main portion is of Caen stone, moulded and carved. The pulpit and font have been made and placed *in situ* by Mr. Harry

**Hems, of Exeter,** who, with his assistants, has also executed the whole of the sculpture and wood and stone carving in the church. The architect is Mr. William White, the builder being Mr. Carter, of Holloway. The total cost is about 10,000l.

**Hawsker.**—On the 29th ult. Sir Charles Strickland, bart., laid the foundation-stone of the new Church of All Saints, at Hawsker, three miles from Whitby. The new church will be built in the centre of a wide agricultural township. The design adopted for the building is that of Mr. E. H. Smales, architect, of Whitby, and the execution of it will involve an outlay of 1,500l., or rather more. Sir Charles Strickland, in addition to being a donor to the building fund, gives all the stone required for the building of the church, from his local quarries. The church is to be built in the Early French style, with a tower and spire, and will contain seats for 300 worshippers. The interior will comprise nave, chancel, vestry, choir-vestry, accommodation for organ, &c. The contractors are Mr. George Winterburn, of Whitby, for the mason's work; Mr. R. Robinson, of Whitby, for the carpenter's work; Mr. Joseph Brown, of Whitby, for the plumbing, &c.; and Mr. T. H. Readman, of Whitby, for the painting and decorating.

**Shottersmill.**—St. Stephen's Church, Shottersmill, near Haslemere, Surrey, was reopened on the 22nd ult., after restoration. The church was formerly a plain square building, with no chancel, and with an entrance under a shingled tower at the west end. The works now carried out comprise a chancel, in the Early English style, and a convenient vestry adjoining. The roof of the old church was, to a great extent, of English timber of large span, and the walls were carried out in various directions. The old roof has been taken off and a new one added, with buttresses to resist the thrust. The western doorway into the tower has been closed. The place under the tower has been formed into a baptistery, a new entrance being made on the south side of the church. The works have been carried out by Mr. Piff, of Milford, contractor, under the superintendence of Mr. J. W. Penfold, architect, and Mr. C. Bridger, clerk of works.

**Kinneff.**—The parish church of Kinneff, which possesses matter of interest to every true Scotchman, has just been re-opened, after undergoing extensive repairs. The present church was built in 1738, on the site of the former parish church, which, in its turn, had been built on the site of an ancient chapel subject to the Abbey of Arbroath. The church was repaired in 1830, but repairs had again become necessary, and the minister and heritors of the parish, feeling that the church has a story, and that a national interest attaches to it, resolved that these should be executed in a liberal manner, and this has been done under the superintendence of Mr. J. R. Mackenzie, architect, Aberdeen. The galleries were inconvenient, and have been removed, a considerable addition has been made to the buildings, a new pulpit has been put up, and all the pews have been re-arranged. A new heating apparatus has been fitted up, and the interior may now serve as a model for a country church. The Regalia of Scotland were hidden in this church from 1652 to 1660, under circumstances described by Sir Walter Scott in his "Tales of a Grandfather." There are some curious old monuments in the church, which can now be seen to advantage. The chief of these is Grainger's monument, which is placed at the west end of the church.

**National Competition Drawings.**—The prize drawings from the various schools of art in the United Kingdom were on private view at South Kensington Museum on Wednesday. The works submitted in competition since the last exhibition number no fewer than 257,926, of which upwards of 100 are now hung in the Museum galleries. Gold medals, twenty-five silver, and sixty bronze, and book prizes and other distinctions, have been given to all the schools that at Lambeth, of which Mr. Sparkes is master, would seem to have been the most successful in carrying off honours, as many as three out of the ten gold medallists having come from that institution. The drawings are of a very miscellaneous description. The names of the students who have obtained gold medals are as follows:—Samuel W. Fisher, Marie Prevost, Thomas Goodall, Lydia H. Haberson, William Logsdail, J. Kean, Herbert Seagrave, W. A. Jobbins, Robert Needham, and Robert R. Green.

#### DISSENTING CHURCH BUILDING NEWS.

**Southleigh.**—The foundation-stone of a new Wesleyan Chapel at Southleigh, near Witney, has been laid. The chapel is being erected as a memorial to the founder of Methodism (Southleigh Church being the place where his first sermon was preached). The chapel is to cost 500l., and the contract for its erection has been taken by Mr. William Cantwell, builder, Newland. The architect is Mr. Charles Bell, of London.

**Byker.**—The corner-stones of a new Primitive Methodist Chapel and Schools at Byker were laid on the 27th ult. The site of the buildings is in the Heaton-road, a new thoroughfare recently opened out, and near its junction with Shields-road, the plot of ground forming the site measures 77 ft. in frontage, by about 131 ft. front to back, and the erections will comprise a chapel, measuring 64 ft. by 41 ft., and Sunday Schools, two stories in height, measuring 50 ft. by 33 ft., and four class-rooms and vestries, adjoining the latter on the north side of the site. The style adopted is Classic, freely treated. The chapel is intended to accommodate about 600 persons, and the schoolrooms 600 scholars. The total estimated cost of the scheme is about 5,000l. The buildings have been designed and will be carried out under the superintendence of Mr. Thomas Parker, architect, Newcastle-upon-Tyne.

**Shavington.**—The corner stones of a new Wesleyan Chapel, at Shavington (a suburb of Crewe), were laid on the 28th ult. The chapel is being erected on a site adjoining the new Board schools. The dimensions internally are 45 ft. by 30 ft., and the accommodation will be for about 200 persons. The plans also comprise a schoolroom capable of accommodating 100 children, but for want of funds the erection of this is postponed for the present. The style is Gothic of a free type, and the materials to be used are red brick and stone dressings. The building is being erected from the designs of Mr. George B. Ford, architect, Burslem; and the builder is Mr. Enoch Ellison, of Hough. The amount of the contract is 812l. 3s. 10d., which is exclusive of boundary fencing and warming apparatus.

**Swansea.**—A new Congregational Church, in the Carmarthen-road, Swansea, was opened on the 18th ult. The new chapel is of a mixed style of architecture, from designs by Mr. Williams. The wood-work of the interior is of pitch pine, with the exception of the front of the gallery and the platform, which are of white picked out with gold. The ceiling is also of pitch pine. The building is of local stone, with Bath stone dressings. The builder was Mr. Thomas White, of Swansea. The cost of the new structure is 2,000l.

**Keith.**—The work of re-roofing the United Presbyterian Church, Keith, Banffshire, has been entrusted to Mr. F. D. Robertson, architect, who is preparing sketches to lay before the congregation for their approval.

**Sowerby.**—The Wesleyans of Sowerby, near Halifax, have determined to replace the chapel destroyed by fire a few months ago. The plans for the new chapel have been designed by Mr. C. F. Patchett, of Halifax. When erected, it will stand on the old site, but by taking in space formerly occupied by vestries, will be a much larger building. It will be in the Italian style. It is proposed to commence building the schools beneath the chapel as soon as possible. The cost of these schools will be from 1,000l. to 1,100l.; when the chapel is erected, it will involve a total expenditure of about 4,000l.

**Carbrook.**—The memorial-stones of a new Wesleyan School Chapel at Carbrook have been laid. About three years ago Mr. Joseph Angus gave a plot of land in Carbrook-street, upon which a school chapel might be erected. Eventually a start was made, and the plans of Mr. J. D. Webster were selected. It was arranged that on the ground-floor there should be a large schoolroom, 51 ft. by 30 ft., and two class-rooms adjoining, each 14 ft. by 12 ft. On the first floor there will be rooms of corresponding dimensions with stonework. The building will be of brick, the schoolrooms and brick bands. Each of the children, and the entire accommodation about 250 about 1,800l.

**Geddington.**—The Union Nonconformist Chapel at Geddington has been rebuilt on another site. It is in the Gothic style, and is capable of seating about 100. Mr. R. W. Johnson is the architect; Mr. Mace, of Brigstock, the builder; and

Mr. Backby the painter and glazier. The cost has been about 700l.

**Cridling Stubbs.**—On the 21st ult. memorial stones were laid of a new Wesleyan Chapel at Cridling Stubbs, near Knottingley. The chapel will accommodate, when completed, about 120 persons on the ground floor. The works will cost about 500l.

**Bellshill.**—On the 20th ult. the foundation-stone of the Bellshill Free Church, Motherwell, which is in course of completion, was laid by Provost Swan, of Kirkcaldy. The new church is a handsome structure in the Gothic style, from a design by Mr. D. Clunas, architect, Edinburgh. There is sitting accommodation for 1,000 people, and the estimated expenditure is about 3,000l.

#### SCHOOL BOARD SCHOOLS.

**Great Dalby.**—New Board schools at Great Dalby have been formally opened. The buildings are of brick, with white stone dressings; and a bell-turret surmounts the whole. The master's residence forms part of the block. The school has an open-timbered roof, and the interior walls are pointed. The roofs are all covered with blue slates, and have red ornamental tile creasting. The total outlay, including fittings and site, is 1,100l. The works have been carried out by Mr. Barnes, contractor, of Melton, from the designs and under the superintendence of Mr. R. W. Johnson, architect, Melton Mowbray.

**Southampton.**—New Board Schools in Bridge-road, Southampton, were opened on the 13th inst. The schools have been built from a design by Mr. E. T. Howell (the architect to the Board), by Mr. H. I. Sanders, of Southampton. The area of site is 791 square yards, and the accommodation in the schools is for 225 boys, 234 girls, and 309 infants, total 768 children, allowing 8 ft. for each. Average, 112 cubic feet of space per head in school and class rooms. The buildings have a frontage to Bridge-road of 50 ft., and to Latimer-street of 140 ft. On the ground-floor is the boys' schoolroom, with two class-rooms, having the entrance from Bridge-road. The girls' schoolroom, with two class-rooms, are situate on the first-floor, over the boys' school, with the entrance from Latimer-street. The accommodation for infants consists of a junior schoolroom with class-room on the ground-floor, and senior schoolroom with class-room on the floor above, with entrance from Latimer-street. The rooms are lofty and well lighted by large side and end windows, the upper portions of which are made to open for ventilation with Elsley's patent levers. The warming will be by open fires. Moon's dual desks for arranging the children in pairs are used. The cost of the building is about 71 per child, the total cost being 5,200l.

**Brighton.**—The Pelham-street Schools, the sixth erected under the auspices of the Brighton School Board, were formally opened on the 12th inst., by the Lord Mayor of London. The schools, although not formally opened until the 12th inst., have been applied to their uses for above a month, and a description of them was given by us a few weeks since. It is, therefore, only necessary to repeat that they are built in the "Domestic Gothic" style of red kiln and white Suffolk bricks, with Doulting freestone dressings; that accommodation is given, in three distinct departments, for 250 boys, 250 girls, and 250 infants. The total cost, including ground and furnishing, has been 10,000l. Accommodation is provided for 750 children. Mr. Simpson is the architect, the builder being Mr. Bruton.

#### LEWES WATERWORKS.

**SIR.**—In the *Times* for Tuesday, 18th July, page 6, second column, and about thirty-seventh line down, the military correspondent, writing about the army movements, says,—"Neither can I think that Lewes has been judiciously selected as a point of concentration. It is true there are plenty of supplies in the neighbourhood; but were the steam waterworks destroyed, or out of order, there would be no water between the Ouse, or Ouse, which passes through Lewes, and the Arun, which is some distance to the rear."

In the *Builder* for November 6th, 1875 (page 995), under head of "Lewes Waterworks," it says,—"Much care and foresight appears to have been used in planning this pumping station, so that there is little fear of any breakdown occurring through accidents; for if one engine failed, made, and while repairs were being made, the other would be ready to apply to the

"The supply of water is inexhaustible, for when pumping 1,050 gallons per minute, the water in the well stands at 12 ft. below ground level, and when pumping ceases it rises until within 5 ft. of ground line, at which level it stops."

This information was taken down while standing by one of the engines at work, and certainly ought to be correct; and if the *Times* military correspondent will make inquiries, he will find it is so.

I think it due to the town of Lewes, as well as the Waterworks authorities, that there should be no misunderstanding in the matter of water supply. B.

#### STAINED GLASS.

**Frome.**—The east window of Trinity Church, Frome, has been filled with stained glass, in memory of its first incumbent, the late Rev. Alfred Daniel. The window has three lancet lights, the one being considerably longer than the others. In the upper medallion is portrayed the Ascension. Underneath it is a quatrefoil, in which are three angels. Under this is the principal figure, "The Good Shepherd"; and at the foot are interlaced triangles, as an emblem of the Holy Trinity. The left side light has three medallions—that at the top representing the call of St. Matthew; at the foot, St. Mark writing his Gospel from the dictation of St. Peter; and the centre comprising two large figures, viz., the Evangelists St. Matthew and St. Mark. The right side light has also three medallions, the upper one being St. Paul in prison being visited by St. Luke; that in the centre having two large figures of the Evangelists St. Luke and St. John; and the medallion at the foot depicting the call of St. John.

**Coates.**—A stained-glass east window, by Messrs. Lavers, Barrand, & Westlake, together with a handsome reredos, in mosaic and painted tiles, by Messrs. Powell, have just been erected in Coates Church. A memorial window to two of his children has also been erected for Mr. A. Cator, by Messrs. Lavers & Co.; and Messrs. Clayton & Bell have in progress still another window for the church.

**Beaulieu.**—Recent additions to Beaulieu Church, Hants, include a stained-glass window, by Heaton, Butler, & Bayne, in memory of the infant son of Lord and Lady H. Scott; a reredos of mosaic work, in glass, by Messrs. Powell; the new pavement of the sanctuary, with tiles which are copied (by Minton) from original Beaulieu Abbey tiles; and some gas-standards, by Messrs. Hart, Son, & Peard, those in the sanctuary and chancel being of polished brass.

**Southdean Church, Scotland.**—There have just been put up in this church a series of stained-glass windows. There are fifteen lights, all, with one exception, supplied by Messrs. Ballantine, Edinburgh, who fitted up the whole. In the north gable are two lofty lancets, with canopy designs; one, the gift of the Earl and Countess of Home, shows a full-sized figure of Moses, and the family arms below; the other, erected by tenantry of the Jedforest estate, in memory of the late Lord Douglas and family, presents Joshua in armour and royal robe, with the Douglas arms below. There are two canopy windows in the side. One of these has been erected by subscription, in memory of Thomson, the poet of "The Seasons." The Scripture subject is David as shepherd tuning his youthful lyre, and beneath is a likeness of the poet, as a young man, copied from an authentic portrait. The only other canopy subject is erected by Sir W. Elliot, Wolflee, in memory of his son. This has been executed by Mr. J. H. Baguley, Newcastle, and contains a representation of Christ stilling the waves.

**Hamilton Parish Church.**—Mr. James Stevenson, Hamilton, has just caused to be placed in the old parish church a memorial window, in memory of his deceased wife. The subject chosen is that of Mary at the feet of our Lord, with Martha standing by. The full text from Luke x. 41, 42, is given in ancient characters round the margin,—"Martha, Martha, thou art careful and troubled about many things; but one thing is needful, and Mary hath chosen that good part, which shall not be taken away from her." Messrs. Ballantine are the artists.

**Plymouth.**—A stained-glass window has just been erected in the Plymouth Guildhall, representing the ceremony of the Guildhall, by H. R. H. the Earl receiving the key of the

building from the then Mayor (the late Mr. Rooker), and on either side are officers and others who were present on the occasion. The window is the gift of Mr. F. W. Gibbs, C.B., and was executed by Messrs. Heaton, Butler, & Bayne, from the design of Mr. J. Milner Allen.

#### Books Received.

*The Englishman's Illustrated Guide Book to the United States and Canada, especially adapted to the Use of British Tourists and Settlers visiting those Countries, with full Information as to the best Routes of Travel, most Attractive Scenery.* Third Edition. London: Longmans, Green, Reader, & Dyer. 1876.

SUCH of our readers as contemplate a run to the States may usefully fortify themselves by the study of this little (illustrated) volume. Some who take it up without any intention of that kind will probably make up their mind to go the first opportunity. An appendix includes an account of the buildings and grounds of the International Exhibition at Philadelphia.

*Experiments on the Strength of Cement, chiefly in reference to the Portland Cement used in the Southern Main Drainage Works.* By JOHN GRANT, M. Inst., C.E. London: E. & F. N. Spon, Charing-cross.

IN reply to some inquiries for information as to Portland cement, we cannot do better than mention that a new edition of Mr. Grant's book was published at the end of last year. Mr. Grant had excellent opportunities for investigation in connexion with the main drainage works, and made that good use of them which might have been expected from his known intelligence and skill. The bulk of the book was originally read at meetings of the Institution of Civil Engineers, and reports are given of the discussions which followed.

#### VARIORUM.

THE *Penn Monthly* for July contains a paper by E. Wrigley on "The Advantages of the Co-operative Feature of the Building Association, compared with other Plans of Saving." This is the last sentence of the article:—"A community of patient, diligent, frugal, and contented workers, recognising fully the power and the beauty of co-operative effort, are like an army of road-builders—they improve the barren places of the earth, and make them to bloom as the rose. In place of wasting their hours in empty repining, and their strength in useless opposition; instead of listening to the idle talk and empty theories of the 'poisoner' and demagogue, they unite, not for the purpose of overthrowing capital, but with the design of becoming in good time capitalists themselves. Thus my text points the way, and co-operation applies the means, of creating that almost millennial state of existence for the working classes which has been the dream of the reformer since civilisation first dawned upon the earth."—A writer in the *Manchester Critic*, commenting on "Queer Inventions," says, speaking of perpetual motion:—"The oddest thing about these perpetual-motion inventors is that they are fully aware of their ignorance of mechanics, and lament that 'their people' did not put them to the mechanical business. Their failures and the want of success of their inventions are all due to bad workmanship and ignorance, and they know it. 'But if my father had only made me an engineer!' they sigh. If you are a good-natured man, and have a little time at the moment, you endeavour to go through the alphabet of force, and try hopelessly to refute and disenchant this man, whose wife tells you he is 'wasting his brains away with thinking, drat 'em!' This requires great care, and after you have prepared his mind by asking him if he believes, as a Christian man, that there are sixteen ounces in the pound, and if he ever knew any pound to have seventeen ounces, you craftily ask him that knows of a weight lighter than sixteen cuts short will balance a pound in the scale; a poet you have your endeavours by quibbling you have no desire never heard of, &c."

And some rough rules have wrought More for mankind Than all the pride of intellect and thought."

"Up the River from Westminster to Wind-

sor" (Hardwicke & Bogue) is a well-illustrated brochure and pleasant reading; it gives, however, but the briefest introduction to the places named. —Speaking of the architectural drawings at "The Centennial," the *American Architect* says:—"The three influences, English, French, and German, to which we owe our architecture, are pretty clearly shown and distinguished in the Exhibition; and their local distribution is somewhat significant. The English influence, represented by modern Gothic of the Victorian type, predominates in the Boston work, and is very prominent in that of New York. The French influence is stronger in the New York section than elsewhere, though it leaves some trace also on the Boston and other Eastern work. The German influence is most marked in the Western work, just as we know that in fact the Germans are a more prominent element in the Western than in the Eastern communities. In the New York work we find the English, French, and German tendencies shown more on an equality than in any of the other, as the makeup of the city is more cosmopolitan in all respects than that of any other part of the country. In the Philadelphia contributions, the German element is prominent also, as it is in the city; but the representation is so incomplete that it cannot be taken as an index of what is done in the city. It is to be remembered, in taking into account the influences which act upon American architecture, that the work which bears a German character is almost exclusively the work of Germans. German architects come here already educated, as German mechanics do, and practise in the German way; but Americans who become architects acquire very little of the German habit in design. If they go abroad to study, it is almost invariably to Paris or London,—commonly the former, almost never to a German city. If they study at home, it is commonly with Americans of French or English tendencies, seldom of German. Hence, as native architects come more and more into majority, and the proportion of imported ones grows smaller, it is likely that the effect of German training on our building will diminish, and the English and French influences have the field more and more to themselves, till some distinctly American character asserts itself; which seems not likely to be the case very quickly."—The Report of the Leicester Free Library shows that the present number of books in the library is 15,073,—in the lending department, 11,012, and in the reference, 4,063,—being an increase, since the commencement, of 5,900. In the lending library the circulation has been 106,237, being an increase of 993; the purchases, 412 volumes, 333 having been to replace worn-out books. In the reference department, 7,174 volumes have been issued, being an increase of 345 on the previous year. 92 volumes have been purchased, and 185 presented.—The July number of *The Quarterly* is a good one. The articles on "Ornamental and Useful Tree Planting," "The Orkneys and Rude Stone Monuments," and "South Sea Island Mythology," will commend themselves to a large proportion of our readers. The writer of the article on rude stone monuments will not accept Mr. Ferguson's theory, which would deprive them of any extreme antiquity.

#### Miscellaneous.

**Technical Education in Germany.**—The programme for 1876-77 of the *Technikum Mittweida* has just been issued. Mittweida is conveniently and centrally situated, being half an hour's journey from Chemnitz, three from Dresden and Leipzig, two from ~~Potsdam~~ and Zwickau, and five from Berlin. The teaching staff consists of the director, professors of mathematics, mechanics, technical matters, and assistants. The advantage of the *Technikum*, as compared with the School of Science, appears to be that in the former greater attention is paid to the arrangement of the classes in such a manner that no student is compelled to learn the higher branches of any given subject unless he is likely to require it in the particular branch of industry to which he proposes to devote himself in after life. By this means each is enabled to obtain more than usual of the particular kind of knowledge useful to him, although he may get a little less general scientific knowledge than might be acquired in the School of Science.

**Supposed Romano-Celtic Remains in Oxford.**—Mr. G. A. Rowell, in a letter to the *Oxford Journal*, says that during the recent drainage works in Titmouse-lane (leading from the Canal Wharf to the Old Castle) several iron horse-shoes of a peculiar form were found at about 15 ft. below the surface. One, from a sort of clay not far from the castle, is bronze-like in appearance, and, although somewhat worn, as bright as if just made; the others were from a mixed soil, and are more or less incrustated with it, but there is not a speck of rust on any of them, although it is probable they had been underground from Romano-British times. From Fleming's work on "Horse-shoes and Horse-shoeing," it appears that neither the Greeks nor the Romans, until a century or two after the Christian era, shod their horses with metal, or, at least, with such shoes as were nailed to the feet; but that horse-shoes similar to those now in question have been found, with the well-known Celt and other bronze articles, in Celtic and Gaulic graves on the Continent and in Great Britain, all such horse-shoes being small in size and similar in form, showing that the horses of these regions in those days were diminutive as compared with those generally of later times. The quality of the iron of one shoe has been tested by Mr. Neill, of Corn Market-street, who states that it is of the very best quality, and such as it would be difficult or hardly possible to procure in the metal market. The shoes (with a hoof-pick found with them, and in a similar condition) will be deposited in the Ashmolean Museum.

**Street Architecture in Elgin.**—We learn from the *Elgin Courier* that the eastward part of Dr. Mackay's property, beside the British Linen Company's Bank—to which is attached the well-known tower which no tourist wishful to see the lions of the old city passes by without inspection—has been dismantled. The tower is attached to the south-east extremity of the property, and its walls contain, in three different parts, the arms of the Leslies of Rothes, with date 1634, and the letters A. L., believed to be the initials of Andrew Leslie, who was, at that time, one of the magistrates of Elgin, and who purchased the estate of the Glen of Rothes. We are glad to learn that the old tower is to stand just as it is, and the new erection contiguous to it, and of which it will form a part, will be entirely in keeping with it, and in the Scottish Baronial style. Billings, in his "Baronial and Ecclesiastical Architecture of Scotland," makes the tower the subject of one of his engravings. The new building is to be three stories in height, with a shop on the ground-floor. The entrance to the new dwelling-house will be by the present door of the tower. The contractors are:—A. Robertson, mason; A. Munro & Son, carpenters; J. Wilson, slater; J. Hunter, plumber; David Simpson, plasterer; John Kintrae, painter and glazier.

**Fine Art Gallery and Industrial Museum for York.**—Arrangements are in progress for the establishment at York of a permanent Fine Art Gallery and Industrial Exhibition or Museum. All the preliminaries are now said to be settled, and the future of the project is cheering. A large guarantee fund, amounting to upwards of 80,000*l.*, has been arranged, and the call of 20 per cent. on the guarantors is being promptly paid into the bank. At a meeting of the Executive Committee, on the 7th inst., Sir James Meek in the chair, Mr. Taylor, architect, presented a lithographed block plan, with elevation of the proposed permanent building. It is designed for the reception and display of paintings, sculptures, and other works of art, with accommodation for a technical museum. Negotiations have been concluded with the Commissioners of Woods and Forests for the acquisition of the site known as Bearpark's Gardens, and the meeting resolved that a cheque for 4,000*l.* be drawn to complete the purchase of the land and to obtain the grant from the Crown. A house adjoining the site has been purchased for 600*l.*, and the executive are now in possession of the whole of the property required.

**Building Societies and Sanitary Associations.**—Under cover of the interest which has been evoked with reference to improved habitations, various societies are being formed and projected. We will simply advise our readers at present that before taking shares in such schemes or otherwise joining any one of them they should satisfy themselves that trustworthy persons have the management of the undertaking.

**Impure Ice.**—The mixing of ice with light wines and other summer drinks has now become so general amongst the better classes of society, that some assurance of its purity seems necessary. What is termed Wenham Lake Ice is principally imported from Norway in large blocks cut out from the frozen fiords or lakes, the water in which is usually very pure, but owing probably to the annually increasing demand for this luxury, a large quantity of ice, apparently clear and transparent, is sold, which does not come from any such unobjectionable sources, and which, when melted, might fairly merit the designation of "dirty water." Dr. Whitmore, in his report on Marylebone, says,—"Some of this melted ice has been brought under my notice, in which I found a considerable amount of sediment, apparently of vegetable matter. Those who use ice are recommended to test its purity by dissolving a small portion in a wine-glass, and if the water is clear and bright, is all probability it is genuine Norway ice; but, if otherwise, it should be rejected." This warning is very necessary.

**Proposed Winter Gardens for Leamington.**—A public meeting was held at Leamington on the 13th inst., to consider the desirability of establishing winter gardens in that town. The mayor expressed his sympathy with the scheme, and his best wishes for its realisation. He then introduced Mr. Hyde, of Southport, who constructed the winter gardens in that place. That gentleman detailed his proposals, pointed out the success of the Southport Winter Gardens, and the great benefits which had accrued to the place through the establishment of such a resort, and showed that similar results might be expected to follow the provision of similar attractions in Leamington. On the proposition of Alderman Bright, seconded by Councillor Salmon, it was resolved that it was desirable to establish winter gardens in Leamington. A provisional committee was appointed to consider the scheme, which it is proposed to carry out by the formation of a limited liability company. Three sites are mentioned.

**Newnam Paddox, Lutterworth.**—The Earl of Denbigh is making great alterations to his mansion and grounds at Newnam Paddox. The north wing has been pulled down, and a new wing, 120 ft. long, three stories high, and containing seventeen suites of rooms, is to be erected. There will be a tower in the centre, and the whole will be built of brick, with stone dressings. The alterations are being carried out by Mr. J. Bromwich, builder, Rugby, from designs by Mr. T. H. Wyatt, architect. On the 11th inst., the Countess of Denbigh laid the foundation-stone of the new building. A portico is to be built over the iron gates that are to be removed from his lordship's Berwick estates. The gates will, it is supposed, cost about 1,000*l.* to remove to Newnam.

**Glass from Slag.**—At the quarterly meeting of the North of England Iron and Coal Trade, slag was shown in a fibrous form, and in the Barrow district a company is in process of formation to manufacture slag into glass, under a patent taken out by Mr. B. Britten. The slag is taken as issuing from the blast-furnaces, conducted into a tank, and there mixed with other materials, from which mixture transparent glass is made. It is claimed for the new glass that it is acid proof, and capable of use for all purposes for which the best bottle glass is suitable. Experiments have just been conducted at the Wellingborough Ironworks, and it is claimed that the saving in the process is so great that it is likely to bring about important changes in the glass manufacture.

**The Birmingham Improvement Scheme.** All the petitions against the scheme of Alderman Chamberlain, M.P., for the improvement of Birmingham, under the Artisans' Dwellings Act, have been withdrawn, and consequently there will be no opposition to the Bill in the House of Lords. The scheme will involve the purchase of property valued at nearly two millions sterling, and have the effect of sweeping away a very large portion of the slums and unhealthy dwellings in the town.

**Bricklayers.**—We are asked to say that technical classes for the instruction of bricklayers are now being held at the Artisans' Institute, St. Martin's-lane, being the result of the recent meetings held with the view of improving the condition of the trade, and that over thirty students have already joined. An architect is announced as president.

**Sanitary Institute of Great Britain.**—The Duke of Northumberland presided, on the 13th inst., at a large meeting convened in St. James's Hall, for the purpose of forming a society to be called the Sanitary Institution of Great Britain. The object of the proposed institute will be to direct public attention to all matters affecting public health. It will watch all measures introduced into Parliament relating to public health and sanitary reform, and it is intended to form branches in urban and rural sanitary districts in connexion with the central office in London. Are there not existing organisations which could be made to effect this?

**New Skating Rink at Stafford.**—A skating rink for Stafford, situate in the Newport-road, was opened on the 5th inst. The rink is a covered one, and is 165 ft. long and 56 ft. broad, excluding the offices. The gable ends are of brick and stone, while the sides and offices are of wood, with brick piers. The roof, which is supported with iron ties and rods, is lofty, and, together with the sides, is picked out in colours of various tints. The skating surface, which has been laid by the Val de Travers Company, contains 8,250 square feet. There is also a spacious promenade, a raised platform at one end, and a band-stand. The rink has been erected by Messrs. Hayes & Son, under the superintendence of Mr. W. F. Bagnall, architect.

**Foreign Competition.**—During the last few months, says the *Birmingham Post*, a French manufacturing firm has established an agency in Birmingham, and has supplied large quantities of hardware peculiar to Birmingham and its district, at prices considerably lower than those of native manufactures, such articles being, nevertheless, frequently made from Staffordshire iron and Sheffield steel. Another significant hint as to future competition, not only in foreign and colonial markets, but even on English soil, is the lists of prices of several American manufacturers who are supplying not only axes and steel forks, for which they have long been famous, but a great variety of hardware goods.

**Accident to a "Steeple Jack."**—On the 13th inst. an accident occurred to a man named William Woodruff, who is one of the men known by the nickname of "Steeple Jack." For some time past the chimney-shaft belonging to the Bone Grinding and Dust Company, Bromley-common, has been leaning, and the services of Woodruff were called in. He ascended for the purpose of sawing the shaft, and labourers were attaching a second sling, when a stone fell from the top of the chimney, striking Woodruff and smashing both thighs. The sling was then lowered, and the injured man was taken to the hospital, where amputation of the left leg was deemed imperative.

**Proposed Tower Bridge.**—At a public meeting held at the Vestry Hall, Minories, on the 10th of July, it was resolved,—"That this meeting having heard a description of Barnett's Patent for a bridge across the river Thames, from the Tower to Rotherhithe, explained by Mr. Le Fevre, hereby expresses an opinion that it is worthy of the consideration of the Bridge Committee of the Common Council, and that the site selected by the engineer is approved by this meeting." We are not able to persuade ourselves that the design will ever be carried out.

**Proposed Public Buildings at Aluwick.** Mr. F. R. Wilson has prepared three alternative plans for providing increased accommodation for Quarter Sessions business at Aluwick. The first plan provides a new court-house, extending from the town-hall to the corner of the Market-place. The second proposes to divide the Corn Exchange into courts and other necessary apartments by means of sound-proof partitions. The third plan is to provide the required accommodation by additions and alterations to the county premises in the Green Bat.

**Swansea Master Builders' Association.**—The members of this recently-formed association dined together on the 11th inst., when about thirty of the master builders of Swansea and one or two invited guests from Newport and Gloucester were present. Mr. Wm. Thomas (of the firm of Thomas, Watkins, and Jenkins), as the president of the association, took the chair, the vice-chairs being filled by Mr. Thos. White, vice-president of the Society, and Mr. Thomas Rees. Mr. William Williams, of Newport, proposed the toast of the evening, "Success to the Master Builders' Association of Swansea."

**Matheson and Grant's Engineering Trades Report** says,—“The iron and other staple trades of the kingdom which depend upon engineering enterprise for their prosperity afford at present the most conspicuous examples of the general commercial depression which has now prevailed in England for more than a year. The causes of this depression are various; but most of them are but incidents in the general reaction which is still taking place from the over-trading and speculation of 1871-2 after the close of the Franco-German war.”

**The New Edinburgh Infirmary Buildings.**—At a recent meeting of the managers of the Royal Infirmary, Mr. John Bryce was appointed architect to the new infirmary buildings. In making this appointment the managers have had regard to Mr. Bryce's intimate acquaintance with the plans, in the preparation of which he took an active part, as well as to his knowledge of the late architect's intentions in regard to the completion of the buildings.

**Gloucestershire Archaeological Association.**—The first annual meeting of this Association will be held at Gloucester on Wednesday, Thursday, and Friday, the 23rd, 24th, and 25th of August. The first day of the meeting will be occupied in visiting the cathedral and other ancient buildings in Gloucester, under the guidance of Mr. John Bellows. On the following day the Association will visit Tewkesbury and Deerhurst; and on the Friday Berkeley Castle will be inspected.

**Great Eastern Railway.**—The improvements which have been in progress at Stepney Station several months, and which were noticed by us recently, have been brought to a successful completion, and the passenger traffic which it was found necessary to suspend during the execution of the works, was resumed on Monday the 17th inst.

**New Lunatic Asylum at Portsmouth.**—A new lunatic asylum for the borough of Portsmouth, at Milton, has been in course of construction for several months past, and on the 11th inst. the ceremony of laying the foundation stone was performed. The builder is Mr. C. T. Quick, and the architect Mr. George Cake.

**Death of the Borough Surveyor of Shrewsbury.**—The death is announced of Mr. Thomas Tisdale, borough surveyor of Shrewsbury for the past quarter of a century. The Mayor, in moving a vote of condolence with the family, paid a high tribute to Mr. Tisdale's zeal and ability.

**Drawings at the American Exhibition.** Information reaches us that many of the drawings now in the Exhibition at Philadelphia are being much injured by the absorption of moisture. Who is looking after the English pictures there?

**Surrey Archaeological Society.**—The annual excursion, under the presidency of Viscount Midleton, is fixed to take place on Thursday, the 3rd of August next, to Godalming, Thursley, Elstead, and Peperharow.

## TENDERS

For banking premises and manager's house, Batley, for the West Riding Union Banking Company. Messrs. Sheard & Hanstock, architects. Quantities by the architects:—

Brier, Sons, & Wilson (masons, &c.)	£4,950 0 0
Thorpe (joiner)	1,649 15 0
Armistead (plumber)	444 7 6
Bagshaw & Son (ironfounders)	320 0 0
Rawthorne (slater)	182 15 0
Kitchingman (plasterer)	150 0 0

For a semi-detached residence in The Avenue, Acre-lane, Brixton, for Mr. Henry Dann. Mr. W. H. Harding, architect:—

Crew (accepted)	£875 0 0
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For sundry alterations to Church-road Wesleyan School, Homerton:—

Jarvis & Sons (accepted)	£545 0 0
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For offices, Sugar Loaf-court, Leadenhall-street. Mr. Robert J. Worley, architect:—

Rudkin (accepted)	£1,215 0 0
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For house and shop for Mr. Welch, Limehouse? Messrs. A. & C. Harston, architects:—

Hearle	£595 0 0
Walker	455 0 0
Salt	463 0 0
Johnson	479 0 0
Reed	479 0 0
Harris & Wardrop (accepted)	445 0 0

For enlarging premises at 19, Great Marlborough-street, for Messrs. Small, Brothers. Mr. A. W. Galbraith, architect:—

Allen	£420 0 0
Byder (accepted)	410 0 0

For West Ham Union Schools, dormitories, and offices. Mr. Lewis Angell, architect. Quantities by Mr. T. Nixon:—

Judd & Hawkins	£20,436	Extra Block.	£1,800
Rivett	20,385		2,080
Shurmer	19,586		2,117
Aitchison & Walker	18,455		1,785
Nightingale	18,287		1,882
Linfield	18,250		1,730
Sheffield	17,968		1,878
Mortier	17,777		1,758
Langmead & Way	17,770		1,750
Stephenson	17,430		1,717
Ennor (accepted)	17,284		1,701

For execution of drainage works, &c., at Twyford, Winchester, for the Rural Sanitary Authority of the Winchester Union. Mr. A. W. Galbraith, surveyor:—

Clark	£1,321 11 9½
Cowdery & Sons	752 0 0
Allen	685 0 0
Croxford & Co.	681 11 0
Sibsey (accepted)	606 18 2
Egerton (sum total not given).	

For labour only to dwelling-house Mapperley Plains, Nottingham. Mr. T. G. Alderson, architect:—

Lewin & Carter	£282 0 0
Binks & Knowles	227 14 5
Parrell, Brothers (accepted)	225 0 0

For erecting new music-hall and altering billiard-room, &c., at Three Cups, Bow, for Mr. Pridaux. Mr. James Broadhurst, architect:—

J. & H. Cocks (accepted)	£2,100 0 0
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For formation of new roads on the Culverden Park estate, Tuxbridge Wells, for Sir David Salomons, bart. (first portion). Messrs. Lander & Bedells, surveyors:—

Woodham, Brothers	£625 0 0
Skinner & Co.	548 0 0
Goldsmith	527 3 6
Hawkes	506 0 0
Perigoe	492 10 3

For ten blocks of buildings at North Hill, Highgate, for the Directors of the Highgate Dwellings Company. Mr. W. Ward Lee, architect. Quantities not supplied:—

Brown	£7,670 0 0
Southgate	7,514 0 0
Smale	6,989 0 0
Wheeler (withdrawn)	5,750 0 0

For new Congregational Church, Romford, Essex, in accordance with amended drawings. Mr. E. C. Allam, architect:—

Staines & Son (accepted)	£3,210 0 0
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For alterations and additions to the Burlington School, Burlington-street. Mr. J. T. Wimperis, architect:—

Holland & Hannen	£5,350 0 0
Smith & Co.	5,300 0 0
H. & A. Bywaters	5,199 0 0
Scribner & White	5,110 0 0
Patrick & Son (accepted)	5,045 0 0

For house at Hendon, Middlesex, for Mr. William Goode. Mr. J. T. Wimperis, architect:—

Fish	£4,103 0 0
Lawrence & Sons	3,982 0 0
Patrick & Son	3,824 0 0
Brass	3,627 0 0

For new wing, &c., to the Royal Free Hospital, Gray's-inn-road. Mr. William Harvey, architect. Quantities by Mr. Henry Smith:—

Eborall	£14,040	Deduct for Bath Stone.	£750
Dove, Brothers	13,755		390
Smith & Co.	13,990		400
Hill, Higges, & Co.	12,990		450
Kirk & Randall	12,876		490
Shepherd	12,450		495

For a pair of semi-detached residences at Walthamstow, Essex. Mr. Robert Blackmore, architect:—

Bullen	£1,090 0 0
Larter	990 0 0
Tubby (accepted, subject to alteration)	847 0 0
Luxford	805 0 0
Crabb	650 0 0

For bailiff's house and cottage at Kingswood, for Sir John Hartopp, bart. Mr. William Smith, architect:—

Keal (accepted)	£1,315 0 0
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For rebuilding Poulstone Court, Fawley, near Ross, for Mr. R. Jones. Mr. H. Carr, architect. Quantities by Mr. George Hackford:—

Pearson	£5,195 0 0
Stephenson	5,019 0 0
Woodbridge	5,009 0 0
Welch	4,998 0 0
Everal	4,983 0 0
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# The Builder.

VOL. XXXIV. No. 1747.

SATURDAY, JULY 20, 1878.

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*The Additions to the National Gallery.*

IN spite of Governmental promises and proposals and schemes, "the finest site in Europe" still retains its somewhat grim and dreary-looking northern boundary; the National Gallery front is still a discredit to a metropolis where such far more ambitious architectural scenery is devoted to the front of a railway hotel, and the architect who was led to hope for the opportunity of connecting his name with a striking and publicly conspicuous building on a grand scale, is still left to feed upon hope, and to reflect that the old warning against putting your trust in princes may be equally applicable to less autocratic forms of Government. Whether Mr. E. M. Barry's complete design for the proposed New National Gallery was altogether the best that could be made may be one question; it was, however, a scheme conceived on a grand scale, and with splendid opportunities for internal effect, and would have been the first step towards making Trafalgar-square more like what we all feel that it might be made: and it cannot be denied that there was, if not a compact, at least the equally binding force of what is called "an honourable understanding" with the architect, that he should have some compensation for his undoubted wrong in regard to another greater Government commission, by the opportunity of carrying out in full his scheme for a complete rebuilding of the National Gallery. This, however, still remains a castle in the air, and in place of the new façade and the group of saloons, arranged symmetrically around a grand centre, we have only one-half of the proposed arrangement of the back portion of the plan, tacked on behind the old and certainly, according to recent lights in architecture, very shabby-looking façade. We may be glad that anything has been done to house the national pictures more worthily, and to collect their forces in one building; but it is impossible to regard the present one-sided achievement with any particular satisfaction.

From the plan which we publish in our present number, it will be seen that the new buildings constitute a nearly square block attached to the east end of the present suite of rooms, and having their principal opening out of the room which, under the old arrangements, contained the pictures of the French and Spanish schools, the productions of Poussin and Claude, Murillo and Velasquez, and others. From the old entrance,

therefore, the whole length of the long room in which used to hang the "Bacchus and Ariadne" of Titian, and other works of the great Italian painters, and the succeeding room, would have to be traversed to arrive at the new portion. But it is part of the new scheme that the east as well as the west entrance of the centre portico (formerly the Royal Academy entrance) is now to be utilised, so that there is a symmetrically arranged entrance-staircase to right and left from the centre doorway, the right-hand staircase leading up to the small room which was recently the abode of certain small Raffaelles and Filippo Lippis, and the Mategna procession and the little St. George of Giorgione, and taking the visitor, in fact, right through the wall on which hung the unfinished Michelangelo. Passing through this room, now a kind of vestibule similar to that on the west side, we see to our left through the new opening in the north wall of the next room the vista across the new octagon hall and two of its vestibules, the four of which form a Greek cross, into the main entrance of the large new north gallery. Advancing into the octagon, the vestibule to the right gives in like manner access to the side entrance of the east gallery, which has also an end entrance from the last room of the old range of rooms, and the north and east new galleries are connected by the new octagon room at the north-east angle. The re-entering angles formed between the arms of the cross are occupied by open courts. For those who have not paid attention to the complete scheme for rebuilding the National Gallery, of which this is a part, it may be explained that this octagon with its dome, now the centre part of the new building, would have been in the complete scheme one of its secondary points, subordinate to a grand central entrance and cupola occupying the centre of the space in rear of the façade, and having a similar corresponding feature to west of the central dome.\* The present building is therefore so planned that it could be incorporated as part of the whole design for rebuilding, should that after all be carried out.

The central compartment has a glazed dome, octagonal on plan; the vestibules which branch from it are barrel-vaulted, with solid panels near the springing, and glass in the upper portion. The decorative effect is of a sumptuous but broad and massed character, derived chiefly from marble and a rather profuse use of gilding. The plinth is of Belgian black marble, which is also used for the architrave borders of the openings in which columns are not added, and which are plain semicircular-headed doorways with no break at the impost. The North Gallery was to have been entered from the vestibule by one of these plain doorways only; but the more liberal administration of "Works," which succeeded to the memorable reign of Mr. Ayton, was induced to countenance a wider and columned opening to give a better climax to the vista from the entrance. The columns are of green Genoa marble, ap-

proaching, however, in most instances rather nearly to black in general tint. The floor of the centre octagon is of marble, with a wide border, formed of bars of the darker marbles, and a centre of lighter white and grey Sicilian marble in squares; in the border opposite each angle is a circular panel filled with yellow Siena marble in a five-petalled flower form, giving a good effect in colour, but rather falsifying the scale. The walls are crimson, and the cornices strongly gilt, with a frieze picked out with a simple ornament in two shades of green; in the two large galleries this frieze is a little more elaborated, and in the octagon, instead of the ornament, there runs round the frieze the following sentence (a quotation, we imagine, from Reynolds):—"The works of those who have stood the test of ages have a claim to that respect and veneration to which no modern can pretend." The original author is of course responsible for the grammar, which really implies a statement that the painters themselves referred to "have stood the test of ages," and not their works; but apart from that, it seems to us that a weaker inscription for such a position could scarcely have been found; if indeed it be quite harmless, for it involves what from some points of view may be thought a very questionable principle. Over the frieze come deep square panels divided by gilt mouldings, and filled, in the vestibules, where they form part of the ceiling, with a simple decoration in light greyish tones, or with gilt ornament in low relief; in the octagon, where the panelled portion forms the drum of the dome, the panels are more deeply sunk, and filled with large rosettes in high relief, also gilt. A heavy round moulding of banded leafage divides the panels, and runs up the ribs of the octagon cupola. In the lower portion of the octagon there is space for hanging four large pictures, one on each of the sides between the openings. In the eight spandrels of the arches above are to be seen, in lunettes, the busts of Michelangelo and Raffaele, Reynolds and Turner, Titian and Rembrandt, Hogarth and Gainsborough. There are, as will be seen, two groups of foreign and two of English painters; those of Raffaele and Michelangelo flank the north arch, which gives access to the room in which the principal works of the great Italian painters are to be collected; the rest have no significance in regard to position. They are perhaps sufficiently typical names, but as the National Gallery has no reference to English art more than that of any other country, and accepts all great works independent of nationality, it might perhaps be asked why the English painter's effigies should preponderate, to the exclusion of such a name as Leonardo, for instance? The smaller decorative arches in the diagonal faces of the octagon are occupied by a Classic device of griffins and a vase,—a decorative feature with a respectable pedigree. The ceilings of the two long galleries have large coves, with a semi-vault at the sides, and with a somewhat similar griffin design in the lunettes; there is a flat ceiling of glass, and the line of the flat ribs in the cove is carried across the ceiling by bands of

\* A reference to the complete plan published in the *Builder* for 1867 (vol. xxv.), will render this clear.

ornamentally-lead glazing. The decoration generally has been in the hands of Messrs. Crace. There are, however, special designs in sculpture, or at least in relief, in the semicircular panels in the end wall of each of the four "vestibules," above the cornice line; these have been designed and modelled by Mr. Wynn. The groups in the east, south, and west vestibules represent Architecture, Sculpture, and Painting respectively: the first-named was not placed at the time of our visit; Sculpture is illustrated by the visit of Pericles and Aspasia to the studio of Phidias; and Painting by a group representing Raffaele in his atelier with his pupils. The remaining space is occupied by a representation of "Colour" and "Form," represented by two fat boys who are not beautiful, and who, if considered as infants, as their proportions and modelling indicate, are out of scale with the other groups: one holds a palette and the other a board, on which the long-exploded "line of beauty" is shown; and between them is the head of Queen Victoria in profile. Why her Majesty should be put between Colour and Form is not apparent; but the whole design is by no means a fortunate thing to see opposite to one on entering the new galleries, and we should seriously suggest the advisability of reconsidering it. The architect, it is to be presumed, is hardly responsible for the character of these designs.

The galleries, as at present constituted, contain no special provision,—we might say no provision at all,—for the exhibition of sculpture; which is of the less practical consequence just at present, as the nation possesses very little sculpture, specimens of which are no doubt more difficult to acquire than paintings. We could wish, however, that some effort were made to secure a representation of sculpture works in the national collection, and in that case there ought to be room to exhibit them properly. This would, we believe, be fully provided for, were Mr. Barry's plan carried out in its complete form. At present economically-minded members of the Government might have a logical basis for decrying the purchase of sculpture, because there is no place to put it. The "Hylas" group of Gibson is quite lost in its position in the little lobby between two of the rooms; we hope that, at least, some better place is to be found for it; at the time of our visit it stood in the old corner.

We have, some time previously, given details as to the fireproof construction adopted in the building\*; beyond this there is not much in the practical part of the work to call for special remark. In the floor below the galleries there is plenty of accommodation in the shape of lavatories, &c., for students attending the gallery on studying days; the rest of the floor is mainly occupied by offices and residential rooms. A considerable space in the basement appears to be not yet appropriated for any special purpose. A lift is provided for raising pictures, brought in at an entrance arranged for that purpose, to the gallery level. While referring to the practical part of the work, we may here mention (though we have given the names before) that the contractor for the work was Mr. G. W. Booth, of Gosport and London, and that it was carried out under the immediate superintendence of Mr. Roome, as clerk of works. The architect, we need hardly remind our readers, is Mr. E. M. Barry, who was appointed in 1868.

As to the re-arrangement of the pictures, the new combinations brought out, the effect upon various works of their new light and new position, and the characteristics of the new works (the Wynn-Ellis collection) which have not yet been publicly seen, there may be something of interest to remark upon when the details of the hanging arrangements are finally carried out. At present we will only mention the general classification of schools which has been adopted. We may premise, in regard to this part of the subject, that considerable difficulty has been experienced in coming to anything like a system of classification, from the fact of the size of the apartments not necessarily fitting in with the precise space required for pictures of a special family, artistically or nationally. This, of course, is an inevitable difficulty in a case of this kind, because even if the rooms had been built for the pictures now in hand, a few new purchases would have disturbed the arrangements. As far as we can gather, the authorities over the

pictures at the National Gallery would have preferred a succession of smaller rooms rather than the two long galleries, as it would then be more easy to break the pictures up into groups, connected by national or chronological relations, or by similarity of style and school, each of which could have been fitted to one room, so as to make that room the representation of a special division of the subject. The difficulty of the long room is illustrated in placing the works of the Italian painters in the north gallery. This gallery does not suggest, in its architectural treatment, any possibility of demarcation of the various Italian schools, or of chronological periods. The only alternative is to mass the whole collection as "the Italian schools," and arrange the pictures in a general chronological order, from one end of the room to the other. But the unity of even this general classification is interfered with, because the room is just not large enough for the whole series of Italian paintings; and the most important of the earlier works, including the specimens of Giotto and Orcagna, have to be placed quite apart in the south vestibule, instead of heading the line of painters who may be said to have descended from them. The endeavour is evidently being made to keep the arrangement of the whole works as systematic as possible; an endeavour which is again interfered with, on the other hand, by the terms of special bequests, which must be collected in one room. However, the general classification is briefly this: entering by the left-hand staircase (the old National Gallery entrance), the visitor will find in the vestibule certain works of the English school, and in the room immediately adjacent, where formerly hung the Angelicos and the specimens of Signorelli and Botticelli, he will find the collected studies of Turner, to which this room is now devoted. Passing through westward, he will find the two old Turner rooms devoted to the miscellaneous works of the English school, and the old English room,—the farthest room westward,—occupied by the Vernon Collection. Returning eastward through the Turner studies room, we find the long room, formerly devoted to the leading Italian pictures, now occupied by the Turner pictures. The small room eastward of it, and the vestibule at the top of the east staircase (the old Michelangelo and Mantegna room) are devoted to some of the older works of the English school. The next room retains some of the same works which it previously held,—the Poussins and Claudes, &c. The room beyond it, where the Peel collection hung, is occupied by later Italian painters, and the extreme east room by the Wynn-Ellis bequest: thus the earliest and latest of the bequeathed collections occupy the two corresponding rooms at opposite ends of the suite. Returning to the Claude-room, we find on the north of it, as mentioned, the breaking through into the new building; and the southern arm of the cross, or the south vestibule, is occupied by the works of the Spanish school. The west vestibule, as we noticed just now, contains some of the earlier Italian paintings; the north vestibule contains the works that were in what is now the east entrance vestibule,—the Michelangelo and the small Raffaels, and others,—which are considered as thereby grouped with the main Italian school in the North Gallery, to which this chamber leads. In the east vestibule are hung the Peel pictures, and through that we may proceed into the long east gallery, which is occupied by the large pictures of the Flemish and Dutch schools chiefly. The door at the north end of this room gives access to the octagon room at the angle, which is occupied by the early Venetian and Umbrian pictures, which, being rather extraneous to the central development of Italian art, are not so ill placed apart from the main Italian room, or North Gallery. This latter we enter from the octagon room, and have then made the circuit, and return to the centre octagon through the door in the side of the north room.

We have thus given the general bearings of the new disposition of the pictures, the results of which, more in detail, we may take opportunity to glance at when the arrangements are finally completed; which will also be the best opportunity for forming a judgment as to the success of the lighting in the new galleries.

**North Bierley (Bradford).**—At a recent meeting of the Local Board, Mr. H. Oliver Smith, of Oxford, was unanimously elected engineer and surveyor. The Board are about to carry out extensive drainage and other works.

#### THE BRUSSELS EXHIBITION.—A LAST LOOK ROUND.

IN resuming and concluding our notice of this remarkable Exhibition, it may be as well to point out the foreign models of especial interest to the British competitors. But it might be unfair to do this without a distinct acknowledgment of the classes against which, in a particular department, our Continental rivals had to contend. The classes we refer to, and which, during our visit, attracted a high degree of scientific, if not of popular, attention, are those referring to sanitary principles of construction, with particular reference to public buildings. Thus, nothing could be more evident than the anxiety felt to study the arrangements of the Portsmouth and Pentonville convict prisons, the new system of warders' quarters at Wormwood Scrubs, the improved accommodation for *détenus* and officials at police-stations, and so forth. It was gratifying, of course, to note the overwhelming admiration bestowed upon the Thames Embankment and the Holborn Viaduct; but it is still more instructive to observe of what kind are the foreign monuments—since monuments they have been from the hour of their completion—which can, in our own day, be set off against these. In the first instance, however, it should be clearly understood that such works come distinctly within the scope of the Exhibition, as one for minimising the infliction of pain and death upon men and upon animals. The Viaduct and the Embankment did both. Two-thirds of the ideas and inventions at Brussels, no doubt, are devoted to the alleviation of sufferings which have already been incurred, and they bespeak all sympathies; but the solid basis of precaution has many attractions for the mind nevertheless. It underlies a good deal that is shown, in the shape of safe house foundations, ship-building, sea-signals, and the drainage of swamps, where townships are intended to be erected; yet the administrators of the Exhibition confine themselves to no technicalities of local structure. The Germans, for example, insist that, in the mere laying out of a public promenade, certain principles should be observed which may be important, if not essential, to the health of a great city; and this is undoubtedly true, as has been demonstrated in Holland over and over again. They have awakened to the truth, moreover, upon another subject which, repulsive though it may appear, will not, by tens of thousands of persons, be regarded as more so than the facts which have called its discussion forth. The Royal Administration of Railroads in Hanover have collected a series of reports on the latrines at railway-stations in Germany, and nobody who has travelled on the Continent can say that such a reprobation of dirt, indecency, and abomination was not required. Details are unnecessary; but every highway-and-byway tourist will attest the value of the new system proposed. It may be said of the model hospitals from all quarters, in a group, that they in most instances, illustrate an ingenuity of idea, the practical application of which remains to be judged by the light of experience, while, in others,—French, Belgian, German, and Italian,—the demonstration is already complete, though in all the sentiment of humanity and the recognition of scientific necessities are most honourably conspicuous. Naturally the amateur genius intrudes itself into this as it does into all other classes; but it is everywhere harmless, and might possibly in due time supply a suggestion when one was wanted. If without inordinateness, any countries were selected as peculiarly represented in this department, England, France, North Germany, and Belgium would assuredly take the lead, although Russia, the Northern States, and Switzerland are not far behind them, leaving Italy, Spain, and South Germany disgracefully in their rear.

Next to treatment of the sick follows naturally that of the wounded; but with this it is hardly our province to deal, except in so far as they are hospital patients; nor is it our concern to discuss the disposal of the dead, unless to indicate the strange number and variety of proposals for mortuaries, cremation-furnaces, cemeteries, tombs, family graves, and so forth, which crowd upon the sight at this Exhibition of "Health and Safety." Suffice, that a very large and a somewhat enlightened view is taken by practical men of these questions, which might possibly result in the adoption of a definite theory, though at present little is obvious in respect of this topic at Brussels, beyond collapse and confusion. That the dead have still a

\* In vol. xxxi. of the *Builder*, page 619, some information on this point, and on the general question of the advisability of wood or tile flooring for picture-galleries, will be found. The latter was recommended, on good authority, to the Government, but it was decided to adhere to the original contract for oak flooring.

relation to the living, is unquestionably true; but it is equally true that the main sources of public health must be sought elsewhere. In the first instance, through the supply of pure water. This, in the old kingdom of Württemberg, has hitherto been an object most difficult to accomplish, and in those which are called the "Alban" districts especially, which are really deserts in one sense of the term. By a bold and ingenious plan, however, the difficulty has been overcome, and the supply of Württemberg is an encouragement to embarrassed engineers. So testify, at any rate, the specifications set forth at Brussels. The hydraulic works at Cologne, Dantzic, Düsseldorf, and so on, as far as Munich, are of equal interest; but we find very little of this in connexion with the Austrian empire, notwithstanding its long riverain coast. The Germans, however, do not rely upon the Rhine; they will not, in fact, draw upon its flow, never superabundant at any time, more than can possibly be helped. Neither Belgium nor Holland ever did so, dependent though both are, and the latter especially, upon "well-regulated inundations." France is scarcely under a necessity of considering the subject, and even Paris has long since abandoned the thought of depending for her supply upon the Seine. In the next class, that of drainage, nearly all the states of Europe appear eager to compete. We have a scheme from Düsseldorf expressly to avoid the pollution of the Rhine; nothing, under the same heading, from Austria or Hungary; and a urinary and water-closet apparatus, adapted from an English patent, from Brussels. Indeed, Belgium abounds in drainage, disinfecting, and cleansing projects,—as does Italy; but drainage, in the case of the Italians, scarcely means cleanliness, decency, or the health of towns, so much as the clearance of swamped lands from water. The French, however, leaving England for the moment out of sight, march in advance of every other nation. They are the modern Romans in this world of art and wisdom,—drainage. Theirs is a very simple "folio," accompanied by a very simple "atlas," which they exhibit beneath the chalet-roofs in the park at Brussels; yet it represents a labyrinth which is a world in its way. There are models, moreover, exceedingly ingenious and of universal interest. Paris contains two classes of "subterranean channels,"—sewers and reservoirs; the first passing beneath the streets, the second receiving their tribute, and rushing away with it rather like rivers than canals. M. Maxime du Camp compares this combination to the skeleton of a fish; the spine is the main drain, the lateral bones are the tributaries,—one on each side of the Seine; that running beneath the left bank actually engulphing a small though historical stream. In the architecture, as it may justly be termed, of this magnificent system—this *cloaca maxima*, if the term has not been too much abused,—a grand amount of courage and genius is manifest; or, at any rate, is claimed by the exhibitors of models and drawings at Brussels.

There is another class, which, until recent years, was regarded as of no great importance in England. It is that of slaughter-houses, always a difficult subject for the general public to understand, but in connexion with cattle, sheep, and meat markets, vital to the common health. The Dutch, as might have been anticipated, show a building in which the preparation of hogs and pigs for human use may, without American extravagance, as illustrated at Chicago, be carried on without those offences to common feeling that, until lately, disgraced the wharfs of Rotterdam. They are not very far in advance of their neighbours, in other respects, possibly; but in this they outstrip the Germans entirely. The class, however, must be a restricted one under any circumstances, and the more so because its representatives hide themselves under cover of a good many models, the details of which are mercifully not explained. Nevertheless, all this, which is the unvarying characteristic of International Exhibitions, need not restrain a nearer and more particular view of the subject, in this special light, as it stands. From embankments, viaducts, drainage, *et hoc genus omne*, passing to the bird's-eye perspective of the general subject, as here exhibited, there are other domestic interests represented; thus, model dwellings for railway officials at Cologne, similar projects for the mechanics employed at the great and famous works of Bodelschwing, and a dozen miscellanies, the like of these, sanctioned by official approbation in Germany. It is gratifying to know that at length the principles of "home" and of "hygiene" are acknowledged as

being synonymous all over the civilised world. For example, in our own British Court, in the plans and models, as we have hinted, of private houses, and a hundred other methods, if the term may be employed, of domesticating danger, and confronting it in a domestic manner, a hundred little contrivances might be set at work, with slight cost, and perhaps, at all events, with a rather more than commensurate result. Most of these "safety" inventions represent, indeed, if they could only be regarded in that light, the principle of insurance; and so much has been admitted to be true by every inventor of a grand project, such as illustrated at the Brussels Exhibition, keeping in sight the signal and particular purposes for which it was designed. It may not be, perhaps, that safety gas-retorts come within the prescribed scope, but they are clearly "structures," as are safety-lamps, boilers, and kindred appliances. For, it is evident that these experiments must not be confined to model workmen's villages, the ventilation of public squares, and hygienic lodging-houses. Their purposes must extend farther. Nevertheless, one great class has to be held in view; the provision of sanitary abodes for the industrious, and, consequently, of the comparatively poor. The Germans show, ostentatiously, perhaps, though in a true spirit of kindly emulation, as though worn out by the spirit of war, from Berlin, a cluster of educational, benevolent, and gymnastic buildings, not quite capable of description unless drawings or models accompanied them. We have, however, perhaps, drawn sufficient notice to these sections, although, it may be feared, the Brussels Exhibition is not being appreciated at its true worth. In many ways, no doubt, the Exhibition is inconceivable without a guide; but, in many other ways, its suggestions are sufficiently distinct. Let us range, finally, through a few miscellaneous classes which appeared to interest the German mind beyond and above the glitter of flags, blazons, and even architectural provisions for the care and comfort of the sick and wounded. In others, however, its ideas stand, pure and emphatic, before every thoughtful mind. There may be, perhaps, a doubt concerning the admission of many miscellanies, of science, invention, and eccentricity, here exhibited; yet, taken for all in all, ought they to have been expelled from or forbidden entrance into such a field of emulation? We venture to think not. There are drains for houses, lightning-conductors, ventilating windows, winter gardens in model, processes to preserve wood from damp, and warming, heating, cooling, and cooking mechanisms beyond enumeration. It may be assumed that all this falls within the limit of "hygiene and safety," but there is a question whether sufficient attention has been paid to the main point at Brussels. It was far more interesting to study the models of baths, designed by his Royal Highness the King's brother,—who is a kind of Prince Consort in these affairs for the north of Europe,—or even to diagram the "cottages containing reliefs for the half-drowned" upon the waters of the Baltic Archipelago. Still, there is a class at Brussels to which too much attention can hardly be directed. We have already pointed it out, in a general manner, twice, and are happy to perceive that, in three or four instances, the press of Antwerp and Brussels have observed and acknowledged our remarks, and especially with regard to the railway models exhibited. "With the London Builder," says the *Echo du Parlement*, "we agree that the essential points are,—safety, celerity, comfort (including cleanliness), good signals, good breaks, points, stations, and,"—but what more could our contemporary add? Well, the *Builder* will not be responsible for its translators, especially when they translate *campagna* as "cockney"; but it is obliged to them, nevertheless, when they acknowledge its good will, "exhibited towards all the new and old architecture, the old and new sanitary ideas, of Europe." It may be that no such apology was needed. Whether necessary or not, however, it tells of a history which has no precedent and may never have a successor.

**Paving.**—The tender of the Brunswick Rock Asphalt Paving Company has been accepted for paving the following streets for the Plumstead Board of Works, viz., Marischal-road, Douglas-road, Clarendon-road, Handen-road, and Len-am-road. The names of the roads previously paved are Leyland-road, Eastdown Park-road, St. Stephen's-road, St. Stephen's-terrace, Belmont-road, Grand-village-road, Lawn-terrace, Brunswick-place, Upville-road, Burnt Ash-lane, and Carston-wood-terrace, making a total of fifteen streets.

## FICTILE IVORIES AT SOUTH KENSINGTON.

THE fine collection of ivory carvings in the South Kensington Museum, the handbook to which by Mr. Maskell we noticed in an early number this year (p. 47, *ante*), has been gradually supplemented and rendered more complete, so far as the illustration of style is concerned, by a collection of what have been termed "fictile ivories," a rather misleading expression, which refers to casts taken from original ivory carvings with a substance, and a finish in regard to colour and surface, intended to approach as near as may be to the effect of the originals. It is an instance of the thoroughness with which the elucidation of the art-objects illustrated at South Kensington is carried out, that this one branch of fictile ivories, of which the majority\* occupy wall-cases in one corner only of one gallery in the building, has been made the subject of a *catalogue raisonné*, forming a large, thick, and handsomely got up volume,† in which almost every specimen number has a full description with critical comments appended to it, and about 150 pages in addition are devoted to a description of the original ivories existing in Continental museums and collections, the inspection of which the writer has considered "a necessary portion of his task" in compiling this catalogue.

If our readers wish to know what is the nature of the process of producing what are here called "fictile ivories," we can give it them shortly from Mr. Westwood's preface, where it is fully described, the author having made the moulds for a good many of the copies himself. A mixture of gutta-percha and wax (the latter added to render the "setting" of the substance less rapid) is placed in hot water till it assumes about the consistence of putty, then moulded into the shape of a flattened plate rather larger than the object of which a cast is required, and then pressed carefully on to the original carving so as to force the gutta-percha into all the deeper-cut parts of the ivory, which must first be washed over with cold water, or with soft soap applied with a camel-hair brush. When cold, the gutta-percha is lifted carefully from the ivory, and as the wax in the composition gives it a certain degree of elasticity, this may with proper care be done, even in the case of deeply-cut ivories, without any injury to the latter; at least, it is stated that such injury is "very rare indeed," and we may admit that in that case the slight risk to any individual specimen is compensated for, as far as public interests are concerned, by the advantage of the reproduction of the design for those who might never see the original. Whether, if we were the private possessors of a very rare and admirable ivory, we should altogether care to see it subjected to Mr. Westwood's process, is another question. Of course, with under-cut ivories the under-cut parts must be "guarded," and the under-cutting in the cast done afterwards. With what the "guarding" is done the author does not mention. The casts are made from the gutta-percha matrix thus obtained, in plaster of Paris of the finest quality, the casts being, when hard, dipped in a "warm fluid stearine" (*Anglicè*, melted tallow, we presume), to harden the surface, and give them a greater similarity to ivory. When a number of casts of one object are wished for, it has been found better to have an electrotype made from the gutta-percha matrix, so that each subsequent cast may be as fresh as the first one.

\* We say "the majority," as the whole of the objects catalogued do not appear to be in this situation, and it is one of the few faults that can be found with the practical management of the Museum, that there is often not a sufficiently distinct localising of certain classes of objects, so that one may know precisely where to go for them. It seems to be the frequent practice to separate some of the most striking specimens of a particular art from the rest, and place them in some special position in the building, where they may attract the more general attention of casual visitors. The result of this is, that any one visiting such a collection with a special object in view, and some of the most important specimens referred to, and must trust to hitting upon them by chance; for it is rarely that any of the ordinary attendants can give information as to their locality. We have looked in vain, for instance, for the plaque of "Diana and her Nymphs," photographed on page 329 of the new catalogue. We have noticed the same irregularity in the disposition of articles in other departments; furniture, for instance. As the real value of the Kensington Museum is for study, and not for amusement, we think that all articles of the same type, and included in the same special catalogue, should be rigorously kept together; and if the catalogues each contained a note of the whereabouts of the particular articles described, it would be all the better, and sometimes save time.

† A Descriptive Catalogue of the Fictile Ivories in the South Kensington Museum: with an Account of the Continental Collections of Classical and Medieval Ivories. By J. C. Westwood, M.A., President of the Oxford Architectural Society, &c. Chapman & Hall.

The casts produced by this method are, considered as casts, remarkably sharp, clear, and minute in detail, though of course it must be obvious that impressions produced in a material which is (purposely) semi-ductile even when hardened, and from which again a second electro-type mould is made, and in which undercutting has to be done by hand afterwards, can scarcely be relied on for the minutest accuracy, though they may succeed in giving the character and style of the original completely, except in regard to that expression of the tool, so to speak, which casting can never really reproduce. But when it is claimed for these casts that they are in appearance almost equal to, and liable to be mistaken for, the originals, we must respectfully decline to endorse the statement. The author of the catalogue declares that "when properly made and carefully coloured by hand from the originals, it is next to impossible to distinguish one of these casts from the original," and he declares that his own copy of a celebrated specimen in the British Museum, treated thus, took in Dr. Waagen, who would scarcely believe that the specimen was not an original ivory. We venture to think that there is a little exaggeration here. At all events, taking the specimens at South Kensington, how any one could pretend to say these could by any possibility be mistaken for ivory, or be even said to resemble ivory, we do not understand; nor how such a statement could be allowed to find place in an official catalogue. They have neither the colour, the sharpness, nor (of course) the surface lustre of ivory, and to examine them with this idea in the mind, that they are meant as imitations of ivory, is almost a shock to the senses. That is why we objected to the term "fictile ivories." They are as different from ivory as chalk from cheese, and no such claim ought to have been put forward for them. In other respects, there is no doubt that the collection is one of great historical and artistic interest as far as the nature and style of the specimens are concerned, and that in many respects it is an advantage to study reproductions which give as nearly as possible the actual sinkings and relief of the design, instead of the mere effect, as a photograph would. Only, do not let the public be deluded into a belief that they are studying what is, for art purposes, as good as the original.

The remarkable point in this fictile collection is the amount of Byzantine and Early Christian work which it represents, and of which the former class in particular includes work not only remarkably interesting historically, in regard to style and feeling, but remarkable for its artistic power and effectiveness, in spite of the technical defects of the period. This class of work forcibly illustrates what was observed in these columns in our notice of Mr. Maskell's "Hand-book" before referred to, that the real and effective use of ivory in the carver's art is not in the production of statuettes, but in small reliefs and in work of what may be termed the cameo style. Ivory statuettes tend to look only like miniature copies of statues,—toys, in fact. But for small compositions in relief, in which figure subjects are combined with delicate ornamental detail, it is a perfect material. Its hard texture and durability allow of the minutest detail, and its surface, with almost a natural polish and a semitransparent character, is precisely suited to give expression to a class of work which is the link between sculpture and ornamental art; and we cannot but remark, in looking at the numerous casts of Byzantine examples of early centuries here (sixth and seventh chiefly), what a true instinct is exhibited in the flat style of carving employed,—flat, but, nevertheless, in tolerably deep relief. What we mean is that, while the interspaces between the figures are sufficiently sunk for a powerful effect, the figures themselves have rather a flat section, and always seem to leave as much as possible of the original flat surface of the ivory incorporated in the figure. This is far more in accordance with the nature of the material than the high relief of the pretty subjects, for instance, by Flaminio, of children playing, which approach sculpture in their treatment. Ivory is more or less a laminated rather than a crystalline substance, not bearing very heavy usage in cutting, and capable, as one of its most marked characteristics, of a lustre of surface which shows itself to most advantage in flat treatment, and which, in fact, is apt, in more rounded relief, to produce false lights interfering with the effect of the modelling. The Byzantine work is, of course, naïve and childlike in regard to the treatment of the figure, but this is far less felt as a draw-

back in these small semi-ornamental productions than it would be in work assimilated more closely to sculpture proper; and the decorative effect of the whole, especially in regard to accessory details, is rather improved than otherwise by the slight stiffness and conventionality of style,—what we now regard as conventionality, though possibly not so intended originally. A very fine instance is the square plaque with a sunk panel ('55—27) of the Saviour in the act of benediction, with a cruciform nimbus forming a decorative background, and the long flowing hair beautifully treated. This is a piece of tenth-century work; but other much earlier specimens are admirable in their way. Among the Byzantine objects should be noticed the very curious "twelve small plaques" ('58—242) described in the catalogue as "portions of a large Byzantine casket made up of small plaques, separated by bars, composed of small circles, containing elegant roses, and occasionally with side faces of a very negro character. The plaques contain representations of single classical figures, generally in energetic attitudes." The work is tenth or eleventh century, and the directness and force of action in the small figures is remarkable, as well as the decorative effect of the whole. The "Back of the Cover of the Psalter of Princess Melisenda," photographed page 73 of the catalogue, and of early twelfth-century date, is a fine piece of Byzantine work; the very elegant border ornament shows a singular mixture of Classic and Gothic feeling, a characteristic even more marked and peculiar in the foliage ornament in the upper panel of the book-cover from St. Gall, of the ninth century ('65—104, photographed page 120 in catalogue). It is curious to compare the before-mentioned "Princess Melisenda" design, however, with the Russo-Greek saucer of the seventeenth century ('73—56, and page 99), in which, except for their better preservation, the figures seem absolutely of the same school, and scarcely show the slightest advance in freedom and power; a striking instance of the intensely conservative nature of the religious art of the Greek Church.

Among the earlier productions are included some which, though coming under the head of "Classic" in the catalogue, have really more affinity in style and treatment with the Byzantine than with what we are generally accustomed to call Classic. A typical specimen of what we mean is the beautiful "portion of leaf of a diptych" ('58—7), described as Roman of the sixth century, the original being in the Brera, Milan. This is part of a "consular diptych," representing what one might be disposed to call a very ecclesiastical-looking consul, and the quasi-Gothic impression is further carried out by the treatment of the drapery with a small diaper worked on it, in most delicate and minute detail. Among other specially suggestive specimens are some of those classed as "North Italian" work, which in another date and in a somewhat different manner represent the same kind of blending of Classic and Gothic feeling which we notice in some of the Byzantine work. The English work seems to us to be distinguished from the rest by a great want of style, an uncouthness quite different from the artistic naïveté of the Byzantine work.

The traces of architectural design in some of the examples are not without interest. In one of the earlier French specimens ('58—13), a book-cover, the spandrels above the figure-subjects are occupied with a pile of buildings of most uncouth and un-European shapes, reminding one more of Indian "Raths" than anything else. In the bas-relief of "Christ disputing with the Doctors" ('73—92), a piece of pre-Gothic German work of the tenth century, the temple is represented by a roof on columns and arches, the arch over the principal group being lengthened out, however, into a segmental one of hardly stable shape, to suit the proportions of the composition; the next arch to it is narrow and stilted in a manner which, in conjunction with the treatment of the roof, appears to be an attempt at perspective. The English ivories seem more true and realistic in their treatment of architectural adjuncts. In the small bas-relief ('58—228) representing the murder of Beckett, the piece of painted wall-arcading behind, with its crocketed label, is sufficiently made out to lead one to be pretty sure that it cannot be twelfth-century work; it is described as "twelfth or thirteenth century" in the catalogue. A curious piece of architectural scenery is shown in one of the plaques, numbered '58—291, the

"Nativity" and "Presentation," which take place under straight pieces of tiled roof, supported on rather long thin columns, of which it is difficult to say whether they are more like reminiscences of the Classic column or anticipations of the Gothic shaft. The piece is called "Carlovingian, or late Anglo-Saxon"; to our thinking the architectural detail is against the latter idea, for the shafts resemble nothing in known Anglo-Saxon work, still less the foliated border. In the extraordinary representation of the Nativity ('73—112, photographed page 158), Mary and Joseph sit in the midst of an enclosure, the features of which are evidently taken from the Mediaeval Feudal castle, with castellated walls and towers at the angles; this evidently represents the town of Bethlehem, as outside are the shepherds with their flock; angels of a remarkably childish type of conception appear in different parts of the design; in the midst of the enclosure stands the manger, half-like a cradle in shape, but with a kind of rack above, through which are poked the heads of two specimens of cattle whose bodies are not accounted for. In the sky is the star, looking rather like a rosette stuck on the surface of the background. This curious piece is German, and assigned to the eleventh or twelfth century. Among the early Christian productions is one representing the women at the sepulchre ('58—179, photographed page 44), in which the representation of the sepulchre presents a singular combination of architectural structures of totally different scale and style; the lower part of the structure, the sepulchre itself, being distinctly Roman architecture, with the conventional lion's head and ring on the centre of one of the doors which have been burst open; the capitals are of an Early Romanesque type, looking more Romanesque and less Roman in consequence of the obliteration or omission of minute detail in the foliation of the cap. But on the flat top of this tomb stands a circular building of jointed masonry in small stones, with circular-headed windows and pointed roof, and without a trace of Classic detail about it; it recalls such a building as the Baptistery of Nocera, only without the aisle. Probably it has some symbolic meaning; but the combination of these two not only in one scene, but almost in one structure, is very curious and unusual. Skipping from ancient to comparatively modern work, we may just revert, in connexion with this architectural part of the subject, to the Russo-Byzantine tablet of the sixteenth century (photographed page 101), in which the characteristics of Russian ecclesiastical architecture are elaborately shown in the background, with the most happy disregard of perspective and perpendicular, and on the whole considerably more clumsy in execution than the Early Christian work previously mentioned.

Although a little too much has in one sense been claimed for the fictile ivories, they are well worth attention, very interesting and very instructive as to art history, and will certainly be rendered more so by the publication of this full and admirably got-up, and, let us add (a very important point), thoroughly indexed catalogue. Whether these books would not have been more practically useful had they been in a smaller and more compact form may be a question. Few are likely to study the objects on the spot with so heavy a volume in the hand; but as a book of reference it is unexceptionable.

**Dorset Natural History Society and Antiquarian Field Club.**—This society lately visited Portesham and Abbotsbury. The route taken was through the village of Nottington. The first halt was made at Portesham. About half a mile from the church stands the cromlech or Druid's altar, and this proved a source of great interest. This cromlech is locally known as the "Hellstone," and has been restored as far as possible to its original condition by Mr. Mansfield. This remnant of antiquity is composed of nine erect stones, which support a large oval stone, horizontally placed, at an elevation of about 6 ft. from the ground. This stone measures 10 ft. 6 in. by 6 ft., and is about 2 ft. in thickness. All are in a rough state except the under-part of the horizontal stone, which seems to have been rudely chiselled. The tradition connected with these stones is that which obtains in many other places—that the devil flung them from Portland whilst he was playing quoits. At Abbotsbury, St. Catherine's Chapel was visited. After the party had finished their researches dinner was provided at the Ship Hotel, the president of the Association, Mr. Mansel-Pleydell, being in the chair.

## THE COLLEGE OF INDIAN ENGINEERS.

ENOUGH is known in this country of the Indian Empire to prevent cultivated men, who have never set foot in it, from attempting to judge its system of government according to any home standard or European method of comparison, for those who dive into history cannot find any parallel to the English domination. The Romans in Gaul, and afterwards in Britain, began their work amongst peoples, or rather tribes, possessed of rude forms of language and religion, and to whom the refined arts were unknown. The English go to India, not as colonists to found a new empire, but as conquerors to rule an old one. Their mission is to acquire the languages, respect the codes of morality, and utilise the traditions and inherited genius of the conquered. But, unfortunately, the interest which the majority who compose the Departments of India feel in the country is rather that of speculators in short leases than of investors in freehold property. Their sentiment of patriotism is expended in love, not of the country to which they have migrated, but of that which they have left. Their aspiration is to achieve just enough success to enable them to return at the earliest opportunity. An Indian civilian's ambition—which, to a stranger visiting him at the Residency of some tributary State, might well appear to be boundless—is often confined to a seat in Parliament at home. The commander of an army which holds in subjection 200 millions of people is not unwilling to exchange his splendid responsibility for the charge of a fortress on the Mediterranean; nor is it to the interest of the governors—however it might accrue to the advantage of the governed—to prolong individual service in India. Great as are the rewards of meritorious officers, they must necessarily be of short duration. It would not be desirable, even were it possible, to keep a really great man there, always at his work. Indeed, Cicero's advice to Cælius to "cling to the city," and that "all employment abroad . . . is obscure and petty for those who have abilities to make them famous at Rome," is only too readily accepted by Englishmen, in spite of the national character for migration. A system, therefore, which favours a continual and ever-changing supply of steady, well-to-do mediocrity has been found in India to produce the most useful results. Such are obtained by the departmental system. Thereby persevering dulness is often made to serve the State as effectually as genius, even though brilliant, or culture, even of a high order. In principle it is, perhaps, exclusively Anglo-Saxon, and its force is acquired from the possibility of always applying to it the proverb, "While there is life there is hope." Nor is its worth unsupported by historical evidence. Louis XIV. was a far greater sovereign than any of his English contemporaries, but there is still a monarch on the throne of this country. In the reigns of Akbar and of Shâh-Jehân, better and grander buildings were erected in North-Western India than by Englishmen, of their time, in England. But at the present moment, to the descendants of the latter alone remains the power of enriching with works of architecture both England and India. That that power has been often signally misapplied in the latter country none will venture to deny. But to judge from public criticism and professional doctrine, it has not been successfully applied even in England since the sixteenth century. Yet the Government has introduced into India something of the order and discipline under which the trade corporations worked in England in the Middle Ages. As there were then grades of masons and carpenters in the one country, so there are now grades of engineers in the other. The Indian Department of Public Works, properly ordered, and having all its members properly instructed, ought to resemble a grand fraternity similar to those of mediæval Europe. Really, under the peculiar circumstances of English rule in the East, we see no reason why eventually the men from Coopers Hill should not do for India what the men from Cluny did for this island at an earlier epoch. It is merely a question of time, of right direction, and of mutual patience.

The original English settlers in India—and they were worthy to be called settlers then—although they went ostensibly for purposes of trade, were compelled at times, in the interest of legitimate business, to transform their counting-houses into guard-rooms, and exchange a load of samples for a knapsack. Their agents and assistants were less bagmen than sporting and military characters. Fresh conquests added

territory, which had to be guarded by mere soldiers. The object of fighting being to overcome adversaries, and the object of attacking an enemy's position being to take it, our soldiers, whether amateur or professional, were so far practical as to sacrifice everything to the attainment of their end. They did not hesitate to occupy Benâres lest in so doing they should injure a Monkey Temple of either Dravidian, Chalukyan, or any other division of Hindû peculiarity or style. The military engineer who converted the fragment of a Bûddhist Kût into a roller might have shocked Plato, but he would have been commended by Bacon. The arts of peace—when it appeared for a time—had necessarily to be done by that portion of the army which devoted itself to scientific and technical subjects. Men who had surveyed the site of an encampment were called upon to plan a barrack and a hospital, and to superintend the execution of both. As the tide of conquest spread, until at length it covered the greater part of the peninsula, to these soldiers were delegated tasks in which, under similar circumstances, probably the most accomplished men in Europe would also have failed. But some of the earlier buildings erected by these soldiers were not unworthy examples of architecture, as it was then understood and practised in Europe. A Frenchman—General Martin—who died in 1800, founded and built at Lucknow a truly excellent edifice in brick and stucco, quite as good as the majority of châteaux which sprang up in France towards the close of the last century. Indeed, the Martinière, the ruins of Dilkûsha, and of other mansions in and around Lucknow, betray extraordinary talent on the part of the amateurs who built them, and who, if they did obtain designs from Europe, were certainly compelled to carry them out unaided and in their own fashion. Colleges, churches, governors' houses, all sorts of public buildings, fell within the province of the over-weighted military engineer. At last, after people at home had begun to discover their own shortcomings in the matter of architecture, the English in India awoke to the realisation of a similarly unpleasant fact. Meantime the natives had learned enough of the French and English adaptations of Italian architecture to caricature both at Tanjore, Trichinopoly, and afterwards at Lucknow. In Europe railways had made the grand tour. Similar means of communication were planned for the great Indian highways. But not before the Mutiny had been suppressed was the English power consolidated by the introduction of the locomotive. The return of order and tranquillity was the sequel for laying down iron rails, and with the utmost possible speed. Engineers were urged to go to India. Anybody who knew anything about bricks and mortar, who had traced plans in an architect's office, or helped to make a builder's estimate,—and who managed to get as far as Calcutta or Bombay,—was snatched up for the work. As the different lines approached completion many of these European assistants sought other employment, and sometimes even were invited to enter the Department of Public Works. Ten years ago, of the 600 officers, both military and civil, who helped to compose it, perhaps some of the best—and undoubtedly also some of the worst—had come from the railway works; and at the present hour many of them hold important posts in the Department, which now numbers more than 1,200 persons.

It is not too much to assert that, at one time, any European who possessed a superficial acquaintance with buildings of the most primitive kind was deemed, if not a welcome, at least a necessary, addition to the Indian Department of Public Works. Nor was the attention of the Government either in India or at home seriously attracted to the subject until certain buildings which had been erected in various parts of the country were condemned by special commissioners, sometimes as faulty structures, sometimes as totally unfit for habitation. Then every inducement was placed in the way of competent Englishmen to take engineering service in India; but with little if any success. Men who were worth anything at all would not consent to act under the thumb of military engineers. Although alterations were made in the discipline of the Department, rules and arrangements modified, opportunities of leave increased, and the position of civil engineers generally improved, it was still next to impossible to obtain useful candidates. Although every inducement was offered to educated young men to present themselves for examination in England, hardly five out of fifty annually invited were deemed eligible. At last

a happy thought seized upon the Government of the day. They were training boys for the navy with increasing success, why not prepare men for an examination which but a fraction of the few who presented themselves were able to pass? A scheme for founding an engineering college was set on foot. A distinguished officer of the Bengal Engineers had just arrived in England. He had held a high appointment for several years in the Department at Calcutta, and had written a book on "Indian Polity." No better president of such a college could be found than Colonel George Chesney. Of course, it was inevitable that both the college itself and the suggested scheme of education should find plausible opponents. As soon as the Government had taken effectual steps to ensure suitable recruits for the Indian Engineering Service, instead of a batch of unsuitable applicants, it was felt that a species of monopoly was being created. The councils of King's College and University College protested against the scheme as mischievous and mistaken. They claimed the right of preparing young civil engineers for India, some of whom could not pass the necessary examination, as experience had too often shown; while others, who could perhaps have passed, would not go to India. An agitation took place in the press, and then in Parliament, of which it is needless now to treat. Suffice it that, at the present moment, the college is in full working order. The Indian Department of Public Works is being recruited with young men of good social position, and some technical education and special training. Far from creating a new monopoly, it allays the inconveniences of a long-standing abuse; and our satisfaction at the results attained at Coopers Hill is only tinged with a little regret that the first co-operative step in professional education should have been taken, not by architects, but by engineers, and under Government influence withal.

The code of honour to which the military man, perhaps sometimes with a little affectation, subscribes, finds similar acknowledgment amongst the covenanted members of the other services. *Espirit-de-corps* would have prevented any public appreciation of administrative abuse; and it is probably due to uncovenanted civil engineers, and to outsiders temporarily classed in it, that we in England have been enabled to learn what little we know about the Indian Department of Public Works. A member of it is a portion of a vast machine which must work according to set rules, any one part of it attempting to do more or less than it is required to do causing a disturbance of the machinery. To try to surpass a colleague is to infringe the code, if not of honour, at least of good fellowship. The responsibility of ill-doing, technically considered, and the credit of a good work, is no one member's prerogative. Discipline alone suffices to prevent the utterance of complaint or expression of regret at being ordered to quit, while still unfinished, a bridge or a building with which any engineer may have sought to identify himself. Yet, if such a state of things appear strange to the freer and more commercial member of a profession, there is still the mediæval precedent of Western Europe. The authorship of churches, cathedrals, and public buildings erected in this country during the Middle Ages is merged in a mass of workmen of many grades, superintended by authority which has left few individual records of existence. The works, however, these apparently irresponsible corporations executed are now models upon which the responsible architect of to-day bases his projects and designs; and the modern custom is to put an architect, often better educated than all those he superintends, at the head, and render him responsible for the proper execution of the whole. This system, although it is often successful in France, and sometimes in England, is utterly impracticable in British India. There, to speak roundly, the officer of Public Works must be his own architect for the design; his own builder for the execution of it; his own engineer to calculate the weight and resistance of materials; and his own surveyor to measure and value them. He has no libraries in which to study no authorities to consult, no European precedents of any value to apply. He is generally next to alone in a crowd of all classes of natives; and often after he has spent time and labour over the pending solution of some local difficulty, he is ordered to start on another job or errand, and transferred to a station 100, 500, or 1,000 miles away. That is the English and strictly constitutional system of providing architecture and architects (engineer-

ing and engineers, if you will) for all parts of India; and it is not unlike, as we have already repeated, the mediæval method. But in the Middle Ages workmen from the highest to the lowest, were in the right groove, and progressed in it. When the Indian engineer gets into an equally right one, he may similarly progress in it; and that he has not yet done so shall not prevent us from believing his arrival therein to be both possible and probable.

We have supported, from the beginning, the Royal Indian Engineering College, because we know only too well the difficulties and perplexities which now attend young men in their early pursuit of knowledge, be it professional, mercantile, or technical. Not a hundred years ago, in order to learn the mysteries of a profession, of commerce, or of a trade, a young man was apprenticed for a term of seven years to some citizen of reputation and experience. He was admitted a member of his master's household, and his parents or guardians paid for his board and education. He grew up to feel an interest in his master's affairs, and perhaps ultimately became a partner in the business. But, nowadays, the world lives so fast and thrives so quickly, that men can hardly afford time to be apprenticed. A little "public school," much boating and cricketing, two or at most three years of articulated clerkship, and then, hey presto! the professional man emerges complete! and ready at the advent of one client to call himself a practitioner. That is the case in England; it was doubly the case in India, where, after a short "coached" examination at home, or a little experience as a subordinate on an Indian railway, men were forced into practice as architects of public works. We have never hesitated to record the accumulation of disaster which followed, and now we hasten to accept proofs of a change for the better.

The college at Coopers Hill, near Staines, was established under order of the Secretary of State for India in view to the special education of civil engineers exclusively for service in India. Admission to the college is obtained by competitive examination; and that for the present year is concluded. All British-born subjects of sound constitution, and free from any serious physical defects, are admissible. They must not, however, be less than seventeen nor more than twenty years of age, in July of the year in which their preliminary examination takes place; and this is held under the orders of the Civil Service Commissioners. The required number of candidates is fifty annually. Such of those who prefer to pursue their studies privately, elsewhere than at the college, are permitted to do so. They have merely to present themselves, three years after the first examination, to undergo the final test. But if the student prefer to enter the college, and follow the course of education extending over three years, he has to pay an annual charge of 150*l.*—in all 450*l.* Should his parents represent their inability to defray the whole of this charge, payment of a part per annum may be deferred, and effected by deductions from the past student's salary during the first three years after his admission to the Government service. Under this arrangement the total charge for board, lodging, and instruction may be reduced to 90*l.* per annum, or 270*l.* for the entire course. Of the nine terms into which the college course is divided, one at least must be passed by the student under a civil or a mechanical engineer. The fees to such engineers are paid by the Secretary of State, and an allowance of 5*s.* a day is made to the student for lodging money and in lieu of "commons" while absent from the college during term time. Those fifty candidates selected at the preliminary examination,—both those who enter the college and those who study elsewhere,—who succeed, three years after, in passing the final test of qualification are immediately appointed to the Indian Department of Public Works, and given a free passage in the most agreeable of all steamers,—those of the P. and O. Company. Nine-tenths of the fifty are made Assistant Engineers, 2nd grade, and receive a salary of 420*l.* per annum. The remaining one-tenth are made Assistant Engineers, 3rd grade, with a salary of 300*l.* per annum.

At the college the students are distributed in sections, containing about fifteen each, under the personal charge of a resident instructor or professor selected as tutor by the president. Each student occupies a separate room, which is furnished, fuel, light, and attendance being provided, he having his bed-linen and towels to provide. His meals are taken in "Hall," and he has to pay extra for wine and beer. There is a

chapel attached to the college, together with a chaplain. Each student has to go through a course of exercise in the gymnasium, and also of military duties; and to wear an academical dress.

The subjects of study at the college are, mathematics, with the mechanics of engineering; the theory and practice of construction; elementary principles of architectural design; surveying; mechanical drawing and descriptive geometry; chemistry, physics, and geology; Hindústānī and the history and geography of India; and accounts. While these are "obligatory," there are others which are "optional," but which appear to be simply an extension of the former. If we have any observation to make upon the subdivision of study, it is with regard to the relative computation seemingly attached to each by the number of marks allotted. Thus, while "descriptive engineering" is valued at forty marks, and "geometrical drawing and estimating" at forty marks, so comprehensive a subject as "architecture" is limited to eight marks. It is, however, easy to perceive that "descriptive engineering" comprises little but what in the last century would have come under the charge of architects, and a great deal which still remains, in Europe at least, a part of their special business.

But if we are willing to admit the excellence of the college course of study, it is impossible not to feel that the preliminary examination presided over by the Civil Service Commission is redolent of coaching, cramming, and every unnatural appliance to force frail humanity in that part of it which is worth very little indeed until after long and gradual development. That examination for this year embraced twelve items, the three first of which were compulsory. These items were as follow:—

1. English (composition, history, and literature).
2. Mathematics (pure and mixed).
3. Latin (translation from and into).
4. Greek (ditto).
5. French (translation from and into and dictation).
6. German (ditto).
7. Inorganic chemistry.
8. Heat and light.
9. Electricity and magnetism.
10. Geology and physical geography.
11. Mechanical drawing of geometrical figures, plane and solid, use and construction of scales, perspective.
12. Freehand (figure and landscape) drawing.

Although we are unable to give any of the particular questions of this year's preliminary examination, that of last year is described in the College Calendar of 1875-6, and it seems quite as formidable in detail as might be supposed from a general glance at the items of this year. It is not improbable that many excellent engineers and architects, of great practical experience, would have been ignominiously "plucked" had they attempted, without long preparation, to answer the prescribed questions, to translate and re-translate, to compose and indite, as the candidates of last year appear to have done with not less confidence than success! Bacon's anecdote of Themistocles, the Athenian, who desired at a feast to touch a lute, said,—“He could not fiddle, but he could make a small town a great city,” might happily be submitted with variations by these unfortunate candidates to their dilatory task-masters. That kind of “fiddling” which succeeds by chance at a competitive examination, but which shows in the player neither sterling qualities nor special talent, is deemed highly valuable by the Civil Service Commissioners, to whom an essay by a young man, of seventeen years of age, on,—“Was Hamlet intended by Shakspeare to be really mad,” probably offers an infinite deal of amusement. We may be pardoned, however, for believing that the most brilliant, refined, and varied hypotheses thereon can afford but a round-about test of qualification for the study of bricks and mortar. The power of rendering long passages from Cicero, Tacitus, Horace, Ovid, and Statius into pure English, or of translating one of Cowper's poems into hexameters, is an eminent acquisition to the wealthy scholar or a well-to-do bookworm. It is anything but indispensable to an engineer-student, although we fully admit the educational value of Latin; and for a Competition-wallah to perpetrate a classical quotation, under a punkah in Calcutta, is not likely to be received with complacency by the ladies, even though it escape the sneers of

the men. These embryo-builders in clay and chunnam are also invited to translate quotations from Homer, Thucydides, and Æschines, or, as an agreeable alternative, to render a bit of Shakspeare into Greek iambs. It would be infinitely better, to ask them for a readable translation of a fable in Persian, Hindústānī, or Sanskrit. Such a form of preliminary examination as that which the Civil Service Commissioners impose upon candidates for mere studentry in engineering, is a remnant of last-century customs. It is absolutely pedantic at a time when no classical author is untranslated; and when the translation is lying open in libraries both public and private. Although Tom Jones whispered soft hexameters into his Sophia's ear, and Partridge flung scraps of Latin at his master, the engineer at his work in India need not make the forcible English he often talks to his subordinates more than strictly grammatical,—at least, for many years to come.

Happily the study of the Classics is not pursued at the college, or, to be more correct, it is not prescribed in the college course of instruction. But the Marquis of Salisbury, at the recent distribution of prizes at Coopers Hill, made a pointed allusion to one or perhaps two branches of the education acquired there by the students. After attempting to get just a chip of criticism out of the rose-coloured reports delivered by outside examiners, he hinted that, although Buddhist and Hindú monuments are excellent things to study at the proper time and when the mind is sufficiently formed to understand them, the many modes of combining materials artistically, of planning buildings and representing the same upon paper—besides correctly estimating the cost thereof—are more immediately important for the student to practise, if not master. That Indian engineers should understand and properly appreciate all types of Indian architecture is most desirable; but a few weeks' study of them, fished from three years devoted to an infinity of other subjects, can only serve to increase the confusion which must at times perplex the mind of even the most precocious aspirant.

The magnificent position of the college of Indian engineers is perhaps not the least of the advantages offered to students able and willing to accept them. Celebrated by Denham, the spot was afterwards made doubly famous by Pope, in his “ Windsor Forest,” in which he implores the “Sacred Nine” to bear him to “where ye muses sport on Cooper's Hill”; and adds the unremediated although prophetic puff:—

“On Cooper's Hill eternal wreaths shall grow,  
While lasts the mountain, or while Thames shall flow.”

Certainly no more charming retreat can be found than among the thick foliage in which the college is partly hidden—with Windsor rising at a short distance, and Runnymede and the river beneath. Perhaps, however, the building itself is a little incongruous. Originally a villa in the occupation of Mr. Albert Grant, who sold it to the Government, it was enlarged and transformed soon after the purchase. A plan and description of the college in its present state was published in the *Builder* a little more than five years ago\*; and the architect who carried out the alterations is Sir Digby Wyatt. We can only add with regard to them that Mr. Grant's conservatory is now a “Theatre” in which lectures are delivered, speeches made, and prizes distributed; and we risk no contradiction in asserting that it is not fitted for the purpose to which it has been roughly adapted.

#### THE EXHIBITION AT WREXHAM.

EIGHT years ago, an Exhibition of Art and Archaeology was opened at the little town of Ruthin, in Denbighshire, North Wales, with a success that surprised its promoters. Bearing this in memory, the friends of such displays have long contemplated a second display of the kind, within the limits of the Principality; but only six months have elapsed since the idea took a formal shape, when it was proposed that not North Wales only, but the border counties,—Lancashire, Cheshire, and Shropshire,—should be included also. The treasures of art accumulated in this wealthy quarter of the kingdom were familiar to the world; but a desire was felt that the public at large should be enabled to appreciate them, so far as it was possible in so comparatively isolated a town as Wrexham. Not but that “ancient Wrexham” possesses an

\* See vol. xxix. p. 606.

interest of its own with whatever is left of antiquity in the historical church of St. Giles, a group of Roman relics, Judge Jeffreys's famous mansion, and examples of the Inigo Jones style in domestic architecture. The local sculptures of Roubilliac, moreover, once enjoyed a far-spread reputation, but no more than a few exceptional tourists have been known, of late, to turn from their beaten route to visit this commercial Denbigh town. It has, however, suddenly achieved a new reputation as containing one of the finest provincial art exhibitions ever brought together. When it is said that nearly 1,300 pictures have been selected, from upwards of 2,000 which were offered; that every available inch in an area exceeding 10,000 square feet has been appropriately occupied; and that the choicest works from the richest galleries in the four counties have been lent, without the slightest apprehension as to their safety, the suggestion is at once implied of a display in all respects remarkable. But the Exhibition is not by any means restricted to illustrations of painting or sculpture,—the latter, indeed, has been, perhaps, unduly subordinated to the exigencies of space; for, after the walls had been covered with canvases and drawings by the Old Masters,—German, Italian, Spanish, Dutch, Belgian, and French,—besides a noble array of the English school; and a special cabinet had been dedicated to the genius of Richard Wilson, the distinguished Welsh artist, in whom his countrymen feel a legitimate pride, and after a separate allotment of accommodation had been made,—a little reluctantly, it would almost appear, of modern work, in addition to room for water-colours and etchings,—only one object of the projectors was fulfilled. In the original plan it was proposed, in emulation of the Leeds precedent, to arrange a special gallery of portraits representing the "Welsh Worthies"; but, if this has been done, they are not obtrusively conspicuous, though many are, no doubt, in miniature. There finally remained, in this department, to collect views, painted or engraved, of those old architectural structures and lordly castles in which, as is said by Mr. Chaffers, who has had charge of the entire scheme from the beginning, Wales abounds. These, of course, were the leading classes in the Exhibition, and they are, naturally, the most prominent, filling the largest area, and contributed to, it may be said, from every important collection in North Wales and its border counties. Criticism upon the pictures themselves would be superfluous, because they possess a fame as wide as the world itself; and it is rather late in the day to pass judgment upon Titian, Gyp, Claude Lorraine, Parmigiano, Rubens, Vandyck, Hogarth, Van Ostade, Jan Steen, Gainsborough, Greuze, Reynolds, or even Turner himself. But a distinct merit of the Exhibition is that the several transitions, nationalities, and schools of art in Europe are clearly marked, both in historical sequence and as they show forth the characteristics of different styles; and here may be perceived the educational influence aimed at,—an influence generally exaggerated, and often marred by errors, if not audacities of opinion, yet one which, it may be conceded, does really operate. At all events, some knowledge upon the subject must be disseminated; and it is a mistake to assume that it concerns the working classes alone. It is not so long since, for a private individual, not moving in particular circles, it might be an effort of years to get a glimpse of the Grosvenor or Stafford, the Chatsworth or Alton-Towers collections, whereas now, by degrees, the pick of them has been publicly exhibited, at one time or another, and art-education has become, if a somewhat overdone, at least a practical topic of the day, and the contents of our royal palaces have been placed freely before the eyes of the student. It has been a principle at Wrexham, and one which, upon the whole, has been consistently followed, to admit no inferior work in any class; and, considering who the owners of the pictures, as a rule, were, their value could scarcely be doubtful. From this, as from every other class, all mere ingenuities and trivialities have been rigorously excluded; and, considering the extent and variety of the Exhibition, nothing more flattering could be said in its favour.

The Exhibition buildings are represented by a facade, consisting of two spacious houses recently erected in Hope-street, with a decorated arcade, adorned by two splendid gates belonging to the Duke of Westminster, who has contributed, indeed, to all the richest of the classes. This is gay with sculpture, shrubs, and flowers, and opens, along one side, upon a succession of

refreshment-rooms, originally designed to be 100 ft. in length; but, in a few details, the first outlines have been varied, and in many they are not sufficiently complete to be altogether distinct. For instance, a glass and corrugated iron corridor, intended for a special display of a national type, is not yet finished; but, as usual, the choice lay between postponing the opening ceremony, which took place last Saturday, and allowing it to take place before the workmen had left. Referring to the corridor of approach, the official description says:—"This leads into a grand central hall and an art gallery, 150 ft. by 70 ft., fireproof, being, in fact, a saloon of zinc plates, with wooden supports and rafters, lighted from the roof,"—a doubtful security, it may appear to some. "The industrial annexes are quite distinct, and the whole is isolated from any surrounding tenements; hydrants are placed in the angles, and firemen are constantly in attendance." There is the usual arrangement of dais, orchestra, accessory rooms, offices, and so forth, and the decorations are creditable; but, of course, in so central a position, it was impossible for the structure to expand far in any direction, and it was unlikely, for many reasons, that such a building should be favourable to the performance of music,—a matter, however, of no great importance, since its main purpose is the illustration of archaeology and art,—ornamental, plastic, and pictorial. The ornamental and antiquarian classes, according to the programme sketched by Mr. Chaffers, and to which considerable importance is deservedly attached, are arranged or distributed, so far as was possible,—they are often, of course, composite,—into material, and distinguished by epochs, illustrating the great periods,—as Grecian, Roman, Celtic, Anglo-Saxon, Norman, Mediæval, and Renaissance. Wrexham, as was its due, takes the lead with Roman, British, or Saxon work discovered by antiquaries in its own vicinity, and the enumeration then runs through a rich and long succession of cabinets:—Ancient glass specimens, and some not a little interesting and rare; enamels, including Mr. Boyd Baker's superb collection, said to be unique, and to two of which the value of 1,000*l.* is attributed. Gold and silver plate, much of which, representing the racing triumphs of the Duke of Westminster's stud, is rather more gorgeous than artistic,—the Pelican Cup from Hawarden; an elaborate abundance of brass, bronze, iron, and other metal-work; the arms and armour invariably conspicuous in the halls and castles of North Wales and the Welsh border; numerous curiosities of bijouterie, some of which are unquestionably foreign manufacture; clocks and watches, one of the latter that ticked in the fob of our first King Charles; engraved gems, which, notwithstanding the ease with which they may be lost, or "conveyed," have been liberally deposited in the glazed coffers,—so to term them,—of the Exhibition; and coins and medals. Some of these might give a hint, perhaps, to the numismatists of our national Museum. The carvings in wood and ivory are not, for the most part, remarkable; but in pottery and porcelain there are fine specimens. The textile manufacturers are present, with embroidery and lace, perfect of quality, if not in large profusion, and, with reference to the latter, it may almost be said that there has been a revival of recent years. Next are the cabinets of books and bookbinding, among which were surprised not to find the works composed by Dafydd Benfras, or David with the Thick Head, since he was such a favourite at the Eisteddfod of last year. You pass on, among illuminated manuscripts, to municipal insignia, not a few of which are distinguished by a genuine historical interest; thence to musical instruments, from amid which the harp was certain not to be absent, in many a form, dating from many an age; and thence into a crowd of miscellanies, where less discrimination would seem to have been applied than in some other parts of the Exhibition. In contrast, the Oriental Museum was intended to contain "the choicest examples of Arabic, Persian, Indian, Chinese, and Japanese manufactures, as models of design and workmanship," as well as the antique art-works of Japan; but it will be evident that a close examination would be required to test their merits. Besides, the principal purpose of the scheme was, even archaeology apart, to create a magnificent Fine Art Exhibition for North Wales, and this has been done, well and amply. The Wrexham galleries, beyond all question, are the richest and the finest ever opened within the limits of the Principality, and ought, whatever their direct educational value to

"the working-classes," to promote a taste for the higher refinements of life, even among those by whom they cannot be otherwise than very imperfectly comprehended. Possibly, a more practical utility belongs to the decorative examples, as applied to manufactures and manual industry of other kinds, in which the two elements meet; but the pictures are, for the nonce, the real treasures of Wrexham, and they will constitute the true attraction and charm of its three months' Exhibition.

#### LONDON LABOURERS AND THEIR DWELLINGS.

It has sometimes been said that none know so little of a town or locality as those who live in it, and who have done so all their lives long; and, without doubt, there is a great deal of truth in the saying, severe as it seems. That it is so in great London city is quite certain; for are there not thousands upon thousands of worthy people in it who have never seen, and hardly heard of, one-half of it? We could name streets and by-ways of renown, too, some of them which we are sure not one person out of ten has ever heard of, much less seen. This may seem somewhat strange, considering the fame of the vast city, and the place it occupies in the world's eye, and the historic memories which have gathered round and about it. But so it is. But more than this: if the very existence of so much of mighty London be an unknown quantity to so many living in it, then yet still more so in very many cases are the changes, and *pullings down* and buildings up, and neglects in so many localities unnoticed, and, as it would seem, all but unknown, even to those who live in all but sight of them! This is certainly strange enough.

We have been led to these reflections by the looking somewhat closely, and at no small inconvenience sometimes, at a phase of things which seems to have attracted but very little if any attention, conspicuous and noteworthy as it is. We allude to the fact of the perpetual occurrence, every here and there,—though house accommodation is so scant and costly,—in the outlying districts of London, and sometimes in the very heart of it, of large blank spaces and of waste ground, filled only with broken bricks, mortar-dust, and building debris, and with grass and weeds here and there growing out of it all. A map of London dotted over with indications of these neglected and unused spots would present, as we think, a somewhat strange aspect. These waste spots are not few in number, as many might suppose; but are perpetually to be come across, if you but turn a little out of the well-beaten and familiar highways. What are they, and why are they? They are to a considerable extent the sites of what are termed "rookeries"; that is, of groups or streets of houses and human tenements which have been by the powers that then were, or that be, condemned as no longer fit to house human beings. We have known some of these before pulling down, as we now know the sites on which they stood. What is a "rookery"—a word of ill omen, and telling of poverty, disease, and want? It means, simply, a crowd of dwellings more or less aged, ill-arranged, out of repair, and broken down, and, we are bound to add, not a little picturesque sometimes,—the abodes commonly of what are termed "labourers." The streets, and courts, and passages of a "rookery" are narrow, and, in some localities we could name, were the actual remains of Old London itself, and from a time long before the modern city was dreamed of. It must be confessed, indeed, that, apart from their "sanitary" state, to speak generally, such places are out of all harmony with our modern and improved ways, and seem to be adapted and fitted only for the special artistic proclivities of the Dorés, and Pronts, and Turners of the artistic and painting world; for what, it may be asked in passing, can or could such do with the quite new and evenly straight streets of neat houses, which are so fast making up what we may well term *new London*? With or without the "imaginative faculty," what can the poor painter do in a new and "improved" street? But to the rookeries. They are, as we have said, scattered about in all directions,—north, south, east, and west; Whitechapel, Drury-lane, Paddington, Bankside, Lambeth, the Borough, Shoreditch, the Tower round and about, and all the way from London Bridge to the very first glimpse you get of the Royal Observatory, Greenwich, as you may go to it through the narrow and darkened and tortuous ways by the

river-side, with occasional sight of river-side pictures seen down narrow openings. Here and everywhere are to be seen rookeries present, and sites of rookeries past, in plenty, and men, and women and children enough to fill them, and to more than fill them. Travellers tell us of spots on this earth's surface whereon it is at all times dangerous and perilous to dwell, no man knowing when or precisely where some great catastrophe may occur by earthquake or inundation. And so it is with a rookery, no one knowing when or precisely from what quarter the powers that be may find out its evil condition, and devote it to instant demolition and destruction. Away everything goes, people and houses, and the blank and bare ground with its brick and mortar debris is alone left to tell of its whereabouts. House accommodation for the growing thousands and thousands of London is yet a problem waiting solution, and it has well been said that anything tending to throw light on the difficult problems of pulling down and building up cannot well come amiss. In the first place it may be noted that it is not the simple question of more and more houses for the "poor," or the working man, or the labouring classes, that presents itself. What is good for one locality and order of working men is not so for another place and phase of labour. We could name spots wherein are and have been large spaces of vacant ground, the sites of rookeries, whereon such buildings as the Peabody Buildings would be all but useless, such accommodation, rent, and surroundings being all far too high and unfitted for those who must needs want them. So rough and foul,—there is no other word,—is the labour that the house must needs feel the influence of it. We are here referring more especially to the lowest class of "labourers," as they are termed. The skilled mechanic, though his work may be rough, is in a quite different position from such, and he may and does at times aspire to the Peabody standard of house accommodation; but even he, though he be under even school board influences, must not expect too much even here, for a Peabody building is not very well calculated to rouse fine art or "picturesque" ambitions. Truth to say,—and why should it not be said?—some of the house-building we have seen pulled down so mercilessly, though not before change was required, needed in reality only thorough repairing, rearranging, and detailed looking to. It has been as good as need be, and must have cost some brainwork in the building. We could name some such, specially, and have listened to the regrets of their inmates, who have sometimes asked, significantly, where a better was to be found for "such as us"? What is therefore to be done with these waste spaces, to be now found, as we have noted, all but everywhere, of all dimensions, from that which would hold a single house, to spaces well nigh big enough to receive a small town? It would almost need a specification to describe in detail the kind of dwelling which such labouring men and women, and children stand in need of, and it is only by a careful collocation of items, from now here and now there, that a true idea of it can well be got at. It must not be too good a thing, and yet is a something needed which but very few indeed would for a moment suppose those so rough and uneducated,—for such are not educated,—would for a moment care about, or that would even occur to them in any way. Not a little injustice is done, it may be noted in passing, and it throws some light on this subject, to the rough and untutored sense, and even "taste," of common humanity. It is all but universally supposed that "education" is to do everything, but not so; it does not and cannot bestow original or inherent, or individualised power, nor can it even implant a feeling or taste which does not exist. In treating in anything like useful detail such a subject as this, it is a little painful to think of the petty items and details that must, to do any sort of good, be noted items,—which you would suppose to be too familiar to need even to be glanced at. It is really surprising, and certainly painful, to glance sometimes at a condemned house standing in an out-of-the-way neighbourhood, and then to contrast it with another in a more favoured spot, and to note how little, if any, difference there is between the two. We could easily name many and many such; the pulled-down house has been better in all ways than the one in another more unnoticed locality left standing, and, what is more, the details of it, as cupboards, were far more to the purpose, and practically useful to such as are sure to occupy such tenements. The "ironmongery" again generally may be glanced at and examined by

those who have patience for such matters. We here refer to simple utilities. We dare but hint at such necessities. What can be said of the art aspect of the question? He must be courageous indeed who will venture on it. Yet contrast, but for a moment, in the mind's eye, the aspect of a "Middle Age" street with one in suburban London, modern London, and balance the loss and gain. It is yet a question, we must needs suppose, in spite of all that has been written and said, as to how far "Art," even in common house-building, is a necessity. That poor people in poor neighbourhoods can exist without it is quite certain; but most surely they would be better with it, unconscious though they might be of the effect it had on them. But the first care must be healthfulness, fitness, and comfort.

We cannot help thinking, after some attentive study of the subject, that a part of the difficulty of providing increased and improved house accommodation for those who most need it in this modern Babylon, would be by the adding to, re-arrangement, and thorough repair of houses in poor streets, as they now exist. It is a matter of detail, and each house must be taken singly, and gone through from top to kitchen. Repairs simply,—plain and simple repair,—and in detail, no fine or smart work being thought of. It is of no use lamenting over what is past, however much we may regret it; but if the process of simple repair, and making sound house by house, had but been at least tried, in place of pulling down, there might have been less of trouble and difficulty than there now is, in finding house-room in localities where it is so much needed, and where the population is so dense and thick. Even as things now are, you must needs come every now and then to an uninhabited, and shut up, and condemned house, as black and grim as may be, in a poor and neglected street. You think it must needs be "in Chancery," but it is simply under the sentence of the sanitary doctor and "Board." You get sight of it, after some trouble, and of the houses right and left of it, and find that a thorough and honest repair only is needed to make it fit for the rough, and laborious, and unlearned beings who will be but too glad to take possession of it room by room. Infinite good, indeed, might be done by some benevolent man, and here and there has been done, say in one of the narrow streets out of Drury-lane, taking in hand but a single house, by way of example, and putting it all right, and giving to the tenants or lodgers in it the benefit of what was done. A clean water-cistern, whole windows, hinged doors, mended floors, a tight drain, a tight roof, a proper "convenience,"—so much, and yet so little to look at!

Too often, however, they are so blocked in, so entirely without the chance of pure air, that nothing can be done, and down they must come, to add another to the blank spaces still waiting to receive a re-arranged dwelling.

#### ON SOME OF THE LEGAL ASPECTS OF CONTRACTORS' CONTRACTS.

THE line of Pope that "a little learning is a dangerous thing" has become almost a proverb in the English language. That this is the case says little for the common sense of the world at large, for a little learning only becomes dangerous when its possessor imagines that he is fully endowed with knowledge. If a little learning has the effect of producing caution, and an appreciation of the width of every subject under the sun, it turns from a danger to a safeguard. Thus, if laymen who succeed in obtaining a knowledge of some of the principles of law, or some of the most usual facts to which they are applied, deem that they know sufficient to guide them aright in all legal matters, they will in all probability finally find themselves some day in an evil plight. If, on the other hand, it renders them cautious and careful, this knowledge may prove of very considerable service. It is in this light that we are desirous that the observations which follow should be regarded. The contracts of contractors, whether builders, or what are usually called "contractors" simply, are, of course, governed by rules more or less applicable to all other species of contracts. But the number of disputes which arise out of these agreements is not small, and we shall therefore proceed to give a few of the chief and most useful rules by which they are governed. Examples of these rules can easily be found in every number of the law reports. Let us presume

that a contract has been made between a builder and a person desirous of having a house erected. The contract having been signed, is given into the custody of the future owner of the future house, or into that of his architect. It makes no difference into which of these two persons' charge the document is given, for it is almost invariably the case that the architect is regarded by the law as the agent of the owner. Thus it may in passing be well to put some little stress upon this point, because it may lay an architect open to lawsuits which he never dreamt of incurring. But the owner or his agent alters or spoils the document when in his custody. What is the effect of such an act? The document ceases in itself to be a valid one, but it does not cease to be evidence of the terms of the contract entered into between the builder and the owner, and thus the builder will be bound by its terms just as much as if the document existed in all its original force. As far as regards builders, this point was judicially and directly decided in the course of last year for the first time. Moreover, the judges further hinted, though they did not absolutely decide the question, that the owner, if the document were thus altered or spoiled, would, supposing he desired to bring an action against a builder for, by way of example, bad building, be unable to sue him with success. It is, of course, highly imprudent to alter or erase portions of a document in this manner. But the case which we have selected as an example (*Pattison v. Luckly*, 44 *Law Journal*, Exchequer, 180) is an instance of such a thing having been done. A written contract having therefore once been made should in no case be altered by one of the parties; for if this be done he who alters it may be unable to take advantage of any of its provisions. At the same time this exception exists, that the party who does not alter it will be bound by its terms if he attempts to set up as his case that the contract under which work has been executed by him was in terms different from those mentioned in the written agreement. The second head of this subject deals with the work which is to be done under the contract, and the exact question is, whether or not the person with whom the contractor enters into an agreement impliedly warrants that the work to be done is feasible. Of course, if in such a contract the person for whom the work is to be done gives an express warranty that the plan will work practically, whilst on the contrary it is found to be a failure, then the contractor can obtain damages from this person for any delay or other consequence of an impracticable scheme; but if no such express warranty is entered into, then no court of law will imply any such warranty, and the contractor must bear any loss which may be incurred. In a very recent and important case with regard to the building of Blackfriars Bridge (*Thorn v. The Mayor and Corporation of the City of London*, 44 *Law Journal*, Exchequer, 62) this very question was decided after a most elaborate argument. It is one of great importance to all engaged in such occupations as engineering and building, because there is a certain idea very prevalent that the law implies all sorts of conditions in contracts. No doubt the law does this in many instances, but this generally happens only when "there is something not expressed which is clear to all men of ordinary intelligence and knowledge of business, must either have been latent in or palpably present to the minds of both parties when the contract was made, so that if they had been called on to express it everybody of ordinary intelligence or knowledge of business must have concluded that both would have expressed it in the desired form." Probably, as many readers of this publication are aware, the manner of performing the work at Blackfriars Bridge by caissons proved impracticable, and was consequently abandoned, and as a further consequence the contractor lost large sums of money by the delay which of course succeeded. Therefore, it must be borne in mind that no warranty will be implied in any contract to execute certain works unless it falls within the very clear rule which has been cited from a judgment of Mr. Justice Brett. The third and last head of the subject, so far as we propose now to touch upon it, is concerned with the terms of the original tender, and the subsequent and formal contract. It is almost a truism to point out that the actual signed contract is that by which the agreement between the parties is to be judged. As long as this contract is not tainted with fraud, or is not obtained by fraudulent or deceptive means, it