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THE BUILDING NEWS

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AN ART EXHIBITION AT VENICE.

THE announcement of such an exhibition, for next month, in Venice, seems paradoxical, because Venice is all one work of art, one picture of glowing perspectives and magnificent interiors, matchless, whether in Europe or the East. Yet it has been resolved upon by the City of Painters to make a display of its canvas treasures such as shall dim the newly-asserted supremacy of Rome; "for Venice," says the patriot of her local press, "though now only a town in a province, will always sway the sovereign sceptre of the arts." It is a haughty thing to say; but the truth of the challenge is unquestionable. Florence, Rome, and Milan arrived at their full development, it is true, somewhat before the Capital of the Canals; but it speedily outstripped them with its Renaissance genius at the hands of Tintoretto, Titian, and Veronese. And now it proclaims a display, not of an emulative character, with its splendid idealisations of fashions, fancy, manners, and civil splendour. "Venice," the invitation runs, "with her street pavements of liquid chrysope, her palaces of porphyry and marble; her quays and squares aglow with the brilliant costumes of the Levant; her lagoons, crowded with the galleys of all nations; her churches, floored with mosaics; her silvery domes, and ceilings glittering with sculptures, bathed in molten gold!" A little less effusion might have suggested the real importance of the exhibition about to be opened, since, it may still be repeated, the Queen and Crown of the Adriatic would be an adornment and a glory of the world in herself, were not a single picture framed upon her walls;—with her luxuriance of light and colour; her arches of sky, bounded nowhere except by horizons of low, quivering sea and purple monotones of plain; her islets of coral and pearl; and her rich secrets of colour, into which the minds of Van Eyck and Fra Angelico quickly and deeply penetrated. But what were they in comparison with the palettes prepared every Venetian morning and every Venetian evening for the student—the crimsons, and scarlets, and blues of the iris, the anemone, of the columbine, brightening broad masses of green grass, making it brilliant, as some rapture-loving writer has said, with a "melodrama of green and gold." Yet it is not in all this that we find, or are inclined

to seek, the real inspiration of the great Venetian painters. They were surrounded by monotony; they enjoyed daily splendours, yet these were always the same; but still in Venetian landscape we discover the true secret of Venetian art. Not alone, however, as the forthcoming exhibition, warmed as it will be by the autumn light, will demonstrate. To begin with, if we may follow the opinion of Pietro Aretino, the buildings of Venice, though constructed of solid stone, appear to be constructed of some ethereal substance. Far different were they from the works of the vulgar Medicean dynasty, who had perpetually war at their gates, with slavery for their invariable end; and whose grim grey palaces and austere churches bore on their fronts the stamp of the Middle Ages. It has been remarked, indeed, as a not insignificant, although a slight, detail, to which we can bear personal witness, that the predominant colour of Florence is a cold and sombre brown; while, on the other hand, the predominant colour of Venice is that of mother-of-pearl, which conceals within its general whiteness every tint that can be placed upon the palette of a painter. Venice first made, of herself, a picture, and next a picture gallery. The Ducal Palace, so called, was her first triumphant work in the sight of Europe. Centuries have contributed to make that edifice what it is. The massive colonnades and Gothic loggias on which it rests, date from the 13th century; their sculptures date from the age when Nicolo Pisano's genius was still in the ascendant; and this structure, which is to contain the exhibition, will, possibly, possess a deeper interest than the entirety of its contents. The square fabric of the palace, so marvellous in the irregularity of its pointed windows, so various in its mosaic diaper of pink and white, is attractive enough; but the inner court, which throws its bridge over the lateral, illustrates the handiwork of Sansovino, a Florentine of the Renaissance, who adopted Venice as his home, and whose genius, stimulated by the magnificence of the Republic, created a style of architecture almost arrogant in its fusion of a broad and vast design with a superfluity of minute decoration. Never before had arisen such a pride—such an insolence it might almost be said—of civic display. The halls of the palace—spacious chambers wherein the Senate assembled,

where ambassadors approached the Doge, where the Council of the Ten conducted their inquisition—are walled and roofed in frameworks of sculptured oak, overlaid with solid gold, specimens of which, or illustrations of them, are to be seen in profusion at Vienna.

It would seem, moreover, that these solid, local, and hereditary splendours of the Republican palace are to constitute the principal glories of its display; thus, the gold brocade of the historical ducal uniform, the scarlet and crimson of the Venetian noble, harmonised by the richness of their surroundings, which covered canvases measured by scores of square yards, and made priceless by the authentic handiwork of Titian, Tintoretto, and Veronese, blazing upon the gilded walls and roofs. Yet this was little more than an audacious display of public wealth—an outpouring, so to speak, of gilded and painted pageantry. But when Venice opens her arms to the pure and true arts, as she will show during the course of the next month, she will fulfil the promise of her poet:—"Supreme over all allegories and histories depicted in those multitudes of paintings, sits Venezia herself, enthroned and crowned, the personification of haughtiness and power—figured as a regal lady, with golden hair tightly knotted beneath a diadem around a small head proudly poised upon her upright throat and upright shoulders." This, it must be understood, is to be the masterpiece of the exhibition; and we have not as yet even done with the central figure, before allowing ourselves to wander among its other enchanting miscellanies. We are to pass from her to Tritons, sea-nymphs, and Neptune, offering pearls; Justice with a sword; Peace with an olive branch; and a whole history of Venice, soon to be shown, in dazzling lights and colours, upon emblazoned walls; most of them the works of Venetians ament the deeds of their brother or ancestral citizens. On every side, above, around, wherever you turn in these vast saloons, are seen the deeds of Venice—whether painted histories of her triumphs over the Emperors, the Popes, the Turks, or allegories of her grandeur; stupendous scenes—as the historian writes—between the Doges Graviani, and Loradani, and Gritti, and Contarini, and Farioli, and Dandolo, fulfil achievements of faith, with St. Mark for their protector and Venezia for

their patroness. Born of these ideas, immense galleries of saintly scenes and portraits have, as it were, been unconsciously erected by the Venetian school. Thronging multitudes of saints, from the colour-flooded easels of Palma and Tintoretto; superb contrasts of light and colour; imposing effects of attitude; grand attitudes, "gorgeous nudities," as the phrase runs at Antwerp, with reference to Rubens; and such a mundane pomp of many-hued apparel, mingled with elaborate mythologies of Greek and Roman origin, fantastic arabesques, and exquisite episodes of pure idyllic painting, that, in a Venetian gallery, we are inclined to doubt whether we are in Venice at all. It will be interesting to note what will be, in its forthcoming exhibition, the historic and artistic challenge which Venice will throw down before the world. Art was, of course, a natural adjunct to the costly and voluptuous life of the Republic; not less necessary than that of Fra Angelico and Albert Dürer; but, as we find in the catalogue of the exhibition as yet unopened, there were jealousies and controversies in those times, and Tintoretto, with his separate and sublime vitality, talked of painting the saints in glory—a countless multitude of surging forms, a sea whereof the waves are souls—an acre of paradise, he calls it, in the background—with a stage full of bewigged gentlemen and powdered-headed ladies in front. This may not seem very Venetian to those who have followed what has been termed "the ideal idea" of that school; but it must be remembered, and will be demonstrated, if the approaching exhibition be at all honest, that the art of Venice, up to a certain period, was almost purely decorative; it was even more pompous, while less expensive, than that of the Renaissance, though always growing towards that mastery of colour and physical magnificence which bloomed to its perfection in the works of Titian and his contemporaries. The Vivarinis then arose, and fifty pictures, by representatives of that family of poet-painters, as they may justly be termed, will next month be exhibited, so to speak, on the banks of the Grand Canal. Fortunately, however, the Council of the Exhibition at Venice have prohibited the hanging upon their walls of the flayed skin of St. Bartholomew, and preferred to show the joyous, strong, and exuberant jewel-work of the bright masters upon whose easels and canvases blossomed flowers that scented the studio, prints that tempted the taste, Oriental stuffs, rubies and emeralds robbed from the rich graves of the East—graves far richer than its living palaces. In fact, they make no attempt at the visions of Angelica or Duccio; at no entranced dreams of solemnity which give a character—called by some people a charm—to the pietistic pictures of Van Eyck and Manding—artists who, by the way, are more allied than any other to the spirit of the first age of Venetian painting. Let it be hoped that, in the forthcoming Venetian Exhibition, we shall perceive a practical exposition of all this. It is impossible to forget that the Venetian school was, even in its middle prime—if the phrase may be permitted—bright colours in dresses, distinct and sunny landscapes, broad backgrounds of architecture, polished armour, gilded cornices, young faces of fisher boys and country girls; grave faces of old men brown with sea-wind and sunlight; withered faces of women hearty in a hale old age, the superb manhood of Venetian senators, the dignity of patrician ladies, the gracefulness of children, the rosy whiteness, and amber-coloured tresses, and black eyes of the daughters of the Adriatic and Lagoon—these are sources of inspiration to the Venetians of the passing period. But what of the pictures they purpose to exhibit? There is a grand canvas, painted by Gian-

Bellini, a painter belonging to the second period of the Venetian Renaissance, and who, in his altar-pieces, falls not far short of Fra Angelico, Fra Bartolommeo, Francia, and Perugino, though he never consented to confuse and sacrifice some points of his artistic theory with theirs. It is in this that the actual value of his comparative illustrations has consisted. Yet how have these mighty painters fared in the consideration of their contemporaries, and, consequently, of their successors? The Venetian Exhibition will lay the entire story before us. There is Bellini, the master colourist of Venice, who perished fifty years after his birth of sheer starvation; then what became of Tintoretto, called by the Italians "the thunderbolt" of painting, because of the impulsiveness and rapidity of his execution in painting? But still we have to summon the Venetian groups and landscapes to the exhibition, the curtains of which are now about to be drawn. There will be Tintoretto and Veronese in their most triumphant attitudes; also Titian, the Venetian Sophocles, and then the five Pietas of the Florentine and Venetian schools. The Venice Exhibition, admired as it must be, under any aspect, will be a picture of past, and future, and everlasting art—not for any living, dead, or passing generation to judge, but for every age, while mankind is conscious of power, and power to recognise and admire.

THE BUILDER'S CLERK.*

THE builder's clerk is often as ill-considered an individual as any to be found in the responsible ranks of civilised society. He is obliged to pick up his knowledge in the best way he can, and is left pretty much to his own resources. To the business of an ordinary clerk he has to add such a knowledge of the various trades of building as will enable him to perform his services with advantage to his master. Mr. Thomas Bales has come forward in the interest of this useful class, and has published some good advice in the shape of a little handbook, now before us. We need scarcely say it is the only work of the kind that addresses itself directly to the builder or managing clerk, and as such we have no hesitation in recommending it to that numerous class of readers. The greater portion of the work has already appeared at various times in the pages of the BUILDING NEWS, and the author has now reproduced it in a combined form for the use of those connected with the clerical part of the builder's business. The author, we are sure, will be amply compensated for placing within the reach of junior clerks a little book that will relieve them of much unnecessary labour and anxiety, and for pointing out to them those methods of business which experience has taught. Many a trifling duty that a builder's clerk may now regard as a mere drudgery will receive a new interest from the perusal of the pages of Mr. Bales' little manual. Thus, the author points out the advantages to be derived from care and attention in the checking of invoices and accounts—one of the first and often-despised duties of the young beginner. A knowledge of prices, so indispensable as a foundation to a knowledge of the builder's business, is learned by this means, besides an insight, however vague, of the modes of measuring material and labour. It is truly remarked, "nothing is so mean or insignificant as to be done without thought." It is unnecessary for us to repeat any of the useful advice of this book; we may, therefore, merely point out one or two of the lessons, to indicate the nature and extent of Mr. Bales' suggestions. A

* The Builder's Clerk; a Guide to the Management of a Builder's Business. By Thomas Bales. London: E. and F. N. Spon, Charing-cross.

general idea of the duties to be done by the junior clerk in his chrysalis state is given, and many useful hints are thrown out that will turn much that is regarded as wearisome and monotonous into pleasure. The value of thought and observance, application, temperance, deportment, and other qualifications are impressed upon the young clerk, but we pass on to notice a few remarks in the chapter on "Book-keeping." The checking of material is strongly insisted upon, and the clerk should see that everything that leaves the builder's yard is entered there and then. We are quite convinced of the truth of the remark that in many establishments the time belonging to one job is charged to another. Time-sheets should always pass through the hands of the foremen of the different trades, so that the accuracy of the entries may be certified; and once a week these sheets should be abstracted, and each account fully entered in the day-book. The form of doing this is pointed out. Labour and material should be classified as in the "abstract" of a bill of quantities. Speaking of "Prime Cost" the author shows the great consequence of its knowledge. We here quote some useful remarks upon the subject:—"If it be the wish of the builder to ascertain what the cost of erecting any particular building would be, without regard to the cost of the component items, his wish can be gratified in a very simple manner by adopting the following mode of procedure: Having firstly abstracted the day-work from the time-sheets, the contract work alone remains, and on going carefully through it he can summarise the amount expended upon the building, during the week, for labour. Then, turning his attention to materials, he can collect from the week's entries the various articles sent to the building from his own premises, and the invoices and carmen's notes will yield him particulars of goods from other sources . . . to these would be added a percentage for his supervision, office expenses, wear and tear of plant, rent of premises, &c. . . . but he should not omit to add the commission paid to the quantity surveyor, on receipt of the first instalment." Another good suggestion is that the sheets be abstracted by a double operation, as a check, so that errors may be detected. Too much time and care cannot be devoted to careful analysis and abstracts, and we have known serious inconvenience arise from want of these methods. Thus, the stuff used by joiners engaged in any particular work should be collected separately with an allowance for glue, besides the time they have been engaged. Everything should be separated and abstracted; the timber should be returned by the foreman as in the rough, and in masons' work the same. Then the time and material account returned will give the amount paid to each trade, after allotting the material. Very necessary, too, is the caution given to credit each work with its own material and labour, so as not to produce confusion and inaccuracy in the accounts. In some large businesses we know this is a source of much trouble to architects and clients. The author recommends the adoption of a price-book carefully prepared and revised from time to time. The cost of materials and different articles should be noted as they are received in invoices, &c., adding to each item railway carriage, haulage, time of loading and unloading, storing, &c. This addition, less the discount, would give prime cost. The price-book may be improved by adding the percentage of profit to the prime cost, placing the amount in another column, thus:

PRIME COST.			DAY WORK.		
Lead per cwt.	£ s. d.	25 p. c. per cwt.	£ s. d.	qr.	qr.
" "	qr.	" "	" "	lb.	lb.
" "	lb.	" "	" "	" "	" "

Thus it may be adapted to day-work

accounts. As regards "joiners' shop-work, it is necessary to abstract the time from the foreman's return, and having made a full descriptive heading, accompanied by an accurate and small scale plan, section and elevation, proceed to enter such time, and take the return of material—which ought always to be in the rough of the original sizes—abstract, it and collect it as 'cube,' 'super,' or 'run,' adding thereto such items of ironmongery, nails, &c., as are indispensable." This will give the prime cost to be entered and indexed, and can be readily turned up when required in pricing, estimation, and schedules, &c. The plan also enables the builder to estimate the services of good workmen at their true worth. Some useful hints are added concerning machine work, how it should be charged; and in large businesses the importance of guidance in this matter is considerable. We find the author recommending that all expenses caused by and arising out of the use of machinery be collected and made chargeable to all the work leaving the shop. This is perhaps the simplest mode, but care is necessary in apportioning to each work its fair share or percentage. Useful hints on trade expenses, "extras," stock-taking, estimates, horse labour, and dealings with architects follow. To the latter chapter we call the attention of the managing clerk, particularly those who indulge in what the author calls "'cutness." Every builder's clerk, young and old, will read Mr. Bales' little work with profit, and turn from the perusal of it with a higher notion of those little daily duties he now considers irksome.

ARCHITECT'S WORK AND THE WORKMAN'S WORK IN A BUILDING.

SO much attention is every now and then being called to the state, manually and mentally, of the *working man*, that it must always be of interest to ascertain with ever-increasing precision what he, the workman, now is, and what he in the future may be and ought to be. How different must have been, in the days of Phidias and his Greeks, the position of the workman to his position nowadays! Was it then better than now, or worse? The *modus operandi* in the creation of an artistic work, as a public building, in the old Greek days, and of one in these modern days, how diverse! Trite as it seems, this is all but a new subject, for the *mode* in which, or by which, any work of art is produced has excited but a languid public interest, and even among artists themselves it has not been regarded with that earnest and fixed attention which the subject would seem naturally to call for. Yet is the *workman's* part in the production of a building, whether it be great or small, of infinite moment and interest. The mere *masonry* of a large structure in past days all but always attracts the attention of the traveller and antiquary, and this masonry is the work of the workman always. It is really surprising to find how little of interest there is, in spite of efforts, to test the capacity of our working men. In the attentive survey and measurement of much of the old mason's work, to cite an example, as contrasted with that of the present, so artistic is it that we can hardly be said to be looking at the same operation. Let us take a notable instance of this, judging of it as we best can, and looking at the palpable facts of the case as far as they can be seen. Past and present modes throw light on each other. We may and can, by earnest and attentive looking at, see a little into the actual *modus operandi* of the building and construction of the famous Parthenon, or Temple of Minerva, on the

Athenian Acropolis. Enough of it remains to tell the way of its building, and it is, perhaps, in many ways better worth the pains of finding this out with exactitude than in the case of any other building ever erected anywhere, from the fact of the extreme care and high artistic skill which was employed on it as a whole, and more especially, for our present purpose, on that portion of it which is commonly thought to be more the province of the mere workman. We allude to the simple masonry of the building, irrespective of the carving, or sculpture, or decorative part of it. It will be found to define, to a very considerable extent, the duties of the architect, as well as the workman, in the old Greek times—in the days of Phidias, of Ictinus, and of Pericles. It is an infinite pity that we have no working man's record of the actual state of this famous building—working drawings to a large scale—just such drawings, indeed, as would be required nowadays to guide in the re-erection of this very temple. It may, we think, fairly be doubted whether any drawings, such as we now understand them, were thought of in the erection of this antique temple, or indeed of any of the old-world architecture. But, be this as it may, it is quite certain that no showy drawings and "perspectives" were ever dreamt of. We may readily fancy the level platform of solid natural rock on which the future temple was to stand, and with this plainly in view, and then, with or without drawings, the absolute necessity there must needs have been for the constant presence of the master workman, who had it clearly in mind to provide, first, for the slight curvature of the steps that were to lead up to the future building, and their almost infinitesimal leaning inwards. Mr. Penrose has given, with great and praiseworthy exactness, the dimensions of these foundational beginnings of the famous temple. Let us give a few dimensions by way of illustration and proof. The proportions of the upper step were as 4 to 9, with an average width, at west and east ends, of 101.344ft., and an average length, at north and south sides, of 228.147ft. The inclination of this upper step is .023. This proportion of 4 to 9, be it observed—and it is a most curious fact in the proportioning of the Parthenon—is not quite, but very nearly, in these proportions, and it has been shown that the very requirements of the construction and working-out necessitated this difference, it allowing for the space taken up by the mason's line to hang clear of the work. Such was Greek work, and we here cite it only for the purpose of showing how the old architects worked, and how impossible it was to trust such fine work as this to subordinates. The architect-workman of the building must himself have handled the rule and plumb-line here, and, though not cutting the stone out of which the steps were made, must have drawn and measured as well as thought. Such building refinements as these can only come of the personality of the artist acting for the time as a workman. It is as in the painting a picture, the mental perception is but half the work; there must be as well the manual and manipulative skill to work out the artist's thoughts. Such work as this cannot be deputed. These few glances at a work of mere masonry, and at what is required even here when the work rises to a high artistic level, are specially interesting at the present moment, when there is question as to the precise vocations of the architect and workman. We have but looked at the first steps in the construction of a great antique building, and we have found, not only the thought of the master architect, but the evidences everywhere of his handywork as well. It is, too, of special moment just now, as a daily-increasing

interest is being manifested in the work of the old classic times, in the antique Greek work of all dates, not simply in those of its perfection in the days of Pericles and Ictinus. It reverts to those so dim and distant as the era of the building of Troy; and there can be no doubt that as the magnificent language of the Greek people followed a progress, so did the building and architecture do so too. Here all about us there is an infinite variety and mixture of all styles and dates of art and building: in the old Greek days there was but one. No contrast can be greater, and the time will doubtless come when we shall have a connected history and chronology of Greek architecture from beginning to end. To architects, as a matter of course, and to all engaged in "building," such a subject must at all times be a matter of special, not to say inexhaustible, interest, but at this moment it must needs be the more so from the fact of the startling discoveries of Dr. Schliemann in the plains of Old Troy. This famous city has, for a long succession of ages, filled at least the "imaginative faculty" of mankind with right wonderful and attractive thoughts, and perhaps dreamings, but never was it thought that we could ever see any vestige of its buildings, still less come to touch the very tombs of its heroes! We can, indeed, but look again and again at those evidences of the handiwork of so distant a past, and endeavour to imagine what the architects and builders and workmen then living in it really did, and how they severally worked. Putting all dreamings, however attractive and poetic, aside, and even for the moment forgetting, if possible, Homer himself, we may look now at the very material work itself, and at the evidences it affords of the state of the arts, of fine art, and architecture, and building, as they then were, and as then in practice wrought out. We see, indeed, into the beginnings of Greek art, and are able thus to look at it from first to last, and to wonder, maybe, as to what special quality in it there was to so attract the attention of the world and to bewitch it. Its influence has been felt by all who have ever seen it, and, so far from being a dead thing now in these advanced days, it is in reality greater in this world's estimation than ever before. This is, indeed, so wide a field for thought and speculation, and so much that is noteworthy has already been said and written, that we would here hint only at the action of the Greek workman. In the days of Old Troy what was the workman? Was he an artist-workman, or did he simply follow and carry out the plans of men more instructed than himself, in a mechanical and, so far, unthinking way? A vital question this, for in these remains, thus marvellously brought to light, we see the evidences of the artistic hand of the workman, and to them we must, in the first place, give attention. If the all-but-perfect sculpture of the Parthenon, the "metopes" and frieze figures, tell us plainly of what the artist-workmen of the age of Pericles did, then must we see with equal clearness what they of Troy, and Argos, and other famous cities did, as they are exemplified in the Mycenæ Gate of the "Lions." If Phidias himself, as without any doubt he did, worked at the "metopes" of the Minerva Temple, then most surely did the nameless sculptor and workman of the lions on the Mycenæ Gate himself work at those ruder, though so remarkable and characteristic, sculptures. We cannot doubt this: he must have both designed—to use that perhaps a little ambiguous term—and wrought them out. Very much more will have come to light when Dr. Schliemann's series of photographs are published, and his more full and detailed account of this gateway and its construction, and especial meaning and signification.

And if this impress of individuality be thus visible in the work of the sculptor as working artist, then again must it obtain more or less in buildings, simply as buildings, as in the so-called "Treasures" in the masonry of the gates, and even in the walling of the towns. Many may demur to this, but surely, if the Parthenon mason's work evidences, as it does, the high artistic skill, as well as manual skill, of the workman, all doubt must disappear as the subject is more closely looked at and studied. If the sculptor's work on the Parthenon is a marvel of artistic power, then is the masonry of it all but equally so. A new subject offers itself here, for but little interest is nowadays manifested in simple wall-building and masonry, and but seldom indeed is it that we hear of the workman's skill in a building being pointed to as a something to be looked at and studied, and individualised. But why not? No one can look into the work of the Egyptian pyramids and temples, at the Greek masonry, whether early, like the work in the Treasures, or in the later work, like that of the Parthenon, without being struck with the extreme accuracy and artistic beauty of their workmanship, although but mere wall-and-column building. We can but hope that these remarkable discoveries of Dr. Schliemann's among the earliest of Greek works may throw additional light on the vocation and action of the workman and architect in art. In archaic work, amidst which he is at work, this must needs be visible, for it is there seen as the workman left it.

C. B. A.

ORNAMENTAL IRONWORK.*

THE earliest historical reference to iron is found in Genesis iv., 22. "Tubal Cain, an instructor of every artificer in brass and iron," lived, according to Biblical chronology, about 3700 B.C. He is supposed by many, and with good reason, to have been the same as Vulcan. He was not merely a smith, but he was an ornamental ironworker, "an instructor of every artificer." The Hebrew word *khoresh*, "artificer, cutting instrument," is akin to *kheresh*, "cunning worker;" both being derived from *kharash*, "to cut, carve, engrave, sculpture." Among other Biblical allusions we may note "an instrument of iron," Numb. xxxv., 16; the giant Og's "bedstead of iron," Deut. iii., 11; "chariots of iron," Josh. xvii., 16; "saws, arrows of iron, and axes of iron," 2 Sam. xii., 31; "chains and fetters of iron," Ps. cxlix., 8; "an iron pillar," Jer. i., 19.

Some doubts have been expressed whether Homer knew anything of iron, but Hesiod, who, according to Herodotus, was a contemporary of Homer, speaks of the "iron age," and the money of Lycurgus was in circulation about 850 B.C. Notwithstanding the interference of rust with the preservation of ironwork, iron hatchets have been found in the Etruscan tombs; an iron forge, tools, and nails among the lake dwellings of Switzerland; and iron pillars are still standing in India, which are supposed to be more than 1,500 years old. Rings, both of gold and of iron, circulated as money in Britain at the time of the Roman conquest, but they were probably imported. Ironworks were in active operation upon the island A.D. 120.

The peculiar combination of carbon with iron, which we call steel, and the art of tempering, seem to have been known in prehistoric times. At the beginning of the Christian era the best steel was imported into Rome from China, that of Parthia being of inferior quality. Steel armour was in common use among the soldiers of William the Conqueror. Steel was manufactured in Sweden as early as A.D. 1340, but the art of fusing steel in a crucible, and then casting it into bars so as to form a homogeneous "cast steel," was invented at Sheffield in 1750, and was long kept secret. Bessemer steel is prepared by forcing a powerful current of air through a quantity of melted

iron. The oxygen of the air, uniting with the carbon and silicon and other impurities of the iron, produces a rapid combustion and intense heat. The blast is continued until the carbon is nearly all consumed, when an alloy called "ferro manganese" is added, in such proportions as are needed to recarbonise the metal and produce such a "low" or "high" grade of steel as may be required. The largest present use of Bessemer metal is in the manufacture of steel rails of a "low" grade, combining great tenacity and durability, with slight brittleness and feeble tempering properties. The bends and twists and cuts and tensile tests of the specimens on the table show how admirably this material is fitted for artistic ornamental treatment.

The art of casting iron seems to be quite a modern one, but the date of its invention is uncertain. There is a cast-iron grave slab in Sussex, made about A.D. 1350. A minute proportion of phosphorus, which renders iron wholly unfit for the Bessemer process, adds greatly to its fluidity, as is shown by the remarkably sharp and beautiful ornamental castings in Berlin iron. The Centennial display, by American ironfounders, of cast statuary, vases, railing, bronzed and enamelled work, stoves, grates, &c., showed a taste of design and care of execution worthy of almost unqualified praise. The architectural combination of cast and wrought iron, in the structure of the main building, also produced many pleasing and commendable effects. But there seems to have been little thought of the admirable results which might be reached by a treatment similar to that of the best Japanese bronzes; the casting being regarded merely as a convenient way of forming a mass which can be more readily cut into shape than a larger piece of metal.

Both cast and wrought iron admirably illustrate the importance of the great natural principle of oscillation or vibration. It is now commonly believed that no two material particles are in absolute contact, but that, even in the most solid substances, there are continual internal tremors and orbital motions, much more complicated than those which keep the planets and "stars in their courses," and yet governed by similar laws. In consequence of such internal motions, glaciers and rocks and metals can be made to "flow," not only through the intervention of the fiery fingers of heat and flame, but also by simple continuous pressure. Mr. Tresca, who has studied the subject very carefully, is unable to find any limit between the fluid and the solid conditions of matter. There are merely differences of viscosity, analogous to that between water and molasses. By means of this flow, iron and many other metals may be rolled into sheets, drawn into rods or wires, or hammered into various desired shapes by skilful workmen. Here is a core-chuck, which can be put into a turning lathe, for shaping a flat disc of metal into a hollow vessel. As the chuck revolves, a gentle steady pressure causes the flowing particles to adjust themselves to its sides, so that, by having proper cores, we can "spin" bowls, vases, teapots, creamers, and various useful or ornamental dishes with great rapidity.

After the vessel is spun, it may be prepared for ornamenting by vibrations and flow of another kind. You remember the beautiful "repoussé" work in many of the departments of the Exhibition, and some of you, doubtless, were curious enough to inquire how it was made. The old method was by simple, careful hammering from the back; but there was always danger of an unlucky blow, that would break the metal and ruin the work of many days or months. Here is a "snarling," or repoussé* iron, firmly fastened in a vice. Mr. Kridler has kindly sent us one of his skilful workmen, who will show us the process of snarling. The floral or other design is drawn on the outside of the vessel, and you see that when Mr. Sloan hammers on the end of the snarler which is nearest the vice, the whole tool is set in vibration, and the rapid, gentle taps of the other end gradually raise a knot or snarl of the desired height and outline. After the snarling or repoussé work is done the

chasing process follows. The hollow is filled, as you observe, with a softish cement, which yields slightly to the pressure of the chisel or graver, or such other tool as the artist may select from this large assortment, and the design is thus wrought out into the beautifully finished details of stem and leaf stamen and petal, and tendril and delicate veining.

Iron is fitted by its cheapness, strength, elasticity, malleability, ductility, and plasticity for general application to ornamental uses, and for taking expressions in tracing and foliage such as no other material can supply. The processes which I have just explained furnish an immense addition to the facilities of the artisan for the expression of his thoughts, and make it the more wonderful, as well as the more deplorable, that the æsthetic treatment of wrought iron and steel should have become so nearly a lost art. In all parts of Europe there are many mediæval specimens preserved, which are worthy of special study. Candelabra, grilles, railings, newels, balusters, crosses, brackets and rings for cornice-poles, chapel screens, gargoyles, vanes, bolts, hinges, locks, keys and escutcheons, knockers, handles, and rings for bells and doors, are decorated with *eisen-blumen* or flower-work of beaten iron, or with various tracery, both serious and grotesque. They display an exuberance of invention and judicious taste which are calculated to enhance our respect for the earnestness and thoughtfulness of the unknown workmen whose resounding hammers so lastingly imprinted lessons of faith, hope and love.

In Germany, Bohemia, Switzerland, and especially in the Tyrol, men in armour, bears or other animals, skilfully wrought, and holding the flag of the district or canton, are often found in the public squares or market-places. At Jenschbach there are remains of ancient smelting works, and of a forge which seemed specially devoted to a peculiar symbolic teaching. The great grey stone houses of the village are adorned by emblems of love and social feeling, being nearly all protected by curious huge dolphins, which are apparently just on the point of flitting from the water-spouts. In nearly every village church or graveyard the artistic eye may be gratified by contemplating the taste displayed in a cross, or a rood screen, or an altar-gate, or a chandelier, or the ridge-cresting and terminals which wed the Gothic architecture to the sky and landscape, as if with a fringed network of delicate lace on the delicate grey, and against the blue. Sometimes the rods of the screen are so arranged in perspective as to represent an iron-arched arbour, under which one must walk in traversing the length of the aisles. Sometimes the symbolism is made still more expressive by combining rich clustering vines with the intricate blossoms of passion flowers, displaying a wealth of tendrils and leaves naturally and gracefully entwining the palings of a simple or rustic gate; always evidences of devout aspiration, childlike trust, deep feeling, and loving labour, such as to bring us into a reverent sympathy with the artists who sought to give visible utterance to some of the most universal and most far-reaching longings of humanity.

Near the west door of Antwerp Cathedral is a well with Gothic canopy and tracery of iron, surmounted by the statue of a knight in armour. It was executed, in 1480, by Quintin Matsys, "at one time a blacksmith, afterwards a famous painter," whose romantic history is briefly commemorated by the inscription on a neighbouring tablet, "Connubialis Amor de Mulcebre fecit Apellem" — connubial love made Apelles from a Vulcan. It is said that this first "learned blacksmith" fell in love with a painter's daughter, and in order to obtain her for his bride he changed his profession, acquiring even greater reputation as a colourist than he had gained by his handiwork at the forge. In the knowledge of that universal language which rings so sweetly in the ears of youthful admirers, he set a precedent for the learned blacksmith of our own days; but, unlike his far-famed successor, he manifested no disposition to trace the universal language into all its dialects. His parity of success in his two vocations shows that he had the fire of true artistic genius, and his fame may encourage the wielder of the hammer, as well as the sitter at the easel, to look for an

* Abstract of a lecture in Prof. PLINY E. CHASE'S course on "LESSONS OF THE CENTENNIAL," delivered before the Franklin Institute, March 13, 1877.

* The terms "spinning" and "snarling" seem to have been borrowed from the textile arts. The French word "repoussé" signifies "pushed back," indicating the mode of hammering.

ever-ready appreciation of whatever depth of thought finds expression through patient, faithful work.

It is a quarter of a century since the first London "World's Fair" revived a European interest in the capabilities of wrought-iron for artistic uses. The progress of the revival is most strikingly exemplified in the Oxford Museum, which was erected in 1867, but traces of it are to be seen in all directions, about the modern public and private edifices of Great Britain, as well as in many of the churches. A notable example of good ecclesiastical work is the Hereford Cathedral Screen, which was shown in the International Exhibition of 1862, before it was removed to the place for which it was designed. Dr. Dresser speaks of it as one of the finest examples of artistic work with which he is acquainted. The grilles, altar-rail standards, and English fire-dogs, in the present Loan Exhibition of the Pennsylvania Museum and School of Industrial Art, placed, as they are, beside a pair of ornamental Florentine andirons of the sixteenth century, show that neither good taste nor skilful execution is wanting in the smiths of our day, and that an educated demand will call forth work which may challenge comparison with anything mediæval. The pagoda-like pavilion of Messrs. Hart, Son, Peard, and Co., with its great variety of contents, cast, woven, or hammered into "joys for ever," justly claimed a large share of attention from the visitors to the main Exhibition building; and in the Belgian department, Prosper Schroyer's door, with its wrought-iron vines, grapes, and bunches of climbing flowers, furnished more food for thoughtful study than the rich laces and costly embroideries which surrounded it.

Philadelphia already shows the effects of the revival; but, unfortunately, the most satisfactory ornamentation is imported. The magnitude and importance of the iron and steel interests in the Keystone State should stimulate our ornamental designers, architects, and contractors to a generous rivalry with their European brethren. Elkington's Helicon Shield showed admirable effects from working steel with other metals by "appliqué," inlaying, and repoussé; the Spanish, Moorish, and Indian departments contained much successful punching, pressing, and damascening; the Russian electrotypes in iron, by the Jacoby process, gave a delicate surface finish, which might be often used artistically with great advantage; the plasticity of steel through its capabilities of alternate softening and hardening, and the elasticity of its graceful shapes when finally and permanently tempered, were everywhere full of suggestiveness. Shields, suits of armour, weapons of war, knives, kettles, steel and iron jewellery, and other articles of personal or household decoration, were well represented, most of them adorned with traditional and conventional embellishments which have been handed down from a remote antiquity. Let our wise designers study such examples; let them cleverly combine the different ways of working and different styles of ornamenture; let them learn from the worker in bronze, the goldsmith, and the jeweller, new devices to charm the eye and elevate the imagination; and their field of labour will be so much enlarged that they will seem to have invented a industry.

I have spoken of the symbolical thought which was so generally expressed by the ironworkers of the cinque-cento. How can it be better revived and expanded than by taking lessons from the old schoolmasters of Eastern Asia, "these from the land of Sinim?" The gipsy kettle, as it is often called, the common bulged tripod dinner-pot, which is used the world over, is copied from Chinese incense-burners that were in use more than five thousand years ago. The Chinese have long had a mania for collecting old bells and vases, partly from their universal reverence for antiquity, partly for the severe simplicity of outline and garniture by which the articles are generally characterised, partly for their moral lessons and associations. A motto from Confucius, or a line of wise advice from some other favourite author, is commonly cast, stamped, or cut into the bronze; "the all-seeing eye," under various forms of conventional treatment, looks from the outer surface, even as it looks

from the amulets and edifices of Egypt and Yucatan; the three feet are said to represent the three guardian spirits that watch over the Emperor, the nobles, and the people. Nearly all the old metallic vases have a special history, independent of their antiquity, for it has been a practice from time immemorial to use them as presents from princes and nobles, and men of wealth or station, to those whom they wished to honour. In the magnificent and unique collections of *cloisonné* enamels which adorned the Centennial, the delicate filigree, and the richly variegated hues of the cellular glazing, seemed to be lavished with a peculiarly loving tenderness on the old homely and home-like form which we all know so well. Our workmen enamel iron skilfully for common purposes; who doubts that they might rival their almond-eyed brethren in applying the art to æsthetic purposes, if they were rightly encouraged? Any ornamentation upon articles of daily use, especially if it be symbolic, or otherwise suggestive of high ideals, may become a source of continual gratification and of constant ennobling instruction.

I can think of no decorative process that has ever been employed upon any metal which is not equally suited for iron; indeed, I doubt whether there is one which has not been repeatedly and successfully tried upon that most precious metal. A judicious Renaissance may lend new force to the Jewish legend which has been so well illustrated, by Schuessle with his brush, and by Sartain with his burin. The story runs, that when the Temple was finished Solomon gave a feast to his artificers. On unveiling the throne, a blacksmith was found in the seat of honour, on the right of the king's place. The people clamoured, and the guards wished to cut him down, but Solomon commanding him to speak, he said: "Thou hast, O king, invited all craftsmen but me; yet how could these builders have raised the temple without the tools I furnished?" "True," answered Solomon, "the seat is his of right. All honour to the ironworker."

WATER JETS FOR EXTINGUISHING FIRES.

A REPORT was presented to the Metropolitan Board of Works, on Friday, by Sir J. W. Bazalgette, their engineer, and Messrs. F. J. Bramwell and E. Easton, C.E., relative to the engineering questions involved in the extinction of fires, more especially that of the proposed substitution of hydrants for wooden fire plugs. Since 1871 the constant supply system has been gradually brought into use by the water companies of the metropolis, and propositions have been made for the replacement of plugs by hydrants throughout the metropolitan area, in order that jets of water may be directed from the mains against a fire without the intervention of steam fire-engines. In order to ascertain the extent of hose friction and heights of jets a series of experiments were made by the three engineers whose signatures are appended to the report, at the pumping station of the South Essex Water Company, at Grays.

To the final test conducted before the members of the Select Committee of the House of Commons on the Metropolitan Fire Brigade of the Metropolitan Board of Works, and the directors and officers of the several water companies interested in the question, we referred in these columns on June 15th last (p. 591). They conclusively showed that not merely is there a reduction in available head due to the friction of the hose, but that there is a large reduction due to the friction of the water through the mains and pipes leading to the hydrant. When the quantities of water per minute and the diameter of the hose are constant, the resistance varies directly as the strength, and is equivalent to the square of the quantities. The ratio of available jet that can, under favourable circumstances, be directed upon a given point may be estimated at $\frac{1}{3}$ ths—62½ per cent.—but is not uniform, as with a very low jet the velocity is so small that the air offers no appreciable resistance; whereas with a lofty jet the necessary increase in velocity meets with a far greater retardation from the friction of the air, and this notwithstanding the largely-augmented supply of water expended in a given time. It has also

been established that when pressure is reduced in a main by a draught of water at some point in its length, a further draught aggravates the loss due to the first one, the total decrease in pressure somewhat exceeding that produced by either draught separately. This points to the serious diminution that may be caused in the available head by comparatively small domestic draughts along the line of main.

These facts, and the consideration of the statutory obligations of the water companies, confirm Sir J. W. Bazalgette and Messrs. Bramwell and Easton in the opinion that, under present circumstances, adequate jets for extinguishing fires cannot be obtained by the waterworks pressure. They further point out that a fireman can just as easily extract a fire-plug as turn a hydrant; in any case the presence of the turncock is necessary, as he alone knows how to shut the various cocks, so as to prevent water being taken for domestic purposes. It is also pointed out that there is no necessary connection between constant service and high pressure, for at the most the former can only be construed to mean delivery to the top story of the highest house—a wholly insufficient pressure for effective jets.

In conclusion the three engineers state that, "after having given the most anxious and careful consideration to the subject for a very long time, having made elaborate and searching experiments," they "have no hesitation in saying that the advantages to be derived by the adoption of hydrants throughout the metropolis, under the present condition of things as regards pipeage and obligatory pressure, would be the occasion of a very large outlay—from £750,000 to £1,000,000—for which no adequate return would be obtained, and that if this outlay were incurred, and the hydrants were put down, in all probability it would be found, some few years hence, that the expense would have to be practically re-incurred, if the supply of water to the metropolis for the extinguishing of fire were arranged upon some different and upon some comprehensive basis."

THE CRYPT OF ST. PAUL'S.

A PART of the vast crypt under St. Paul's has been recently formed into a chapel for early celebrations, which, however, is not regularly closed in by any architectural additions to the structure, but consists simply of a carved wood communion table, raised upon a solid podium ornamented with mosaic work, immediately beneath the eastern part of the choir, in the place which would be called the apse of the Cathedral, the table being a considerable distance from the east window, from which it is chiefly lighted. Around the table, and for a large space in front, extending to the side walls of the aisles, a pavement has been laid down, designed by Mr. Penrose. It is intended eventually to carry out this tessellated pavement over the whole of the crypt, and, with this view, another large space had been finished previously to this chapel, forming the floor of the central columnar chamber, where the tomb of Nelson stands. The general design of the pavement is one throughout; but as the chapel is approached the geometrical spaces are more ornamental, and the whole is enriched with bright colours in the marbles as well as with sacred emblems, and four circular compartments containing the Evangelists. In these the azure of the lapis lazuli, the deep-toned red of the rosso antico, the Sicilian jasper, the giallo, and other precious marbles give sufficient brilliancy to be in keeping with the surrounding ornament without departing from the style of the old *musivum opus* which Mr. Penrose has adopted. A point of interest in this application of mosaic work is that it has been entirely done, so far at least as the mechanical part goes, by the hands of the female prisoners at the Woking Gaol. The table is of carved oak work, having spiral columns at the angles and panels, with a low dossal of simple character.

In Mr. Meakin's page advertisement last week, by an unfortunate error the name of the first mansion mentioned in which that gentleman's patent sash fasteners have been fixed was wrongly spelled "Tapley House." Most readers will probably have guessed that Apsley House, the residence of the Duke of Wellington, was the mansion meant.

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ILLUSTRATIONS.

BAILIFF'S HOUSE, WYFOLD COURT—INTERIOR OF PROPOSED CHURCH AT HARLESDEN—ST. MARY'S ABBEY, YORK—PROPOSED CHURCH AT GREENOCK—"BUILDING NEWS" CLUB DESIGNS FOR COTTAGES.

OUR LITHOGRAPHIC ILLUSTRATIONS.

INTERIOR OF ALL SOULS' CHURCH, TO BE BUILT AT HARLESDEN, N.W.

THIS view is taken from a sketch prepared chiefly to try the effect of the roof over the octagon, which forms the chief feature in the church. A view of the exterior is hung at the Royal Academy, and this we hope to give, with the plan of the church, at an early date. The construction of the roof, though perhaps novel, is extremely simple, consisting of four "queen" trusses crossing each other from angle to angle, and forming the valleys between the eight gables. The boarded ceiling, shown in the view, was designed to conceal the carpentry at a smaller cost than working that carpentry into ornamental forms. The choir is brought forward into the body of the church on the Basilican principle, and the apse merely contains the requisite space within the kneeling step. Mr. Edward J. Tarver, of Craig's-court, is the architect.

BAILIFF'S HOUSE, WYFOLD COURT, OXFORDSHIRE.

OUR double-page plate to-day illustrates in detail the bailiff's house (now used by the head gardener) of Wyfold Court, Oxfordshire. It was erected in 1872 for E. Hermon, Esq., M.P., a short distance from the mansion. The materials employed are red brick and Bath stone for the walling, with ash and fir timber quarterings, and barge-board gables. The roofs are covered with tiles from Reading. The accommodation, as shown by the plans, is of the usual character for such an occupation. Mr. George Somers Clarke is the architect.

ST. MARY'S ABBEY, YORK—VESTIBULE OF CHAPTER-HOUSE.

FOLLOWING the drawings already given of this series, illustrative of Sir G. Gilbert Scott's Royal Academy Lectures, and drawn by Mr. W. Samuel Weatherley, we complete the set to-day by publishing the restored views of the vestibule to the chapter-house of St. Mary's Abbey, York. This sheet of drawings, like the others, is now in the Royal Academy Exhibition. The following description of the plate was written by Sir Gilbert Scott:—"One of the most remarkable specimens of refined Norman of the highest class is at St. Mary's Abbey, at York, in the vestibule of the chapter-house. I give a restored view, partly from remains *in situ*, and partly from fragments preserved in the museum. The date of this most exquisite work is unknown; but I should suppose it contemporary with the later years of Archbishop Roger de Pont l'Évêque, the great promoter of the Transition in that diocese, and who presided over the see of York from 1154 to 1181. He rebuilt the choir of his cathedral, of which the very noble remains of the crypt were discovered a few years back of a very refined Norman style. He also built the palace on the north side of the cathedral, of which a most beautiful fragment remains. This fragment, though simple, and with round arches, agrees exactly in its details with the doorway at St. Mary's, even to the exact diameter and height of its shafts and capitals, and was, no doubt, executed by the same persons."

BUILDING NEWS DESIGNING CLUB—
A TRIPLE COTTAGE.

TO-DAY we illustrate our selection of the designs we have considered best in this subject. Our readers will see the relative areas and merits of plan in "Bee" in circle, "St. Lucy," and others. We refer our readers to our remarks, p. 616, for the reasons of our selection.

PROPOSED CHURCH AT GREENOCK.

THE church proposed to be erected at Greenock, of which we give interior and exterior views, was designed by Mr. R. Anderson, A.R.S.A. The drawing was exhibited this year at the Royal Scottish Academy.

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

MIDLAND INSTITUTE.—The first walking excursion during the present summer of the archaeological section of the Midland Institute was held on Saturday last. The party was driven from Birmingham to Stonebridge, where they left the carriages, and walked through the fields, along the banks of the Blythe, to the little Norman church at Little Packington. The church is principally interesting from its rude masonry, and from the quaint timber framing in the interior that supports a small wood bell-cote at the west end. It contains a monumental tablet, bearing the Shakespeare arms, to members of the Shakespeare family. The members next walked along the lanes and fields, on the outskirts of Packington Park, and by the Packington bridges to Maxtoke Priory. Permission to cross Packington Park could not be obtained, that fine domain being now closed to artist or archaeologist, and given over to the occupancy of rabbits. Passing the Hermitage Farm, the members reached Maxtoke Priory, where Mr. Holliday exhibited a plan of and described the excavations recently made there by the section, with the permission of Lord Leigh, the owner. He pointed out that by means of these excavations the plan of the Priory Church, the cloisters, and the adjacent monastic buildings had been completely recovered; and announced that a full account of the result of the investigations, and of what is known of the history of the Priory, would shortly be issued to the members in a volume of the transactions of the section, now passing through the hands of the printers. A walk to Coleshill followed. After tea the monuments and font in the restored church of Coleshill were visited. The carriages were then rejoined, and a drive home through Castle Bromwich brought the excursion to a close.

WATER SUPPLY AND SANITARY MATTERS.

DUNFERMLINE.—The new scheme for supplying water to the town of Dunfermline has been commenced. A reservoir is to be constructed 13 miles distant from the town, to impound the water of the Glensherup Burn, and having a capacity of 180,000,000 gallons. The water will be conveyed to the town by means of a cast-iron pipe 12in. in diameter. Mr. French, of Blackhall, near Edinburgh, is the contractor for the reservoir, Messrs. Stewart and Creber, of Dundee, will lay the main and construct the measuring cistern, and Messrs. Laidlaw, of Glasgow, are to supply the iron pipe. The cost of the scheme is estimated at £55,000.

CHIPS.

THE parish church of Moxley, near Wednesbury, has been completed by the erection of a spire, and the erection of a clock and chancel window. The spire is 120ft. high, and is built of Codsall stone, having a pinnacle at each of the four angles of the tower. Mr. A. P. Brevitt, of Darlaston, is the architect. The chancel window has been executed by Messrs. Hardman and Co., of Birmingham.

New Church schools are about to be erected at Calverley, near Leeds, from the design of Messrs. T. H. and F. Healey, architects, of Bradford. The style of the proposed building is Perpendicular, and the estimated cost £1,600.

A stained-glass window has recently been erected in Holy Trinity Church, Coventry, to the memory of Dean Hook, formerly vicar of the parish. The window which is at the west end of the church, consists of 14 lights, and is occupied by figures of Our Lord as the Good Shepherd, St. John the Baptist, and the twelve Apostles. The window was executed by Messrs. Heaton, Butler, and Bayne, of London, at a cost of £600.

BUILDING OPERATIONS AT
NORTHAMPTON.

A CONSIDERABLE amount of activity has lately been manifested in the building trades of the shoemakers' metropolis; and a number of works are either contemplated or in course of erection. One of the most important is the extension of the General Infirmary. In accordance with plans prepared by Mr. Hull it is proposed to erect on the north-east of the main building, and in the north-west corner of the kitchen-garden, an out-patients' block. The whole will be built of white brick, with Bath stone dressings and facings, in the Italian style, with pilasters between the circular-headed windows. By having a cruciform ground plan, the rooms are arranged in the most convenient manner. It will consist of an accident-room, accident waiting-room, three physicians' rooms, three surgeons' rooms, eye and throat rooms, dispensary, with separate dispensing windows for men and women, and an extensive general waiting-room. Mr. Thomas Cosford is the builder, the contract being for £2,600. Messrs. P. and R. Phipps have commenced to erect commodious baths in the New-road, opposite the Cattle Market. The interior comprises a large swimming bath and private baths. In addition to the work of the Church Extension Society, other religious communities are moving in the direction of providing increased accommodation for their congregations. The Wesleyans are building a large chapel on the Regent-square, and another chapel in Queen-road for that district; and the Primitive Methodist body have put up a temporary erection in the Kettering-road. In connection with Doddridge Chapel, the schoolroom is being considerably enlarged. The present alterations, which are being made by Mr. Heap, according to plans prepared by Mr. Hull, will cost something like £1,170. St. Lawrence's Church, in Duke-street, is being progressed with satisfactorily. A short time ago the foundation stone of a new and extensive Board School, on the Kettering-road, was laid. The school, which is calculated to meet the present requirements of the north-east district, is very complete in its character.

In turning our attention to the places for carrying on business, we would first allude to the boot and shoe trade. Several small factories are being built in various parts of the town, but the principal ones are those of Mr. John Cave and Messrs. Kerridge Bros., in Overstone-road. Messrs. Kerridge Bros.' factory, which is being built at the corner of Overstone-road and Clare-street, by Mr. Heap, at a cost of £1,025, has a frontage of 57ft. 6in. to the former thoroughfare, and 60ft. to the latter, with an entrance of 7ft. 6in. at the angle. The building is of brick throughout, and will have no pretensions to ornamentation. Messrs. Blakey and Son, of Leeds, have about completed a substantial warehouse in Guildhall-road. It stands 69ft. high, and has a frontage of 45ft. It is built of red brick, with Bath stone dressings, and white brick pilasters between the windows. Mr. Ingman was the architect, and Mr. Bonham, of Edith-street, was the builder. Messrs. P. and R. Phipps are making extensive additions to their brewery in Bridge-street. A part of the old building has been taken down, and it is proposed to erect a new tunnyery in the yard, occupying also the site on which the old building stood. The whole is of red brick, with Bath stone dressings, and blue brick quoins and plinths. Its dimensions will be 120ft. by 54ft. The cellarage will be made to connect with the old cellarage. The first floor will be used as a landing stage, and will be laid with Claridge's patent asphalt, supported by cast iron columns, wrought iron girders, and brick arches. Messrs. R. Davison, Son, and Mackenzie, brewers' engineers, of Shorditch, High-street, are the architects, and Mr. Dunkley, of Blisworth, is the contractor. Messrs. Ratliffe and Jeffery are having a malting erected at the rear of the Crown and Anchor, Bridge-street. Dwelling-houses are being rapidly erected in all the outlying districts of the town. New streets are being developed where fields once stood between Bailiff-street and the Kettering-road; in the Corporation Close, now Hazlewood-road; and in the district lying between Wellingborough-road and Billing-road.

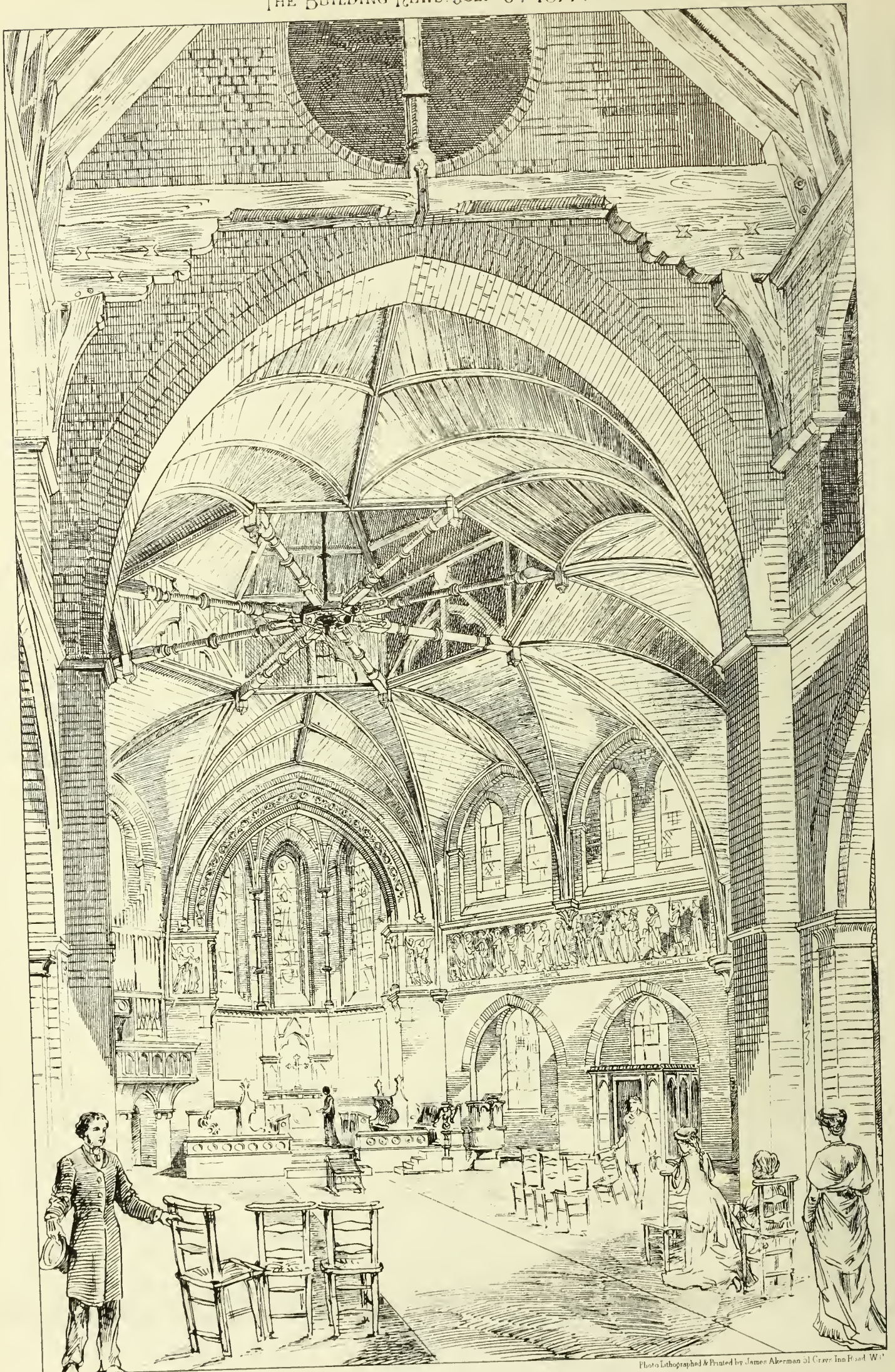


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INTERIOR OF CHURCH TO BE ERECTED AT HARLESDEN, (WILLESDEN JUNCTION)
E. J. TARVER ARCHITECT.

THE BUILDING NEWS. JULY 6. 1877.

Proposed Church GREENOCK.
R. ANDERSON A.R.S.A ARCHITECT

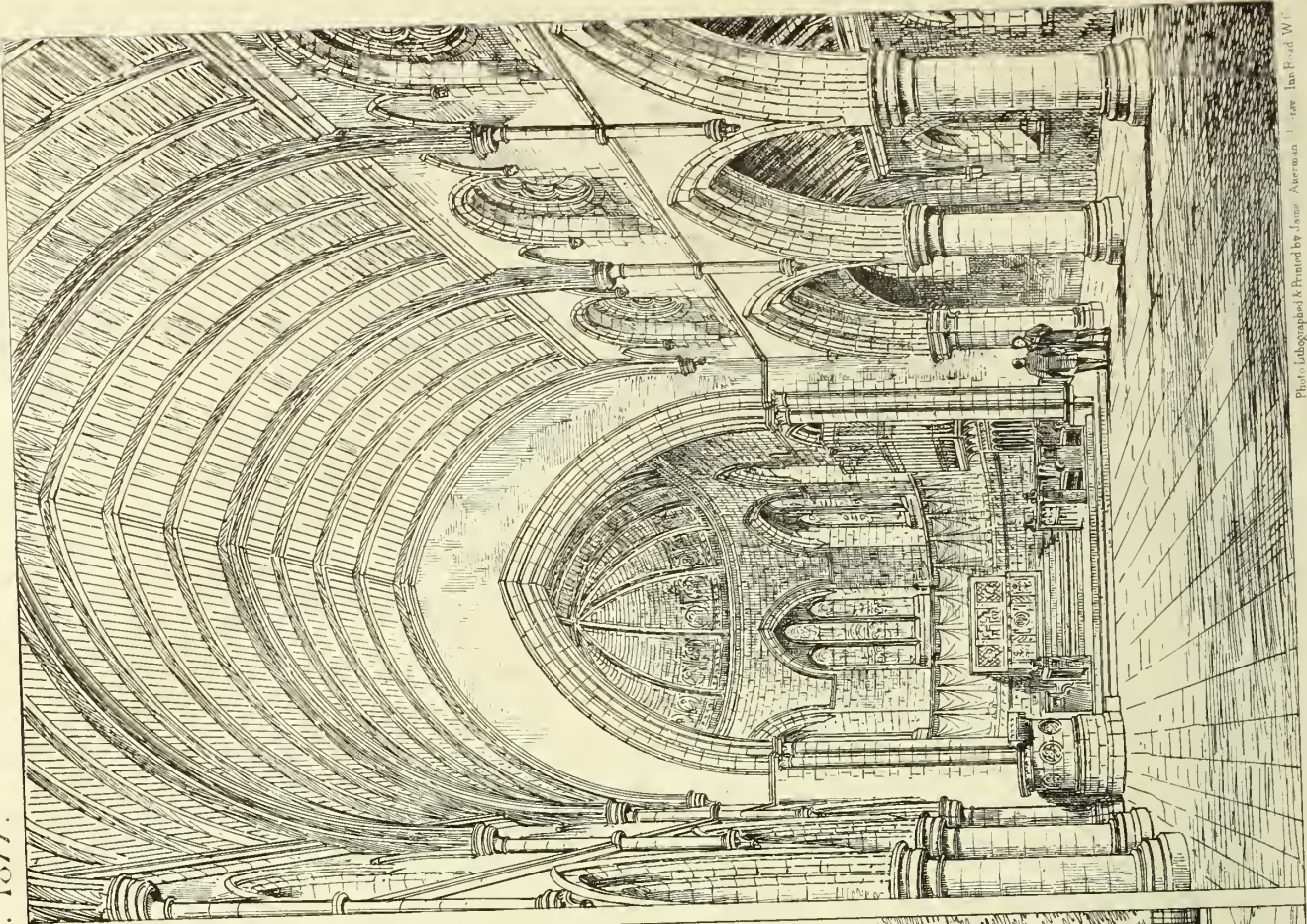
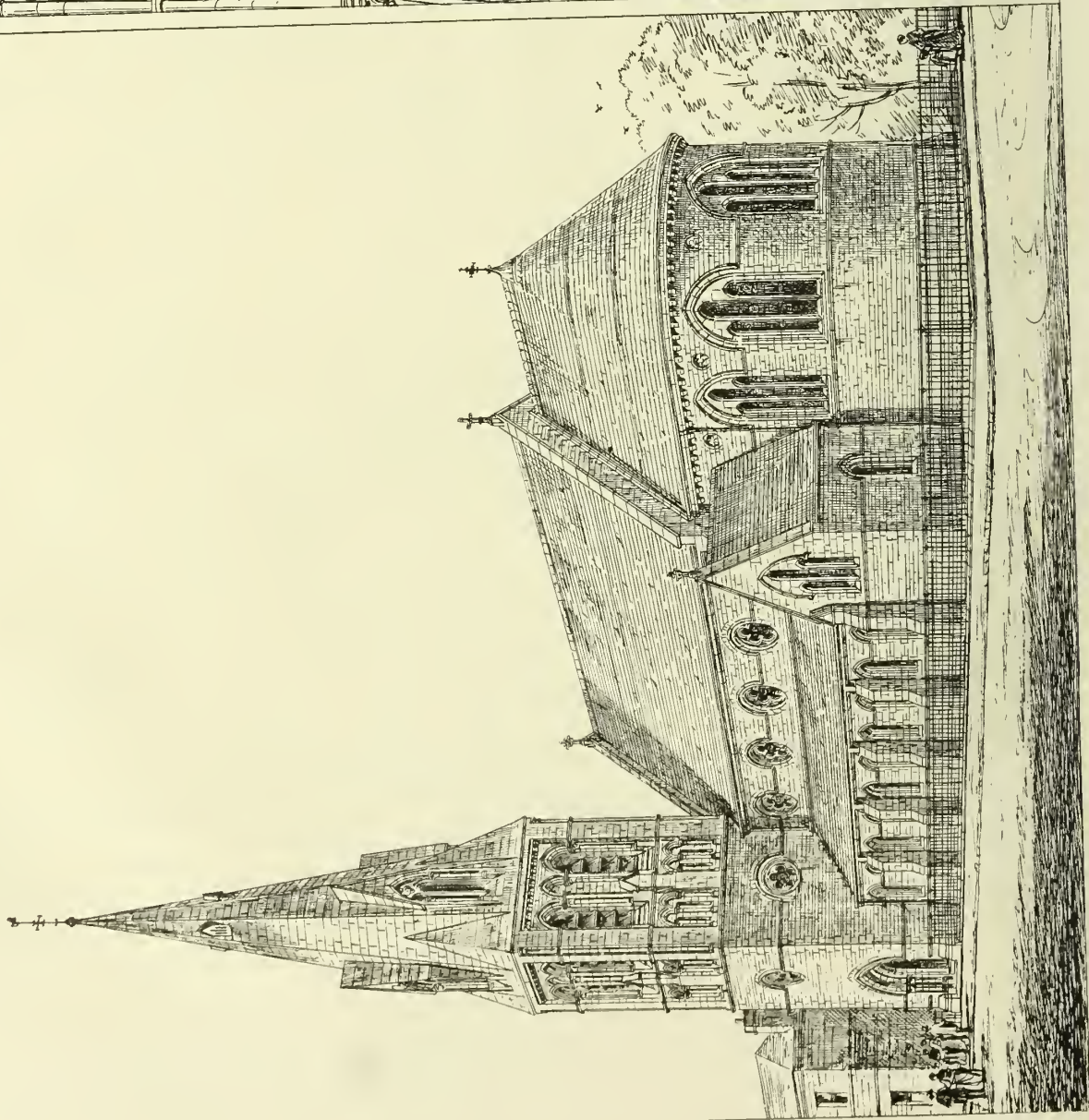
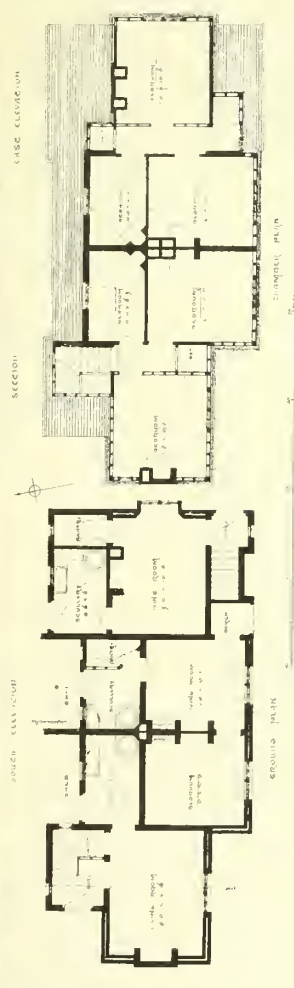
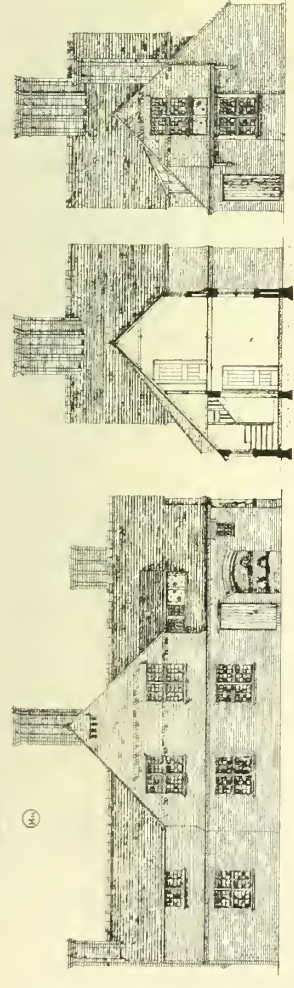


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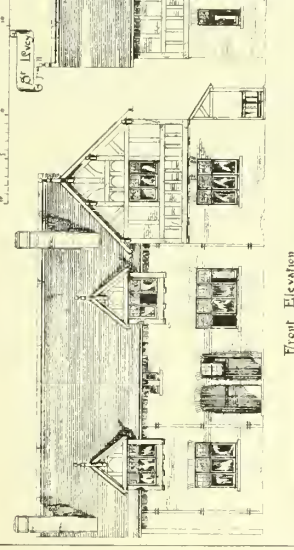
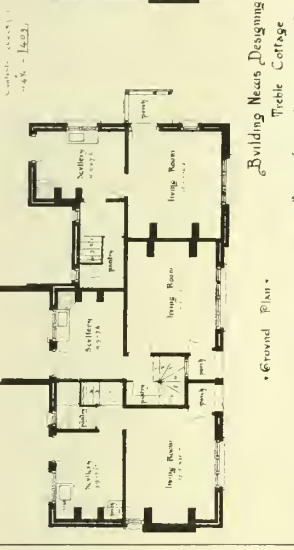
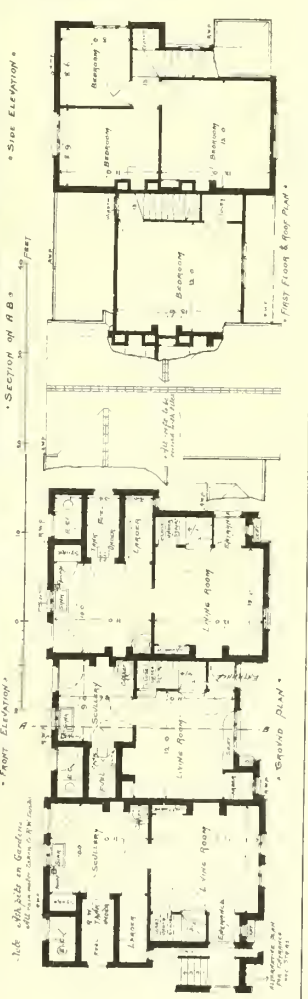
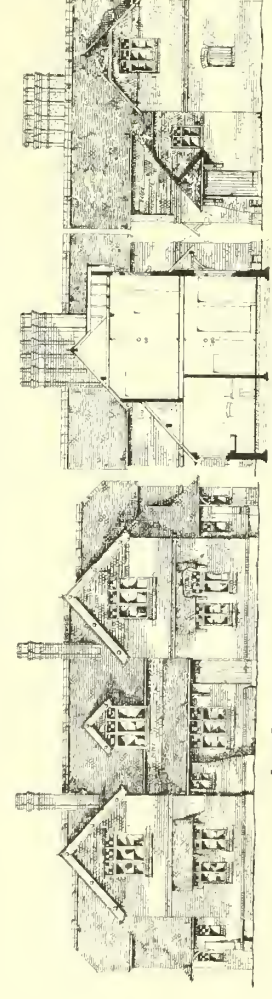
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DESIGN FOR TRIPLE COLLEGE

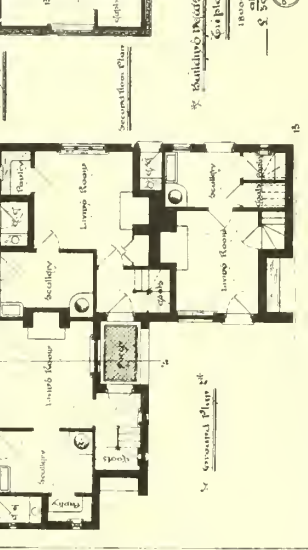
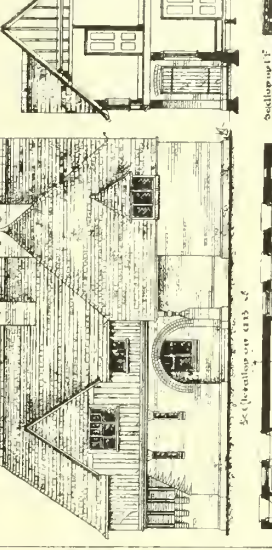
CONTENTS 19390 CUBIC FEET 47' 5" x 90' 0" D.



BUILDING NEWS DESIGNING CLUB

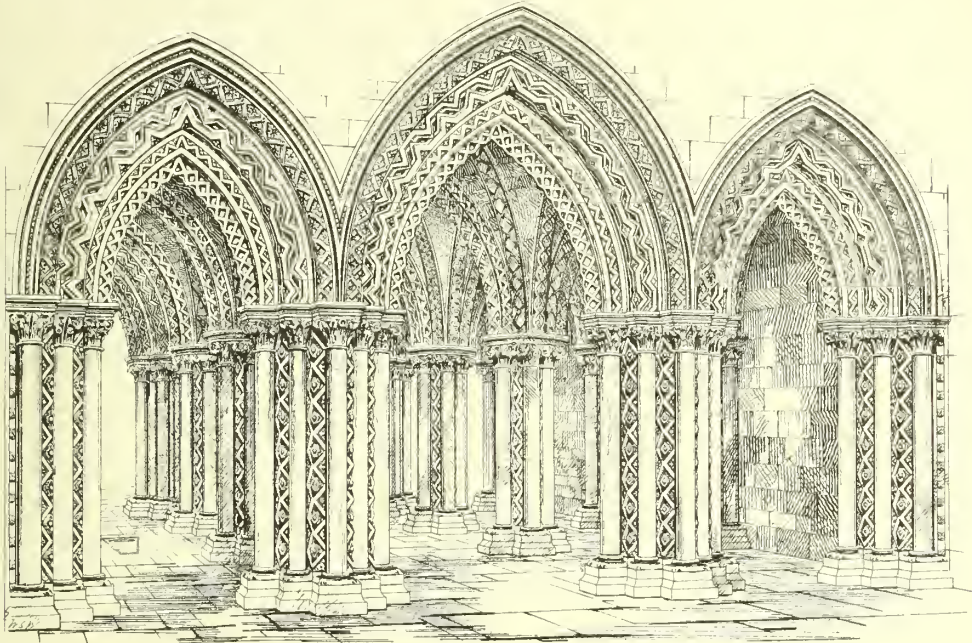
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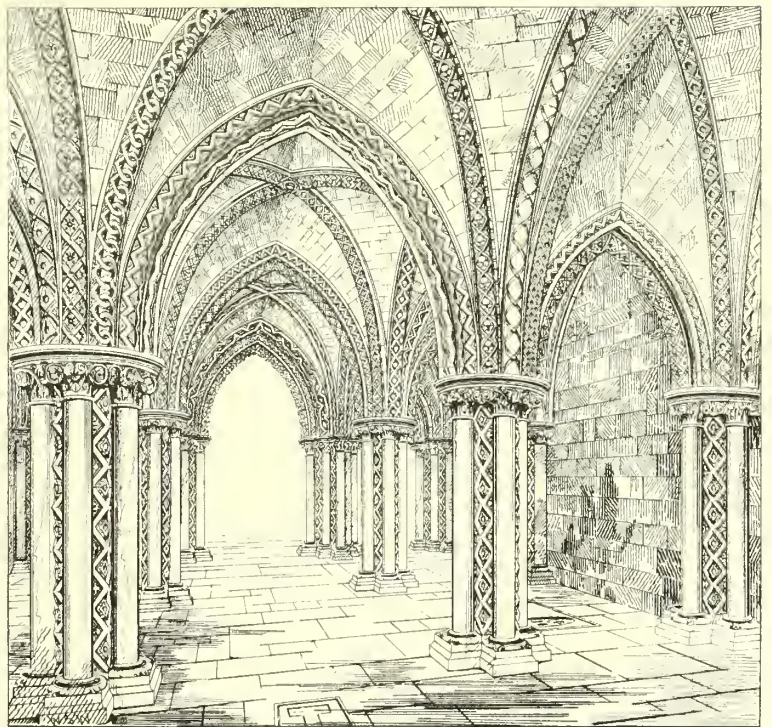
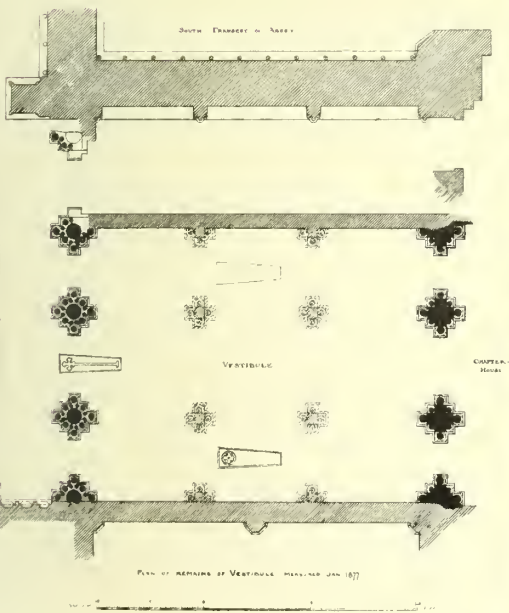


S: MARY'S ABBEY, YORK.

VESTIBULE OF CHAPTER-HOUSE

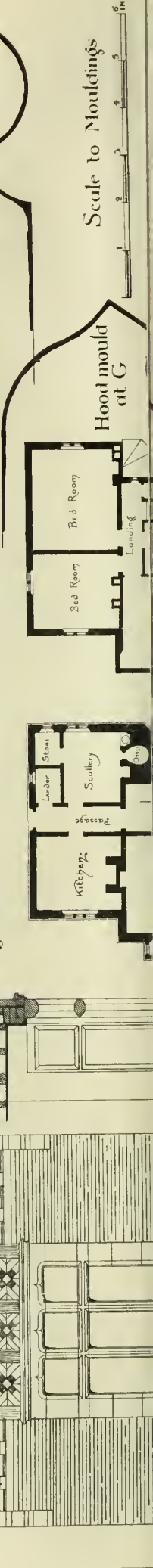
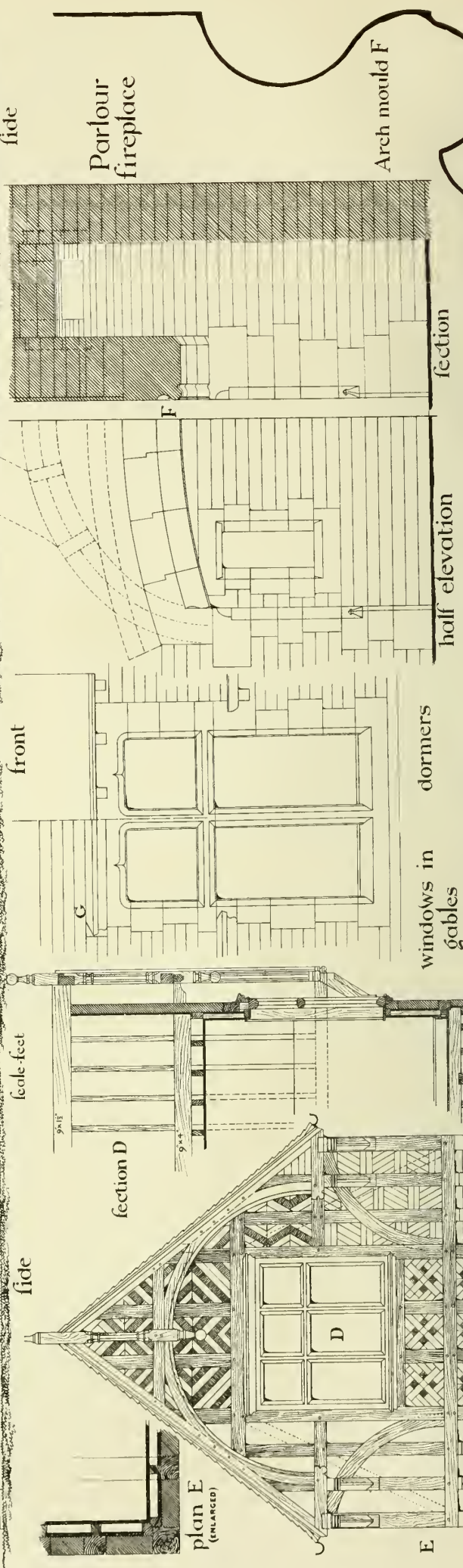
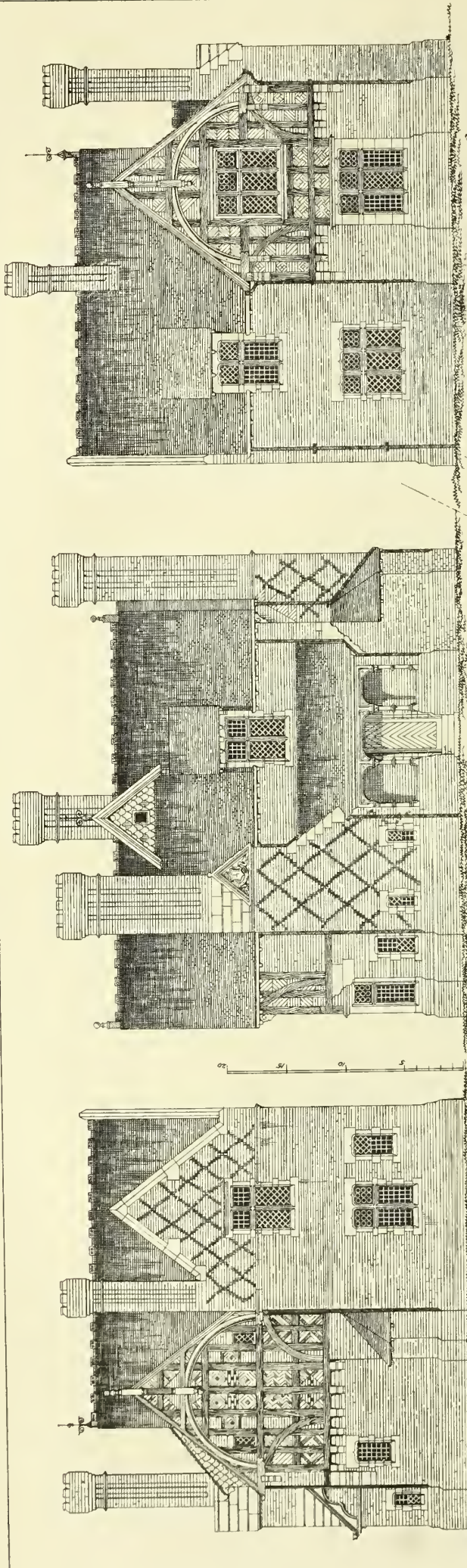


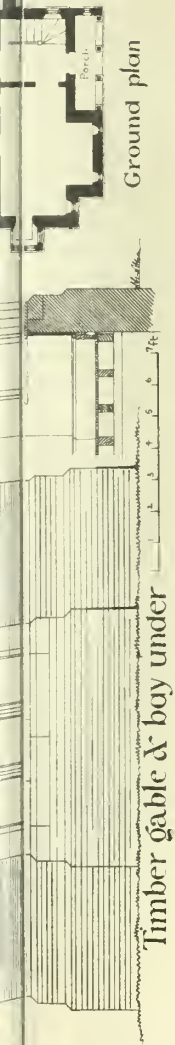
(RESTORED) VIEW OF VESTIBULE, FROM CHAPTER-HOUSE.



(RESTORED) VIEW OF VESTIBULE OF CHAPTER-HOUSE FROM TRANSEPT.



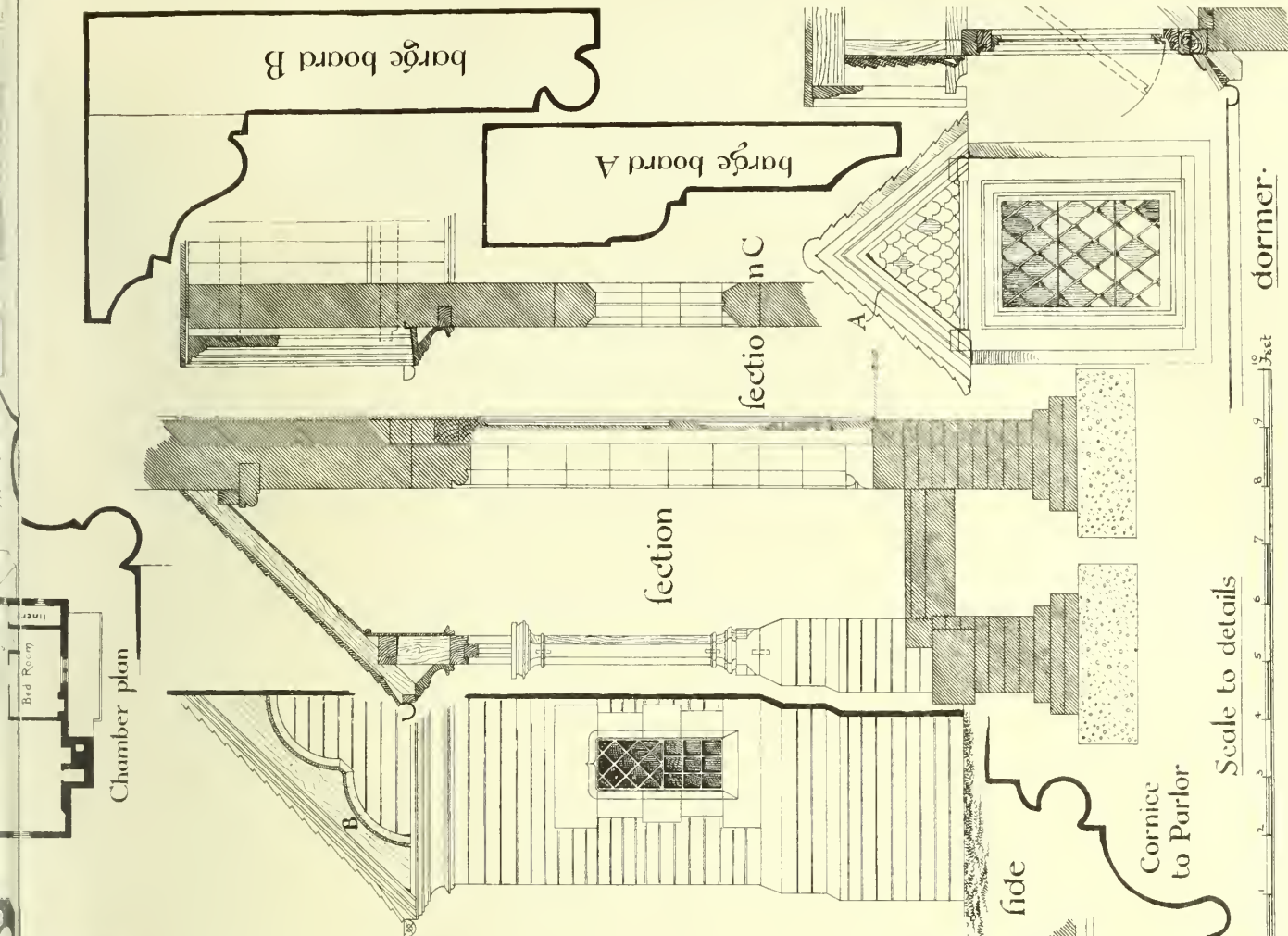
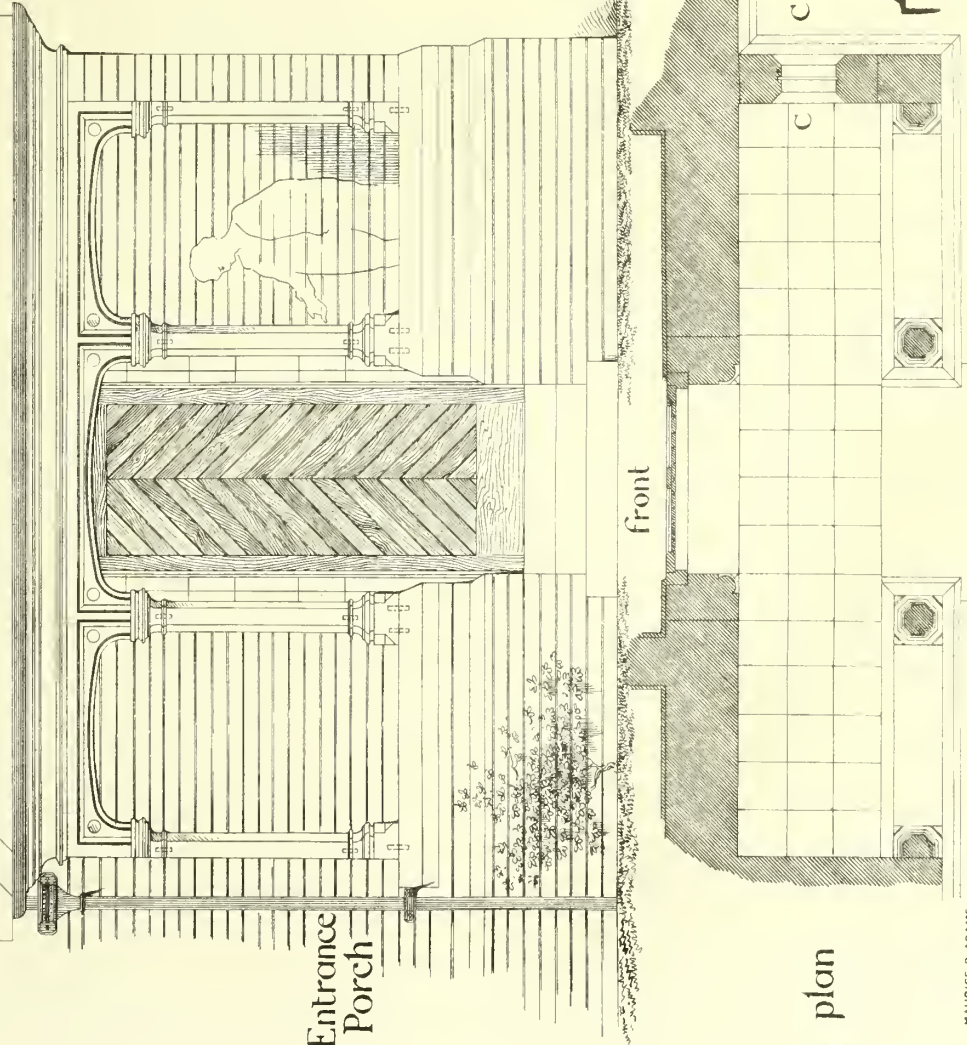




Plans and Details of BAILIFF'S HOUSE · Wyfold · Court · Oxon ·

GEORGE SOMERS CLARKE
ARCHITECT

Scale to Plans
0 10 20 30 40 50 FT



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THE CAXTON CELEBRATION
COLLECTION.[From the *Echo*.]

PRINTING is so associated with the Fine Arts that such a collection as that at South Kensington, brought together to celebrate the 400th anniversary of the introduction of printing into England, has an interest for artists beyond the object the promoters of the celebration have in view. Those who desire to acquaint themselves with the ancient and modern typography, who wish to study the mechanical appliances of this "noble craft," and the various forms of printing now in use, cannot do better than spend a few hours in examining the valuable collection of typographical apparatus and the earlier records and block books to be found in the galleries at Kensington. The machines and models to be seen in operation in the lower room may give any one a fair idea of the recent improvements in the mechanical art in which machines and presses of every kind can be examined. There is, however, a little too much of the "advertisement" in this display, and we content ourselves with examining the upper gallery of old books and specimens of printing. We here find some of the earliest examples of block engravings, and the systems of printing of Guttenberg, Meerman, Heenecker, Santander, Koning, and others. The specimens of wood engraving, many of Albert Dürer's, such as those the readers of the *BUILDING NEWS* have had presented to them at different times, and some other rare prints of the 15th and 16th century, are especially interesting; and so is the collection of the earlier editions of the Bible and New Testament, many of them of extreme rarity and in good preservation. Thus we see the 1st edition of the present version of the Bible with the date 1611 in the Old English letter; another, a Slavonic Bible, 1580; and Bohemian Krulic Bible printed in 1587. A rather interesting portion of the collection is that lent by the Guildhall Library Committee, showing various styles of printers' types, vignettes, ornaments, tail-pieces, and other embellishments of early printing. Among the prints are illustrations and descriptions of royal pageants of the city of London, "Triumphs of London," as they are called, and these are generally of the sixteenth century. The cases of books printed by Caxton are extremely interesting, as showing the earliest styles of printing, soon after Caxton set up a press at Westminster, though how many of them are really genuine it would be difficult to say. We noted No. 130, the "Directorium Sacerdotum," 1st edition of second version, folio, with date 1417; "The Fifteen Oes," 4to, with a very piquant border and woodcuts, in which birds and flowers are entwined, printed by command of the Princess Elizabeth, Queen of England, by William Caxton (1490); the "Mirrour of the World," 3rd edition, lent by the Duke of Devonshire; "Fables of Æsop, of Avian, of Alfonso, and of Poge the Florentine," with woodcuts, "emprynted by me, William Caxton at Westmynstre, folio, 1484," lent by the Queen; "Canterbury Tales," by Chaucer, folio, with curious woodcut; "Rhetorica Nova," Abbey of St. Albans, and others. The "Fables of Æsop" are illustrated by a figure surrounded by a symbolic representation of the fables, and, as a specimen of an early wood-block hatched in coarse lines, we have seldom seen its equal. The "Chronicles of England," folio, 2nd edition, with long commas, and date 1482, illuminated by red capitals of straggling shape, is a fair specimen of the age. It may be interesting to many to say that previous to 1476 there were no separate titles to books; from about that date they began to be printed on detached leaves. Another peculiarity of the editions of the fifteenth century was the absence of capital letters at the commencement of divisions. In the early specimens of typography we find spaces to have been left, which were afterwards filled up by illuminators, who placed the initial letters in these spaces for those who purchased books—then of great value. We see many of such kinds of illuminated initials, embellished with gold and various colours. Another mark of this period was the rare occurrence of divisions, commas, and semicolons, and this originated no doubt from the great exactness with which the

printers copied the original MSS. We are struck also with the vellum-like thickness of the paper, the peculiar inequality of the types, and the use of abbreviations, all of which add considerably to the artistic appearance of fifteenth century typography. "The History of Reynard the Fox," folio, 2nd edition, 1489, is shown in a fac-simile of pages from the copy in the Pepysian Library, Cambridge. Of the same date is a copy of the "Directorium Sacerdotum," from the Bodleian Library. But the greatest interest centres in a small glass case, containing two folio editions, printed by Caxton, with the date, 1477. One is the "Dictes and Sayings of the Philosophers," translated by Earl Rivers, and printed by Caxton. This is described as the first book from Caxton's press, and is the foundation stone of the collection. The type is tolerably clear, and has red initials. The date, 1477, is printed in the body of the text of the last chapter. The other book is the "Recuyell of the Historyes of Troye," translated by Caxton, in 1469-71, and printed shortly after at Bruges. It is the first book printed in English. It is said the demand for this book was so great that Caxton could not transcribe copies fast enough, and he employed the new invention of printing to aid him. "The Game and Playe of Chess" was another—the first book in England, according to some authorities. This was printed at Westminster, and completed in 1476. But visitors to the exhibition will be still more interested in Guttenberg's Bible, printed 1450-55, taking six years—a large folio.

Considerable doubt has been expressed by authorities as to the real introduction of printing into England, generally conceded to Caxton, a mercer and citizen of London, and it is now almost unnecessary to dispute the generally received tradition. An old chronicle, with a date of its impression from Oxford in 1468, was discovered, or alleged to have been found, in the Archbishop of Canterbury's palace, and it was considered a decisive proof that printing was established in the University of Oxford some years before Caxton returned from the Continent, where he had been travelling many years in connection with his own trade. The fact may be mentioned if not worth much. There is some misunderstanding, however, as to the real value of Caxton's share in the great work, and it is right to say other places and men claim the honour of type printing. It is not worth while to contend that Corsellis, of Haarlem, adopted the same mode, when Caxton was the first to practise the art of printing with metal types in England. However, it must not be forgotten that the great discovery was the employment of separate metal types cast for the purpose, and not that of block printing in which the types were engraved on blocks of wood—a mode lost in antiquity. Mentz, Haarlem, and Strasburg, are places that claim the honour of having invented the art of type-founding, and every one knows that to John Guttenberg is attributed the invention of cut metal types, with which the earliest edition of the Bible was printed in 1450, and which is to be seen at Kensington. Cut wood or metal types were used. The last stage of the art consisted in casting the types in matrices, invented, it is said, by a partner of Guttenberg—Peter Schoeffer—and the first work printed on these is said to be "Durandi Rationale," in 1459. Very conflicting are the statements of authorities on the subject, but it may be considered tolerably certain that to Guttenberg is due the founding of metal types in a matrix, though his claim was contested at law by his partner in 1439. It was this process which constitutes the art of printing as we know it, and it is questionable whether moveable wooden types were used to print an entire book at that period.

Of course, the method of taking impressions from signets—wooden stamps in which the letters are engraved, to be seen in the British Museum—is a very ancient art. Wilkinson, Layard, and others have discovered many such means of impression in the form of clay, wood, and bronze stamps, while numerous ancient examples in papyrus, linen, and parchment show us the kind of impressions produced by these means. In the thirteenth century picture-printing from wooden blocks

was practised. To Lawrence Coster, of Haarlem, it is alleged, is due the block printing of the fifteenth century, when many books appeared printed in one-page blocks. The mode of separate wooden letters, cut to fit each other, followed, and Coster probably practised this also: at any rate it was this invention, to whomsoever due, that inaugurated the art of modern printing. Thus, it will be observed, the art has passed through five well distinguished phases—first, the stamp printing of antiquity; second, block printing; third, cut movable wooden letters; fourth, cut metal type, invented by Guttenberg; and fifth, casting types in moulds. All these phases of the art are to be studied in the collection at Kensington, though it would considerably have enhanced the interest if the books and cases had been classified and labelled with more care. We cannot fail to observe in the earlier specimens of type printing the great resemblance to the old manuscripts; and as works of art in which the individuality of the type-cutter is traceable, we cannot also disregard the difference the cast type introduced into the printing. Thus, from the time when the old religious recluse in the intervals of canonical hours fabricated his illuminated Bible or breviary, with all the patience of his art, to the mechanical printing of today, we trace a mechanical improvement going on simultaneously with a diminution of artistic zeal. We lose the cherubic initials in colour and gold over which hours were spent; but we have gained a thousand-fold in the multiplication of copies. It is yet possible for art and mechanical progress to meet.

THE COMMON COUNCIL AND THE
PROPOSED NEW BRIDGE ACROSS THE
THAMES.

THE Court of Common Council has made another blunder—almost as serious as that committed when it decided to widen London-bridge, and spoil it. As it had to be saved then from the consequences of the folly of its members, so once again outside opinion will have to be expressed, or a mistake will be made, the future consequences of which will be disastrous, and impossible to escape from. It will be remembered that after the final abandonment of the proposal to widen London-bridge, and the usual period of delay which invariably follows any successful attempt on the part of the City talkers to make up their minds about anything, a special committee was appointed to consider and report on the proposed new bridge. The report of this committee was presented on Thursday week, and the best that can be said about it is that it recommends the adoption of a makeshift. It is in favour of a low level bridge, with openings for the passage of ships, which, it is estimated, can be erected for £750,000, while it is asserted, a high level bridge with the proper approaches, would cost £2,000,000. In spite of the remonstrances of a few of the more sensible members of the council the report of the committee was adopted. Fortunately there is no immediate fear of the idea being carried into execution, as the assent both of the Government and the Metropolitan Board of Works is necessary first, and the money has to be found. Meanwhile those interested in maintaining uninterrupted the free passage of the river, had better bestir themselves. The navigation of the Pool is not too easy at present. Fancy it blocked by vessels waiting to be let through the proposed drawbridge, and that, in its turn, crowded by vehicles compelled to stand perhaps half an hour while the ships passed through. Badly as a new means of communication between the north and south banks of the river is wanted below London-bridge, we had better give up all hope of getting it if it is only to be obtained by turning the Thames into a lock for the sake of £1,250,000. The impracticable idea, however—which seems to have originated in the same brain that on a former occasion produced the fearful and wonderful design for spoiling Rennie's-bridge—will never be adopted. The bridge, whenever it is built, will be a high level bridge, not only because a high level bridge is wanted on account of the river traffic, but because the necessary approaches are almost as badly wanted as the bridge itself.

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. X.

A Small Stable.

THE designs we have received for the first subject display considerable variety in treatment, though as regards plan the ordinary types have been followed, with scarcely enough attention to sanitary requirements and economy. Our conditions required a two-stall stable, with loose box, harness-room, and coach-house, and hay-loft, or granary, over some portion. The plans we have received divide themselves into two groups—those in which the stable and coach-house are embraced in one rectangular single-roofed building, and those in which either the stable or the coach-house forms a distinct wing or projection. "B," in a circle seems to be the nearest approach to what, in our opinion, a stable range should be, though we by no means consider the plan the best in all respects. The author adopts the simplest form of a single roof, the stable being at one end and the coach-house at the other, with the harness-room between them—a desirable position for it. We note, however, that the author makes his loose box distinct, and separates it from the stable proper. This is unnecessary in ordinary cases, though some grooms prefer it. It is made the whole depth of the building, or 17ft. by 10ft. wide, and has a distinct entrance, with windows on both sides of the doorway. There are two angle mangers. The stable adjoining, 17ft. x 12ft. 6in. and 11ft. high, with two stalls, has its entrance in the return side of the open lobby—a recessed part of the building formed by the harness-room, which is 10ft. square. The coach-house forms the other end of the range, and is 17ft. x 14ft. 6in., with sliding doors in front. The corn and hay-shoot and ladder are placed between the loose box and stalls, in a good position behind the horses, a cupboard is fitted under the stable window, the harness-room is also fitted with these necessities, and the author has not forgotten to provide a stove between the harness-room and coach-house—a requirement overlooked by many of the competitors. Ventilating windows are provided above the horses' heads, at the back of the stable. Externally the design is more satisfactory. Over the harness-room entrance is a timber gabled loft with door, and simplicity and characteristic detail mark the design. The author provides a useful covered shed for washing the carriages. No details of the stable fittings are given. The author of "Another for Hector" sends a good plan, in which the coach-house projects as a wing on the right-hand side; the harness-room is placed at the back of the coach-house, but no means of warming the coach-house is shown. The loose box is separated from the stalls by a wall, but has not a distinct outer entrance. The ladder and corn-shoot are placed between the stable and coach-house, forming the jamb of the doorway. In this respect, and the awkward communication between the harness-room and stable, at the back of carriages, the arrangement is defective. We object also to the position of the manure receptacle in the front. No fittings are indicated. Externally, the design is very pleasing. The walls are of stone rubble, and the roof of flag shingle. There are well-treated lights for iron casements, and the combined treatment of the coach-house doors, and the loft door over in the gable, is cleverly managed. "B. N." is a simple rectangular block, with the stable and loose box in one, entered at the side of a covered entrance, or washing porch. The loose box is rather small; it should generally be double the width of the stalls. The harness-room is in the right position, but no direct communication is provided between it and the stable—a defect noticeable in the two first designs. The author shows flat gratings over an inclosed gutter at the foot of stalls, the paving being laid with valley. The loft, or granary, extends over the whole building. This is not desirable; the door for admitting hay and corn is made a central gabled dormer above the entrance. The loft is mainly in the roof, which is well framed, with principals springing from the floor, the plate of the outer roof being tied to them. In the elevation the author tiles a portion of the wall under the eaves, and introduces ventilating tiles at the level of the stable ceiling. The

treatment of the exterior is picturesque, though we do not like the cambered timber lintel over entrance, and a little less affectation in the timbering would have been better.

"Sperabo" has a compact plan, the stalls and box being in one compartment, about 18ft. by 16ft., and 10ft. high, the loose box occupying the corner, and a 6ft. stall on each side (at right-angles), allowing an angular entrance between the two stall posts to the box. The harness-room is well placed in the centre, a corn-bin and hay-shoot being placed in front of it, with two doorways, one entering the stable and the other the coach-house. There is, however, no means of warming the coach-house, so essential to keep the stuffing and linings of the carriages dry. A loft is shown over the stable and harness-room, and a ventilating flue is carried up from the stable next the harness-room flue. We scarcely admire the broken and cut-up arrangement of the roof, with its two hips and dormer. Quadrant ventilators are shown, and hollow walls, and the drainage is indicated. The reveals of the openings are provided to be of bull-nosed bricks, a desirable point, and the stable to be paved with grooved stable bricks on 9in. of concrete. Design, with motto "St. Lucy," is too straggling; the loose box is made entirely distinct, and the groom would have to bring his horses out an unnecessary distance to the washing stall, while the harness-room is quite out of reach from the stables. We cannot understand why the author has placed his stalls lengthwise with the building. The hay-loft is over the harness-room and washing-stall. A well-designed elevation, with a ventilating flèche over stables, has been sacrificed to an ill-considered and uneconomical plan. "Eclipse" shows a plan with a common-sense arrangement. There is a lobby or washing entrance, but the position of the doorways is not convenient for horses. It is also unlighted; a harness-room opposite (inside) with the 2-stall stable and box on the right-hand, and a coach-house on the left. The fire-place of the harness-room is well placed for warming the coach-house, and the corn-bins and ladder are placed in the entrance lobby. Iron mangers and corner racks are shown, but no ventilation. A groom's bedroom and hay-loft of half timber is placed as a gabled structure over the harness-room and lobby, and the external treatment is suitable, though we object to the small windows and inadequate lighting. There should always be a window to a coach-house, and it should be well ventilated to ensure dryness. Iron casements are healthiest and best, as they are cleaner, and the ammoniacal gas and vapour of the stable do not permeate them like wooden sashes. "A. L. C." has a rather confused and broken plan, with a loose box forming a transeptal arrangement with the stable proper. The washing lobby is rather large, and the stable lighted through it. The harness-room is not conveniently arranged as regards its fire-place, and the central pier between the coach-house doors would be better omitted. The plan, in fact, is too full of breaks to be a desirable one. In elevation the design indicates a correct taste, and is well drawn. A centre air-shaft, with the turret over, is carried from the stable through the hay-loft. There was no need for three sheets of drawings, which are very carefully made. "J'Espere" has the most compact plan of any as regards area, but the positions of coach-house, which is too small, and the manure enclosure at the angle of stable and loose box, are not the best. The elevation is better. We also note that the trap doors for hay above the mangers are not desirable, as they tend to frighten restless horses. "A," in circle, has a fair plan arranged in the ordinary manner, showing ventilators above the stalls, but there is no washing space. The alteration is not so good, and a smaller loft would have been better. In a second class we put "Senlac's" plan, incomplete, and there are several omissions. The harness-room, with its external flue, is a mistake; why waste heat when it could be made so useful to the dryness of the coach-house? and its position, too, is not central enough. There is no washing lobby, no drains, or means of ventilation shown, and the hay-loft is unnecessarily large, while the coach-house is not wide enough for two carriages. The author attempts a Queen Anne elevation, which is perhaps the best part of the design.

"Self Help" places his harness-room at the back of coach-house, and his loose box is separately entered. No fittings are shown. The hay-shoot and clock gable do not add to the design. "Isola" has a better plan, but no harness-room is provided, and therefore the design is inadmissible. "Student's" plan shows a fair arrangement, but the coach-house is not the best proportioned; its entrance doors leave too much space on either side, and the harness-room is unnecessarily large. The elevations are too ornate for stables. "En Avant" has a good workable plan, though not original, with the harness-rooms, stalls, and loose box (latter too small) in one row, loft over, the coach-house being on one side, and the manure pit at the other end. Were it not for the too cottage-like exterior we should have placed the design higher. "E." has a fair plan, but there are too many whimsicalities in the elevation, such as the cut brackets to coach-house door, which would be likely to be knocked off. The drainage is the best part of design. "Sparken-hoe" has an L-shaped plan, but there is no proper harness-room; design poor. "Honesty" does not do justice to its motto; the entrance is too narrow, and there is no harness-room. "Omega," in circle, which came late, puts his loose box where the harness-room should be. The treatment in half timber is suitable, though perhaps scarcely stable-like enough.

A Font.

Our idea of a font is that it should be a basin architecturally treated, and not the base of a rostrum. Some of the designers for this subject have given us a pulpit, and others have lost sight of the primal idea. The Norman and Early Transitional examples of fonts are excellent types, which do not appear to have been made use of. The design which most nearly realises our conception of a font is that by "Début." It is a circular, spherically-shaped basin, relieved by simple surface ornament, resting on an octagon base, surrounded by small shafts, which terminate at the top in trefoiled heads. A plain flat base, or circular step, surrounds the basin. The mouldings are simple, and indicative of the use of the object. "Fleur-de-lis" is the next most carefully-drawn design. The bowl is octagonal externally, richly-pannelled with raised shields round the sides; the angles are taken down as mullions to the base, and support eight cinque-foil-cusped arches under the bowl. The octagonal base is seen under them, and the whole rests upon three octagon steps, too narrow to be of use. The weak point of this design is that the surrounding arcade conceals the intention, and the ornament is rather too florid for a parish church. As a pulpit, the design would have been admirable. "B," in a circle, is of a similar style, but the sides of octagon are made to diverge outwards at the top and the sides below. The bowl is hollowed, and the steps are wider than the last. The swags of oak foliage round the font look like festoons. The author proposes New England limestone as the material. The next best is "J'Espere." The bowl portion is made square externally, though somewhat larger than the square base, the faces being joined by a deep ogee cove. The base is relieved by angle shafts (engaged), the capitals of which are cleverly worked into the coving with leafage. The neck members are too fine, and the arched bowl heavy and unredeemable. Materials specified are: Steps blue Greenmoor; base, red Mansfield; shafts, red granite; bowl, Bath stone, and panels, red Mansfield. "Trefoil," in circle, shows a hexagonal-shaped bowl, pannelled on face, with poor foliage. The font rests on a circular shaft, which would have been reasonable enough if the author had not shown six unmeaning, broken-looking mullions as legs at the angles, which incline inwards at bottom. The effect is that of a font top-heavy, breaking its supports, and the detail is poor. Of a second order we place "Faire Raison," whose ideal is a cap and base joined by a short shaft. "Harry," in circle, has mistaken a pulpit for a font, with a basin deep enough for a copper; "Mentonniere," hackneyed; "W," in circle—why the shafts supporting the curved part of basin? "Spe et Labor," another pulpit with a pedestal tapering to the bottom like a pendant of fan tracery. What next?

"Ashlar"—why spend time in drawing such detail? To all these authors we say—"Think well of what is wanted, and how best to do it."

A Stack of Chimneys.

In this subject "Début" again leads. Two circular and one centre square flue, diagonally set, and conjoined form the stack, which is well treated in brick and stone, or terra-cotta—the author does not say which—the ornament being the elongated diamond pattern, with caps having the embattlement finish. A small alarum bell protrudes from the base of shaft under a corbelled canopy. Drawing is effective but scratchy. "Bee," in circle, sends a well-conceived chimney stack of four flues combined, with a belfry between. The design is severely treated, the octagon shafts being perfectly plain, with steep conical cappings, between which the steep roof of belfry finishes. Fire-clay pipes, with stone facings, and terra-cotta cappings, are adopted. "Mechlin" has four square flues, ranged in a row as one stack, but the brickwork externally is moulded to form four conjoined shafts, with a salient centre angle. The base is pleasingly treated, with crow steps, and the bell is introduced in a niche in the base. The caps are well relieved by four oversailing courses and necking. We think the cut panels in the base are too small to be effective. "St. Lucy" is a well-designed group of four separate octagonals in plan, and arranged in a square or in two ranks, springing from a flush base, which projects from wall. An ornamental bell-cote juts out from the side of base, which is treated as a gable, with terra-cotta panels. The style is essentially Gothic, and the details are well shown.

LIST OF SUBJECTS.—NO. XIII.

A. A design for a small villa, to contain two sitting-rooms and necessary offices, with three bedrooms and a bath-room. Cost not to exceed £500, at the rate of 6d. a foot cube, the measurement being taken from the footings to half-way up the roof. Plans, 2 elevations and section; $\frac{1}{4}$ in. scale. (This subject will be counted equal to two.)

B. A mahogany sofa and easy chair; a perspective sketch with details. Inch and $\frac{1}{4}$ full size.

C. A brick cornice for a building of three stories high; 3 designs in a sheet; $\frac{1}{4}$ full size.

RECEIVED.—Alf Avimey.

ARCHITECTURAL SCIENCE CLASS.

MODES OF HEATING BUILDINGS.

THE methods of warming buildings have been fairly stated by "S. M. E." in our published replies. Warming by hot water is less costly and more safe than steam; and the low pressure system is that generally adopted. The theory of the circulation of heated water is too well known to require explanation here. The motion is imparted by the difference in the densities of the respective columns of heated and cold water. Circulation is increased by vertical pipes, and the extent of the circulation depends also on the height of the ascending pipe from boiler. The main points are the boiler, the circulating pipes, and the supply cistern. Authorities give about 1ft. superficial of boiler surface to 50ft. of 4in. pipe, or 4ft. superficial of boiler surface exposed to the fire to about 200ft. length of 4in. piping; and 2 $\frac{1}{2}$ to 3ft. of flue surface is considered equal to 1ft. superficial of surface exposed to direct heat. Saddle-back and conical boilers are perhaps the most economical for houses. In fixing pipes of course allowance must be made for the expansion by heat, and those laid horizontally should be larger than the vertical pipes or vertical mains. The area of piping required will depend on the number of cubic feet to be warmed per minute, the loss by ventilation, glass windows, &c., in the building. Of course the air extracted by ventilation will be so much heat lost. If 4ft. be allowed to each person per minute, that quantity of heat will be lost to each individual, or he will lose so much heat as is equivalent to the difference between the inner and outer temperature. Tredgold in his "Treatise on Warming and Ventilation" lays down the rule as to loss of heat by glass:—Multiply the area of glass sur-

face by 1.5, and the product will be the cubic feet of air per minute cooled from the temperature of room to outer air. Each door wastes 11ft. cubic air per minute on an average. For expansion $\frac{1}{4}$ in. for every 10ft. of length should be allowed, and the pipes should be laid with an inclination to the boiler, so that the condensed steam be returned to it. The supply cistern, to hold about $\frac{1}{30}$ th of the whole quantity of water in the pipes and boiler, should have an expansion-box to allow for the escape of accumulated air, and should be fixed at the highest part of the system. The high temperature or pressure system of warming, introduced by Perkins, consists in a system of pipes of small diameter, hermetically closed after being filled with water. The pipes are usually about $\frac{1}{2}$ in. diameter in bore, and $\frac{1}{4}$ in. thick, and the temperature of the water is raised to 300 or 400°. The heating is effected by a coil of the pipe, about $\frac{1}{3}$ th of its total length, exposed to the fire. The expansion of the water is provided for by an expansion-pipe, about 2 $\frac{1}{2}$ in. diameter, which contains about 15 per cent. of the water, and fixed at the highest point. The water is thus used to fill the piping to the bottom of the expansion-pipe, which should have a safety valve to prevent bursting. The danger of the high-pressure system is the great heat given off to woodwork in its vicinity, and the risk of the water escaping, by which red-hot vapour is formed at high temperature. The pipes should be of the best iron, and tested to an internal pressure of 3,000lb. per square inch. Warming by steam is rarely used, except when waste steam can be employed. In these cases the advantage of steam is great, though there are certain risks attendant on its use to be guarded against. Of course the expansion of the pipes has to be allowed for, and the boiler, furnace, and other fittings require to be constructed by an engineer. "Atteave" calls attention to the importance of an equable temperature without over-heating the air. Warming by heated air by the ordinary means of hot-air stoves and grates is that generally introduced in small houses, and the systems of introducing and warming the air, whether through a basement chamber, or through chambers behind grates, or at the sides of stoves, as in the Galton stove, are too numerous to enter upon in this summary. The principle in all cases is the same—namely, the warming of the fresh air admitted, and its equal distribution in conjunction with a system of outlets; for hot air, like hot water, becomes rarified and ascends, and this principle has to be taken advantage of. Sometimes a combination of the air and hot-water systems becomes necessary in large buildings, and no one system can be regarded suitable for universal application. Students are referred to the works of Tredgold, Hood, and others.

LIMES AND CEMENTS.—PLASTERING.

Question 49, on the materials used by the plasterer, has been fairly answered by "T. N.," "A. L. B.," "J. S. A. M.," and "R. J." "T. N." refers to the various plastering mediums, such as "coarse stuff," "fine stuff," "gauged stuff," putty, "rough stucco," "trowelled stucco," "rough cast," &c. Coarse stuff is a name applied to the mortar having the addition of hair, to give it tenacity as a first coat. "T. N." says it is composed of about 30 per cent. lime, and 70 per cent. sand. Clean cow hair is usually employed, incorporated, as "A. L. B." says, by means of the drag. "Fine stuff" consists of almost pure lime, slacked with water, and afterwards so saturated as to bring it to the thickness of cream. The water is then drained off, and the stuff attains the consistence of putty; hair is mixed with it. Plasterer's putty is another name for the same kind of material. Chalk or fat limes are those employed by the plasterer as not being so liable to "blow," as the slacking of every particle of lime is necessary. Dorking lime is often preferred. The sand used should be fresh water or pit sand. There is nothing better than clean road drift, produced by the attrition of flints and gravel, for the under coats. "Gauged stuff" is a mixture of fine stuff with plaster of Paris, the proportion required of the latter being regulated according to the time for setting. If the work

is to set rapidly, a larger proportion is required, the usual proportion being about 5 to 1. Plaster of Paris is prepared from gypsum, and is a sulphate of lime, and there are two qualities of fineness; the setting or finishing coats of walls and ceilings, and the cornices and other enrichments are generally a mixture of fine stuff and this plaster, the fine quality being best for the latter purposes. There are other kinds of materials used, such as "rough stucco," a mixture of fine stuff and sharp clean sand, to give a granulated or rough appearance. For external work the lime should be hydraulic. "Trowelled" or "bastard" stucco is a like composition, but with clean sand, and finished with a finer face; "rough cast," formed of gravel or grit, mixed with hot fluid lime, and used for exterior walls. The cements known as Parian, Keen's, and Martin's, are all compositions in which plaster is the common ingredient, mixed with borax, alum, and other substances. None of our correspondents have entered into the chemical properties of limes and cements, nor shown what chemical affinities, if any, take place between slacked lime and the sand. There is no doubt that a molecular structure or crystallisation is formed, known as a silicate. Dr. Higgins, who wrote a valuable treatise on calcareous limes and cements in the latter part of the last century, enters into various theories. He shows that the difference between chalk lime and limestone, consists in the retention or expulsion of the carbonic acid gas in them. Portland and Roman cements have been pretty fully described, and their ingredients are too well known to require mention here. Portland admits of a larger proportion of sand, and, if good, weighs about 120lb. per bushel, but fineness and weight combined should be required. Unlike Roman cement it improves by time. The latter cement has quicker setting properties—hence it is useful for many purposes where time is not an element. The tensile strength of Roman cement immersed (7 days old) equals 90lb. per square inch, whereas Portland cement equals 270lb. at the same age, and with age the strength of the former is reduced, while the latter increases in strength. The replies to question 51, in both the classes, published last week, contain the leading facts known on the subject of cements, and we refer our correspondents to them. "A. L. B." refers more fully than others to papier-maché, scagliola, laths, &c. Referring to nails, cast and wrought iron are both used, but for fir laths galvanised or zinc nails are perhaps best to prevent oxidation and disfigurement of plastering and ceilings. The processes of plastering walls and ceilings (50) have been fully described by "R. J.," "A. L. B.," "T. N.," and "J. S. A. M." Some of the writers, however, do not refer to the *modus operandi* with sufficient care. "R. J.," whose reply came too late, gives the most complete explanation of preparing the ceilings and walls. Thus, in nailing laths to beams, he shows that fillets are necessary to receive the laths, so that the "key" may be preserved. In the commonest ceilings, two-coat work or "lath plaster and set" is employed; the surface of the first coat is scratched to form a key for the finishing coat. This last coat is a thin layer of lime putty, trowelled and then smoothed with a wet brush. Three-coat is used in good work; this is called "lath plaster floated and set." The first coat is technically called "pricking up," and the surface is scratched diagonally, after which the floating coat of fine stuff is laid on. To form a true plane for this coat screeds of plaster, about 6in. wide and at intervals of about 5ft., are formed and plumbed. When perfectly true the filling-in or bays between the screeds is proceeded with in fine stuff, and the surface gone over with a Derby float, and finished with a hand float. "A. L. B." rightly says all laths should be "butt-jointed" in order to get a level ceiling; lapping should not be permitted in good work. For walls we have the same processes, but named "render, float, and set." Passing to the advanced replies the same questions are considered. The two qualities of lime have been fairly answered by "S. M. E." and "Atteave." "S. M. E." draws the distinction between "rich" and poor or hydraulic limes. These properties depend on their purity or the degree of admix-

ture with foreign elements, the latter varying from 1 to 30 per cent. Pure carbonate of lime is found in the white rock or chalk, though even this is not perfectly pure. Such limes yield the most powder when slaked, or from twice to three times the original bulk, but they set slowly. Poor limes slake slowly with less increase in bulk, and depend less on the presence of air for setting. Their impurities consist of clay, silica, oxide of iron, &c., and on the quantity of the former ingredient depends their hydraulic properties. "Attneave" does not distinguish clearly enough between these qualities. The next question (50) has been concisely answered by the latter, who says "lime for plastering must be slaked several weeks before use by being run into bed through fine sieves; when ready for use it is mixed in the proportion of 3 of sand to 1 of lime." Rich limes require a greater quantity of sand than poor ones, however, and a great deal depends on the quality of lime and sand mixed together. For "coarse stuff" the lime is usually mixed with 1½ or twice its bulk of sand, with the addition of well-beaten hair. Colouring, whitening, and limewhiting are not described by any of our correspondents, though they are generally considered the plasterer's work.

PAINTING.

ELEMENTARY QUESTIONS.

53. What are the principal materials used by the painter? Describe the ingredients of colour.

56. Describe the processes of common painting wood and iron work.

57. In colouring walls, what precautions should be used?

ADVANCED QUESTIONS.

55. Explain the theory of colouring.

56. Describe the proper mode of painting wall surfaces.

57. What is the best paint for ironwork?

RECEIVED.—T. N., R. J., Attneave, J. S. A. M., Spero, Egbert, A. L. B., Wilhelmus.

CHIPS.

The foundation stone of a new Wesleyan chapel was laid at Kirkdale, Liverpool, last week. Messrs. Dyer, of Barrow, are the contractors for the structure, which will be of iron.

The disused burial-grounds of St. Pancras and St. Giles-in-the-Fields, which have been converted into a recreation ground, were opened last week.

The accident at Bath has been repeated—fortunately, without loss of life—at Saltash. Archaeologists who disembarked last year will remember the narrow wooden bridge connecting the landing-stage with the shore. A crowd of excursionists visiting the local regatta on Coronation Day were precipitated into the Tamar by the bridge breaking in two, but all were rescued alive.

A series of improvements in the interior of the Leeds Town Hall has just been completed under the direction of the borough engineer. The decoration of the Civil Court, which is a noticeable feature, is from the designs of Mr. Hall, an assistant in the borough engineer's office.

Mr. G. E. Thoms, engineer and surveyor to the Great Crosby Local Board, has been elected borough surveyor for Wolverhampton, at a salary of £500 per annum. There were fifty-two candidates.

Mr. William Gibson has been appointed assistant surveyor to the Withington Local Board, at a salary of £150 per annum. There were sixty-four applicants for the post.

The Manchester City Council has resolved not to sanction any expenditure upon the mural decorations of the new Town Hall until a report has been prepared showing the amount of expenditure already incurred in erecting and furnishing the building. Mr. Alderman Lamb said the ratepayers were anxious to know whether or not there was any truth in the report that the expenditure up to the present date amounted to nearly £1,000,000.

The best preservative against dry rot, says the *American Journal of Pharmacy*, is the following of Mr. Schwartz, by whose death the secret is revealed: 1 part oil of cassia, 1 part wood tar, and 1 part train oil; apply three coats on the reverse sides, and on the ends of planks, floors, &c. In all probability oil of cassia played the chief rôle as preservative.

The foundation stone of St. Paul's Mission School, Bedford, was laid on Wednesday afternoon by Mrs. Thos. Baruard, of Cople House, Bedford. The school contains a large room for lectures, service, &c., 62ft. by 28ft., and two class-rooms, each 20ft. by 12ft., with the usual lobby entrances, cloak-rooms, lavatories, &c. The contract, £1,030, was taken by Mr. S. Foster, of Kempston, by whom it is now being satisfactorily carried out. The architect is Mr. John Day, diocesan surveyor, Bedford.

Building Intelligence.

ABBOT'S BROMLEY.—The foundation stone of a new middle-class school for girls was laid at Abbot's Bromley two years ago, and the chapel was opened for Divine service on Tuesday week. Inside, the building is some 30ft. long, 20ft. wide, and 50ft. high to the apex of the roof. At present the fabric has a plain appearance, both externally and internally. The whole is built of local red brick specially made to a thickness of only 2in. By this dimension an effect is given to a small building which would not be produced by the use of the ordinary bricks. A similar thin brick is used in the mediæval churches of Belgium, as, for instance, at Bruges—and until modern times these thin bricks were most common in England. The altar is raised six steps above the body of the chapel, and the pavement of Godwin's tiles increases in richness of design as it advances eastwards. The ultimate intention is to line the walls of the sanctuary with stone and bands of alabaster, with a reredos in the centre bay consisting of three moulded arches, in which, carved in red stone, will be the Crucifixion with St. Mary and St. John. Flanking the reredos on the side walls will be figures of saints under projecting canopies—three on either side. The choir has been erected at a cost of about £800. The completion of the chapel by a nave 40ft. long will be proceeded with as soon as funds permit. The architect is Mr. Carpenter, of Regent-street, London, and the builders Messrs. Espley and Sons, of Stafford.

BIRMINGHAM.—The interior of the Birmingham Exchange, which has lately been enlarged, has been decorated by Mr. Joseph Seers, of that town. The style of decoration has been adapted to suit the architectural features of the room, the character being semi-natural foliated. The general groundwork of the walls and ceiling is light buff for the former and cream-colour for the latter. The decoration of the walls is divided from the floor by a skirting of deep chocolate, above which is a maroon dado, with the moulding relieved with gold, warm green, and black. Above this the walls are divided into arched panels, with broad pilasters. The panels are painted light-buff plain, while the pilasters bear considerable ornamentation. From the dado upwards there is on each pilaster—first, a broad band of deep warm green; next, a 12in. rose border, in dull red; then a diapering of small stem flowers on a light green ground; and then a finishing of semi-natural foliage of sunflower and lily. The remaining parts of the walls are painted light-buff, diapered with dull red flower, and there is a running frieze under the cornice. The ironwork of the roof is of cold grey, with the rivet-heads gilded; and the wood panelling cream-colour, with the joints lined out with vermilion. The mediæval iron pillars and foliated ironwork of the capitals and brackets are decorated with several colours. The centre pillar of each cluster is blue, and the smaller pillars round it warm brown. The bases are of maroon and deep blue, and the capitals cold grey, relieved in the principal parts with gilding and colour.

DERBY.—On Wednesday week the new buildings of the Derby School of Art were opened. The architects are Messrs. Waller and Son, of Gloucester. The building consists of two wings, having an open courtyard between, so arranged as to obtain a north light for all the drawing-rooms. The wings are united at the east and west ends by corridors, connected with all necessary offices, staircases, and entrances. The ground floor consists of a porch and entrance-hall in the centre of the building, facing Green-hill, opening on the front corridors, but shut off from them by means of an inner glass screen. Communicating with the front corridor on the north of the entrance are the principal stairs, ladies' elementary room, and a passage to the machine drawing-room and back corridor. On the south side of the entrance are the secretary's room, store-room, elementary-room, and cottage for curator, this latter being so placed that the curator may have easy access to the front door and all other parts of the building. The back corridor, in which is the male students' en-

trance, communicates on the north side with the machine drawing-room and passage in front corridor, &c., with the staircase to first floor for the use of male students, and with their lavatory, &c., on the south side, with the elementary and painting rooms. The wing containing elementary and painting rooms is only a one-story building. The construction of the roof of the antique and painting room is peculiar, and specially adapted for the admission of uninterrupted light, as it partakes of one great curve from the sills of the windows to the apex of the roof. The roof of these rooms, and the windows in it being carried on curved iron principals to allow of this form of construction being adopted, the result is that in all these windows all the advantages of the ordinary skylight and perpendicular side-light are obtained, without the great disadvantage of the block caused by the wall plate at the junction of the two. This form of construction has been adopted by Messrs. Waller and Son, in the School of Art at Gloucester, and has been found to answer extremely well, and to be of very great practical benefit to the school. The fronts towards Green-hill and Degge-street are of stone, but the rest, where not generally visible, is of brick. The cost of the present section, with land, architects' charges, &c., was originally estimated at about £7,000, but a sum considerably in excess of that amount has already been expended.

HANLEY.—The foundation stone of a new Conservative Club-house at Hanley was laid on Tuesday week. The building will be in the Classic style, and of stone. It will comprise, on the ground floor, four shops; on the basement, cellars, scullery, pantry, beer, wine, and coal-cellars to the club; on the first floor, assembly and reading-rooms; on the second floor two billiard-rooms, with lavatories, &c. The top floor of the tower will be used as a store-room. The architects, are Messrs. R. Scrivener and Sons, of Shelton; and the builder is Mr. Ellis, of Hanley. The entire cost of the club buildings, including the expense of furnishing, &c., is estimated at £6,000. The cost of the site was £2,000. The contract for the building has been let at £3,200.

HORSFORTH.—The foundation stone of a new church at Horsforth, near Leeds, was laid last week. The design has been furnished by Mr. J. L. Pearson, of London, and the contract is being executed by Messrs. B. Whitaker and Sons, builders, Horsforth. The style is Early Pointed. The plan comprises a nave, with north and south aisles. The nave arcades are in five bays, and opening from the two eastern bays a second aisle extends northward, and is gabled transept-wise in two gables. The nave is 88ft. long and 24ft. wide; the total width of nave and aisles is 55ft., and the additional aisles 12ft. 3in. more. The chancel is 41ft. by 22ft. 6in. Opening out from the chancel, by a lofty arch on the south side, is the tower, 14ft. square internally. On the opposite side of the chancel there is an aisle 16ft. 6in. by 17ft., gabled towards the north, and east of this a vestry 21ft. by 17ft. The tower is about 90ft. high, and is surmounted by a pyramidal spire. The walls will be built of grit stone in courses, the dressings will be of similar stone, and the roof will be tiled. The interior will depend for its effect considerably upon its height. The walls will be either plastered or faced with stone in courses.

NEW WESLEYAN CHAPEL, OXFORD.—The memorial stones of a new Wesleyan chapel, to be erected in the city of Oxford, were laid on Thursday, the 28th ultimo. The site has been carefully selected with a view to an imposing structure. The front elevation, including a tower and spire, 130ft. in height, will be visible from Cornmarket-street. The new building will accommodate 850 persons, and the design, which is of elaborate Decorated Gothic, is rendered very effective in the interior by the use of polished granite columns to support the stone arches of arcade. The contract has been undertaken by Messrs. Lynn and Co., at £6,500; and the architect is Mr. Chas. Bell, A.R.I.B.A., of 4, Union-court, Old Broad-street, London.

READING.—The new Congregational Church of St. Augustine, Reading, was opened for public worship on Wednesday. The church, the total cost of which exceeds £3,000, has been

built by Mr. S. Elliott, of Newbury, from designs by Messrs. W. and J. T. Brown, and F. W. Albury, Reading. It is in the Early English style. The material used is red brick, with dressings of Bath stone, the interior walls being of wrought brickwork, relieved by stone bands. The side walls have internal pier buttresses, supporting arches which form wall arcades of six spans on each side. The height of the apex to the central gable is 60ft. There is a gallery at the north end, including which the church will seat 700 persons; while, if necessary, side galleries can easily be added to accommodate 300 more.

STARCROSS.—The new Western Counties Idiot Asylum, at Starcross, near Exeter, was opened a fortnight since. The Early English style of architecture has been adopted. The external walls are of grey limestone, relieved with dressings of buff bricks and Bath stone. The general arrangement of the main building is somewhat in the form of the letter E; the level of the ground floor being raised some feet above the ground, thus providing ample cellars, &c., in the basement story. The central block forms a residence for the superintendent. The northern wing is appropriated to the boys, and the southern to the girls. The building at present will accommodate eighty children, but provision has been made for further extension if necessary. The cost has been from about £8,000 to £9,000. A portion of the old asylum building has been retained as a sanatorium. The architect is Mr. J. W. Rowell, of Newton Abbot and Torquay; the contractors, Messrs. Towill and Coles, of Starcross; and Mr. Thomas Gale, of Exeter, has acted as clerk of the works.

PUBLIC HEALTH,

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

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Correspondence.

MR. LONG'S "EGYPTIAN FEAST" AT THE ROYAL ACADEMY.

To the Editor of the BUILDING NEWS.

SIR,—“M.” is confusing himself and others by throwing dust in their eyes. The question simply was, whether Mr. Long’s interior is right or wrong. “M.” declared it wrong. He asked “where the light came from,” and said, “there appear to be no windows.” I showed in my reply that Mr. Long’s interior was not impossible, and could have been lighted without windows, pointing out that the artist had represented one of the palace halls such as we find at Karnac, Thebes, and other parts, in which the light was admitted from above. Under the Ptolemies the temples were similarly planned, with open courts, the glare of the sun being kept off by awnings, while the darker cells were lighted by slits or openings at the top. “M.” says I have invented the idea of awnings. Lethim consult Viollet-le-Duc and other writers on the subject. He then says I seem incredulous about windows, thus shifting his position. The point was not whether there were windows, but whether Mr. Long had shown a mode of lighting that was impossible. I contend that the artist is perfectly justified in showing a windowless apartment for his feast. “M.” has adduced some examples to show that his preconceived idea of windows is tenable; but they only prove the rule, and they certainly do not prove Mr. Long’s picture to be wrong. “M.” then asks, “Has the critic ever read Herodotus?” If “M.” had, he would have never raised the doubt he has. Who said that the historian says anything about lighting banquetting-halls? The idea emanates from “M.’s” brain. It is scarcely necessary to say more. By the way, “M.” makes no further allusion to the feast and the viands. Perhaps Herodotus has set him right here. It is not my desire to defend Mr. Long, who, I dare say, is well able to take care of himself. All I desire is the truth.—I am, &c.,

THE WRITER OF THE ARTICLE.

[We cannot afford any more room for this discussion.—ED.]

AN UNFAIR COMPETITION.

SIR,—In the competition for Hindley Cemetery, recently decided, the surveyor to the board, to whom the competing architects had to apply, and by whom particulars were furnished, was allowed to submit designs. They were selected, and the first prize awarded for them.

Will you express your opinion as to the fairness or otherwise of this course?

The board maintain that they had a perfect right to receive and select his plans.

I, and other competitors, contend that any one connected officially with the board was debarred in honour, if not in law, from competing.—I am, &c.,

R. KNILL FREEMAN.

Bolton-le-Moors and Derby, July 4th.

[We consider such a competition supremely unfair.—ED. B. N.]

COMPETITIONS.

SIR,—I have to beg permission to ask, in your columns, for information as to the results of two recent competitions—namely, those for cemeteries at Reddish (near Stockport), and at Hindley (near Wigan). The former was promoted by a joint-stock company; the judgment was long delayed; and my drawings were returned ultimately with carriage and thanks alike unpaid (both of which I obtained subsequently); and with the information that certain designs had been retained for “further consideration.” As a matter of curiosity, I should like to learn whether that “consideration” has yet fructified into a decision. It will be well for competitors, in dealing with joint-stock companies, to learn, before embarking their time on a hazardous speculation, in what state the company exists; as their labour and learning may otherwise form a gratuitous portion of the machinery by which the company is “floated;” and may fail of any chance of remuneration if the “floating” fail. This forms only another rock ahead in the career of the profession.

At Hindley the business was conducted with perfect courtesy, but the result was not communicated, nor has it up to the present time been published. Can any of your readers inform the profession on these points, and oblige, amongst others,

July 3, 1877.

A COMPETITOR.

[“A Competitor” will see by Mr. R. K. Freeman’s letter in to-day’s issue of the BUILDING NEWS that the Hindley Cemetery competition has been decided in a way that reflects anything but credit on the committee.—ED. B. N.]

The foundation stone of St. Peter’s Church, Allerton, was laid on Friday. The church, designed by Messrs. Petersen and Thompson, Bradford, 84ft. long, 25ft. wide, will seat 320 persons, and the cost is estimated at £2,500.

Intercommunication.

QUESTIONS.

[5058].—Keen’s Cement.—Will some reader of the BUILDING NEWS kindly inform me how to use Keen’s cement to make a good job? I have some window reveals to do, and am not acquainted with it. Should the walls be scratched on, and the laths (with lime) before it is put on? And how should it finish with the other walls?—COUNTRY PLASTERER.

REPLIES.

[5054].—Fences.—Neither you nor your neighbours are bound in law to fence your lands, so that there is no legal liability on your part to maintain any of the fences. If you are under contract by lease to maintain and repair fences, you must ascertain the boundary of the land leased to you, and are then only bound to keep in repair such fences as are on the said land unless there are express covenants as to party fences to be kept in repair at joint expense. As to ownership of fences, the presumption, in absence of better evidence, is, that the fence belongs to the land on that side of it on which the posts are fixed, so that in fixing the outer boards or pales the points of the nails are towards the land to which it belongs, the fair sides of the fence facing the neighbour’s land. Were a fence otherwise fixed, the owner would lose the use of a strip of land as wide as the thickness of the posts.—L.

LEGAL INTELLIGENCE.

LUBBROOK v. BARRETT.—Architect fraudulently withholding certificate—Collusion with builder’s employer—Demurrer.—An action will lie by a builder against an architect, who, fraudulently and in collusion with the builder’s employer, refuses to certify that he is satisfied with the work done, whereby the builder is unable to obtain payment, if the architect has an interest in the contract between the builder and his employer.—This was a demurrer to a statement of claim in the Common Pleas Division. The statement of claim was as follows:—
1. The plaintiff is a painter and decorator, of No. 11, Norris-street, Haymarket. 2. The defendant is an architect and surveyor, carrying on business at 4, Dowgate-hill, London, E. 3. The defendant was employed by one Alexander Ridgway, for reward and commission in that behalf, to negotiate and effect a contract for the repair of certain premises known as 30, St. Martin’s-street, St. Martin’s-in-the-Fields. 4. And the defendant, with a view to earning the said commission, induced the plaintiff to make, and the plaintiff did make to the defendant a certain tender for the repairs above-mentioned, which, as far as is material, is in the words and figures following:—“11, Norris-street, Haymarket, 18th March, 1875. To Mr. W. Barrett, 4, Dowgate-hill, City. Sir,—I hereby agree to perform all the works at No. 30, St. Martin’s-lane, for Col. Ridgway, according to the specification or schedule prepared by Mr. Waghorn, to his and your satisfaction, for the sum of £120. And I also agree to perform, without any additional charge, all other repairs and restorations that may be necessary to these premises, or that may be fairly construed as a dilapidation, although not particularly described. The restorations in the basements are to correspond in every respect with the basement of No. 31 adjoining, except the copper and cistern which are now in the yard, and the range; which are not included in this contract, but the chimney breast is to be properly altered ready to receive it. The whole of the works to be done in a good, sound, workmanlike manner, and the whole of the premises to be left in a clean and tenantable condition, fit for occupation, and to be completely finished in every respect on or before the 30th day of April next—CHARLES LUBBROOK.” 5. And the defendant accepted the said tender, and agreed with the plaintiff that as soon as the work was done as therein specified, in a sound and workmanlike manner, he would signify his satisfaction in an adequate and sufficient manner to enable the plaintiff to recover the price thereof from the said Alexander Ridgway. 6. The plaintiff duly executed the said work in accordance with the specification referred to, in a good, sound, workmanlike manner, and to the satisfaction of the said Mr. Waghorn, and duly carried out all the clauses of the said contract, save such as the performance of the same was waived by the said Alexander Ridgway and the defendant, and the plaintiff altered and amended all such things as were pointed out by the defendant as not being to his satisfaction, as far as the nature and age of the house (the subject-matter of the contract) would admit of, and all conditions were fulfilled, save those as aforesaid waived, and all things had happened and were done to entitle the plaintiff to have the defendant give such sufficient certificate or other intimation of his satisfaction to enable the plaintiff to recover from the said Alexander Ridgway the agreed price; yet the defendant, although he admitted to the plaintiff, and to the plaintiff’s solicitor, that he was satisfied with the work, falsely contriving, and in collusion

with the said Alexander Ridgway, and by his procurement and for fear of forfeiting the further customs and rewards of the said Alexander Ridgway, and in fraud of the plaintiff, and contrary to the true intent and meaning of the said contract, neglected and refused to admit or certify that he was satisfied with the work, but on the contrary falsely pretended that he was dissatisfied with the same, and that it was not done in a workmanlike manner.

7. By reason of the premises, the said Alexander Ridgway refused to pay to the plaintiff the whole of the agreed price justly due to him on the said contract, and through the wrongful acts of the defendant above-mentioned, the plaintiff was unable to recover from the said Alexander Ridgway more than what the said Alexander Ridgway chose to pay, which was a sum less than the balance justly due, and the plaintiff accordingly lost the balance thereof, to which he would have been otherwise entitled, and the said balance still remains wholly due and unpaid to the plaintiff. The plaintiff claims £100 damages.—Clarke, for the demurrer.—The demurrer raises the question whether an action will lie by a builder against an architect, who has been employed, and whose certificate has been rendered necessary before payment of the builder for the work done, for refusing to give his certificate. *Batterbury v. Vyse* (2 H. & C. 42) decides that the employer is liable to the builder where there is fraud and collusion between him and the architect, which prevents the latter from giving his certificate. Therefore, this action should have been brought against the employer. There is no allegation here that the architect was in fact satisfied. Grove, J.: How is that material when fraud and collusion are alleged?—There is no contract with the architect. Grove, J.: This is not in contract, but in tort.—It is not shown by this statement that he has been defeated in recovering the amount from Alexander Ridgway, the person he contracted with. Grove, J.: The claim alleges that he was unable to obtain payment.—There is no precedent for such an action as this.—Woodward, in support of the claim: *Batterbury v. Vyse*, cited on the other side, is really an authority in favour of this action. In *Lumley v. Gye* (2 E. & B. 216), maliciously inducing a person to break a contract, was held to form such a conjunction of wrong and damage as constitutes a ground of action. In *Com. Dig. v. Action on the Case*, it is laid down that wherever damage is done through the wrongful act of another, an action on the case will lie. *Pasley v. Freeman* (3 T. R. 51) is to the same effect, and is a leading case on the subject. Therefore, there is here a legal cause of action. I particularly inserted in the claim that it was done with fraud and collusion, so as to keep well within the cases. In *Pasley v. Freeman*, and *Lumley v. Gye*, the same argument that the action was a new one was urged; but the judges said that there being no legal objection to it in principle, the fact that there was no precedent for the particular action made no difference.—Clarke, in reply: There can be here no damage through the defendant's act, because the plaintiff has not lost his right of action against his employer, which *Batterbury v. Vyse* shows that he possesses.—Grove J., after referring to the statement of claim and the arguments of counsel, proceeded: One might have expected that an action of this sort would have been brought before; but it appears not to have been so. There can be no doubt that an action will lie by the builder against his employer, when the architect's certificate is fraudulently withheld by collusion between the architect and the employer. *Batterbury v. Vyse* has decided that. I can see no reason why it should not lie against the other party to the fraud. Can it be said that an action would not lie jointly against the two persons in collusion to withhold the certificate? It has been argued that there is no necessary damage here. I should say that where there was a breach of contract occasioned by the tortious act of another, an action would lie without special damage. But it is not necessary to decide that now, because here there is special damage alleged. Neither is it necessary to decide whether this action would lie against a stranger to the contract; because here there are averments showing that the defendant had an interest as to earning his commission, and was cognisant of the agreement between the parties. Here there is every element requisite to constitute a legal cause of action. I am of opinion, without any doubt, except such doubt as must always arise in cases *prima impressionis*, that the statement of claim discloses a perfectly good cause of action; and that this demurrer must therefore be overruled.—Demurrer overruled with costs.

THE CHARGES FOR PLANS OF BUILDINGS.—Mr. Samuel Clarke, builder, of Plymouth, for whom Mr. Charles Rodda appeared, sued at the Stonehouse County Court Mr. Henry Matthews, confectioner, of Plymouth to recover £7 10s. for work done. Mr. T. C. Brian appeared for the defendant.—The claim was for making two sets of plans for the erection of stables in Higher-lane, and preparing an approximate estimate for the same, for which

1½ per cent. would be an architect's charge, and this, on two sets of plans, at an estimated cost of £350 each for the buildings, would make ten guineas.—Mr. J. H. Keats, architect, of Plymouth, was sworn by the plaintiff's solicitor, but he asserted that three guineas were enough for the work done, on the ground that the plans were not completed.—Mr. J. L. Hodge, surveyor to the Stonehouse Local Board, and Mr. John Hicks, a member of the Plymouth Town Council, swore that the charges were fair.—The Judge, without calling upon Mr. Brian to examine witnesses, considered that three guineas were sufficient for the plans, and gave a verdict for that amount, which, Mr. Brian stated, had been paid into court.

CONCRETE BLOCKS IN WALLS.—Thames Police-court.—The District Surveyor of Bromley-by-Bow, Middlesex, summoned Mr. Harris, a builder, before Mr. De Rutzen, at the above court, for partially constructing the walls of three houses with concrete blocks, without having obtained the special sanction of the Metropolitan Board of Works. The solicitor who appeared for the defendant contended—first, that the concrete used by his client was a "hard and incombustible substance" within the meaning of the Building Act; and, second, that the Metropolitan Board of Works had no power to grant licenses or to enforce rules for the composition of concrete. The district surveyor proved the use of concrete in the partial construction of the walls, as alleged in the summons, and the chief clerk of the superintending architect's department of the Board of Works stated that no application had been received from the defendant for a license to use concrete in the construction of the walls of his houses. A sample of the concrete used by the defendant was produced in court, and both these witnesses stated it was of a friable nature, and very inferior to that which would have been made had the rules incorporated in the licenses granted by the board been properly observed. Two surveyors were called for the defence, and although one of them admitted that the concrete used by the defendant was "rather brittle," they both concurred in the opinion that it was a suitable material for the walls of small houses, and as it was "hard and incombustible" it appeared to them to literally fulfil the requirements of the Building Act. A Mr. Wicks (builder) was called, and stated that some years ago he built several houses in Poplar entirely of concrete of a description very inferior to that used by the defendant, but no objection was made to its being used. The magistrate, having taken time to consider the matter, delivered judgment on Monday last to the following effect:—"I do not intend to discuss the question as to whether the concrete used by the defendant is a 'hard and incombustible material' within the meaning of the Building Act, but I purpose confining myself to the issue raised by the district surveyor, which is simply—Is a person who desires to build the walls of a building with concrete obliged to obtain the special sanction of the Metropolitan Board of Works for the use of such material? On referring to the first schedule preliminary of the Building Act, I find it laid down in the second rule that every wall shall be 'properly bonded,' and I hold that this is not applicable to a concrete wall, and I am of opinion that buildings constructed of concrete are buildings to which the rules of the Building Act are inapplicable, and that, therefore, the special sanction of the Metropolitan Board of Works to the erection of such buildings must be obtained in accordance with the third rule miscellaneous, first schedule preliminary, of the Building Act. It appears to me most essential that proper control should be exercised over the composition of concrete intended to be used for walls of buildings, otherwise friable, and therefore unfit, material might be used for that purpose under the name of concrete, and there would be danger of such buildings falling. In the present case it appears that only a small portion of the walls have been built in concrete. I do not therefore, propose to make an order to pull them down unless the Metropolitan Board of Works consider it necessary." The district surveyor has reported the decision of the magistrate to the Metropolitan Board of Works, whose decision is that no further action is to be taken.

MR. SWINDLEHURST AND HIS "MIDDLE MAN" ARRESTED FOR CONSPIRACY TO DEFRAUD.—On Tuesday, at Bow-street, Edward Saffery, estate agent, and William Swindlehurst, secretary and manager of the Artisans, Labourers, and General Dwellings Company, were brought before Mr. Vaughan, on a warrant, charged with having conspired to defraud the shareholders of the sum of £60,000. Mr. Douglas Straight, who conducted the prosecution, said that these proceedings had been taken at the instance of a committee appointed by the shareholders to investigate the affairs of the company, which, up to a certain time, had been apparently carried on with a fair amount of prosperity. The matter was placed in the hands of Mr. John Morris, of the firm of Ashurst and Morris, who, after full investigation, arrived at the conclusion that the defendants, by a process of combination, which, after discovery, seemed simple enough, had appropriated large sums of money constituting the difference between the sums actually

received by them and paid on behalf of the company for the purchase of certain estates. Up to the present time Mr. Swindlehurst had enjoyed the full confidence of the shareholders, and when the committee of investigation was appointed, he expressed his desire to supply every information in his power as to the affairs of the company; but on Saturday last he suddenly withdrew from the post which he had occupied, absented himself from the office, and was apparently intending to abscond altogether. The learned counsel referred to the defendant Saffery as the "middle-man" in the transactions between the company, as represented by Swindlehurst, and the original vendors of the property, and mentioned, as examples of the same, that the Shaftesbury-park Estate was sold to the company, apparently, for £28,000, whereas the sum actually paid to the vendor was only £25,000; another property, called the Cann Hall, near Epping Forest, was represented as having been acquired by the company for £48,000, although only £35,000 was paid for the same; the Queen's-park Estate, sold for £17,000 was charged to the company at £57,000. The complicity of the two defendants in these transactions would be amply proved, and bank-notes received by one defendant had been traced to the possession of the other in the course of the investigations. After referring to the sections of the Larceny Act, under which the warrants were obtained, Mr. Straight said he was prepared to go into the case only so far that a remand might be granted. The Hon. Evelyn Ashley, M.P., deposed that he was a shareholder of the company, of which Dr. Baxter Langley was the chairman and Mr. Walton the deputy-chairman. The defendant Swindlehurst was, until Saturday last, the secretary and manager of the company. At a special meeting of the shareholders a committee of investigation was appointed to examine the accounts of the company. Mr. S. Morley, M.P., Mr. W. H. Stone, Mr. Mocatta, Mr. Kempster, Mr. Ernest Noel, Mr. Cutler, witness, and others were members of that committee, witness being appointed chairman. They commenced an inquiry at the offices of the company in Great George-street, Westminster, and after several meetings placed the matter in the hands of Mr. John Morris, Mr. Edwin Waterhouse, accountant, being also employed to assist. They inquired into the purchase of the Shaftesbury-park, Cann-hall, and Queen's-park estates, which purchases were made between 1872 and 1874. Witness gave the details of these purchases, as stated in the opening of Mr. Straight, and showed that the amount paid was about £37,000 less than the sums charged to the company. The defendant, Saffery, acted in each case as "middle man." Witness knew nothing of Saffery, but had heard that he lived at Cookham, and had offices in Essex-street, Strand. The defendant, Saffery, wished to know what was meant by the term "middle-man" as applied to him: Witness explained that the man who stood between the owner and the purchaser of a property and made a profit out of the sale was a "middle man." Mr. Vaughan advised the defendant, who was not represented by counsel, to defer his cross-examination for the present, especially as the evidence so far had hardly affected him. Mr. John Morris was examined to show the connection of Saffery with the purchase of the three estates in question. He did not deny this fact, but said the money did not pass through his hands. Witness had communicated with the solicitors representing the owners of the estates and the company's solicitors, and found the amount of purchase-money accurately stated. The difference between the vendors' charges and the sum charged to the company was also accurately stated, and the defendant, Saffery, said it was only a fair profit on the transactions to be derived by the intermediate vendor. In answer to the defendant, witness stated that Saffery attended very promptly when required to give an explanation of his share in the business. The case was remanded, bail being accepted for both defendants—two sureties, in £500 each, besides personal recognisances in £1,000 each—with the usual notice.

CHRISTIE v. MITCHISON.—Demurrer—Party walls—Contribution to expense of—Use and benefit of by defendant.—A statement of claim in substance alleged that the plaintiff purchased a building site of one J. in Crown-street, Newcastle, and covenanted to erect thereon houses according to a certain specification. The specification, in providing for the erection of a party wall, declared that the purchaser first building a party wall was to be repaid by the purchaser of the adjoining site one-half of the cost of such party wall, the value of the same to be determined by the vendor's architect. The statement of claim further alleged that the plaintiff erected a party wall, and that the defendant afterwards became possessed of an adjoining site on the terms that he should build in accordance with a similar specification, and should observe, perform, and abide by all the terms of the said specification relating to the party wall: that the defendant built a house on the adjoining site, and made use of a moiety of the party wall erected by the plaintiff, and promised to pay the plaintiff one-half of the value of the same (which had been ascertained by the vendor's architect), and one-half of the architect's fee, but had not paid the same. Held, on demurrer, that the statement of claim was good, the defendant having made use of the party wall, knowing that money was to be paid to some one for use hereof, and having afterwards promised to pay plaintiff.

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 13, 1877.

THE SCIENCE OF ÆSTHETICS.

IT will be a new doctrine to many to be told that the states of mind—we use the term advisedly—arising from the contemplation of a work of fine art, such as a musical composition, a fine painting, or a work of architecture, have a physical origin, and are related to our nervous organisation. There are many people who will probably laugh at the idea that their enjoyment of Mozart or a Raphael—a simple melody or a pleasing chimney-piece—is connected with their vital functions. To the artist who believes in the transcendental origin of his art, the notion will be still more repugnant, for he now regards his genius for art in the light of a Parnassian inspiration—something that is akin to the supernatural—more exalted than anything human. But to our minds a scientific explanation of the phenomena of our sensations or emotions, does not rob art one iota of its high ends and purposes. It rather, we think, tends to give it a solid basis of reality—something beyond mere whims and fantasies. It is rather early in the day to broach the subject; for it is a lamentable fact to admit that there is scarcely one artist in a hundred who knows or cares to know anything of science beyond the bare wants and literature of his own art. Even a contemporary falls into absurd mistakes in dealing with the theory we are about to describe. The writer seems to think that, because we have dispensed so long with such knowledge as this “new” æsthetic revelation has given us—that because the author of Salisbury spire was ignorant of the deductions of the physiologist—it is vain to unlearn the time-honoured doctrine. What doctrine? Then another mistake is to confound our knowledge of physiological facts with æsthetic progress. What writer on this subject has ever declared that our artistic progress must necessarily be measured by our physiological? Such ideas as these arise from a confusion of the objective with the subjective states of mind, and we dismiss them for what they are worth.

Mr. Grant Allen, in a new work on “Physiological Æsthetics,” has given us a clear exposition of the theories of our greatest modern psychologists on the subject of æsthetics, and as we have read the work with some attention, we shall endeavour to give our readers some notion of the advanced views entertained on this branch of psychological science. The theory broached is not altogether new, as it really is a development in one direction of the “evolution” theory now generally admitted by some of our greatest minds—Darwin, Herbert, Spencer, and others. We need scarcely say some very ludicrous mistakes are entertained of the hypotheses of the former writer, while the works of the latter are too profound and comprehensive to have been garbled to the same extent. Some time ago we attempted to place before the readers of the BUILDING NEWS some deductions upon the subject of æsthetic laws, when one architect actually asked the meaning of the term “positivism,” and who Comte was? This admitted ignorance is even less excusable now. Mr. Allen Grant’s work only attempts to prove, in regard to our æsthetic feelings, what all modern physiologists have proved with reference to our sensations generally, and in so far he is simply extending a general law previously referred to in these pages. Æsthetic feelings are shown to be constant subjective counterparts of definite nervous

states. In this brief sentence we have the sum and substance of Mr. Allen’s essay, and before writers try to demolish they at least ought to explain. We do not assert that this proposition has been so elaborately worked out and demonstrated as it is possible to be, but we consider the opponents of the theory should first prove it wrong, or adduce facts to verify their own hypotheses. Till they do this they are only “begging the question,” and we must be content to follow our own inductions from facts. Burke, in his “Essay on the Sublime and Beautiful” has tried to show that beautiful objects have a tendency to produce “an agreeable relaxation of the fibres,” and hence he says that smoothness and delicacy are qualities essential to beauty. Alison, in his well-known work on “Taste,” refers the emotion to association, and that it is something quite different from sense; Jeffrey, in the “Encyclopædia Britannica,” adopts the same theory; Dugald Stewart, in his “Philosophical Essays,” agrees with the notion that association determines our preferences in colour, form, and motion, but also maintains a primitive pleasure of colour and the intrinsic beauty of objects of sight; Hogarth, in his “Analysis,” takes account of certain elements in lines, such as fitness, variety, uniformity, simplicity, intricacy, and magnitude which produce beauty; while Ruskin discusses the subject in too transcendental and ideal a manner to understand, though he acknowledges the æsthetic character of the senses of sight and hearing. It will be observed these different views contain more or less of the truth, but they all reason from the individual consciousness, and take account of the external properties of beautiful objects, their reasoning being more deductive than inductive. Now, when we see a fine piece of architecture we know its external proportions, gradation of parts, lines, and forms, such as those mentioned by Hogarth, give us pleasure; while another building gives us pain, or produces a feeling of disgust, from precisely opposite properties. These are facts that we can assure ourselves of if we know anything at all about architecture; a feeling of disgust or dissatisfaction we know to arise from certain kinds of forms and contrasts, and an opposite feeling from opposite properties; but beyond this general inference we scarcely trouble ourselves about. How and why such and such proportions, lines, and combinations are more pleasing than others is a question belonging to the physiologist, who, from a generalised experience of sensations and the modes the nerve centres are affected, has deduced a general law that explains better than any previous theory our feelings on this subject. Mr. Grant Allen confesses frankly that he is not “an excessive devotee of fine art in any form,” but he adds:—“I count this a gain in attempting the psychological analysis of æsthetics, because, as Helmholtz well observes, the worshipper of art is liable to bring with him into the consideration of its simplest elements those enthusiastic feelings which are aroused in him by its highest developments.” We need hardly say this view is quite justified, though it is obvious to any artistic reader that the author has evinced, in speaking of architecture, painting, music, and the other arts, a decided feeling, as we shall have occasion to note. The treatise begins by explaining the simple pleasures in bright colour and rude imitations which have always delighted the child and the savage, and goes on to explain the more complex gratification and tastes of the present day. We have space here only to point out the leading positions as regards art, referring our readers to the treatise itself for further detail; and we shall try to divest it of unnecessary reference to organic structure. The general relation of

physical pleasure and pain to our organism is first pointed out, and this is so well established that we need not say anything of it. All know that pain is produced by dismemberment of bodily tissues in various ways. Pleasure is not so easily explained, but the teachings of recent authorities have almost proved the truth of the law* “that states of pleasure are concomitant with an increase, and states of pain with an abatement, of some or all of the vital functions.” Mr. Allen improves upon this, and says, “pleasure is the concomitant of the healthy action of any or all of the organs supplied with afferent cerebro-spinal nerves to an extent not exceeding the ordinary powers of reparation possessed by the system.” In other words, a pleasure is referable to an unimpeded action of the body, in which the circulating, respiratory, and digestive functions are at ease. No one in bad health can fully enjoy a fine piece of music or architecture, and every one will readily attest the truth that the strongest sensuous pleasures result from a harmonious exercise and stimulation of the nervous organs. But these have reference to the lowest pleasures, though upon them the author justifiably rests his superstructure of the more complex emotions known as æsthetic. We may as well premise that the writer nowhere leads us to infer that simple sensuous pleasures are allied to those produced by art, though those who reject the scientific explanation of æsthetics frequently throw this false charge against their opponents—perhaps more from ignorance than intention, however. Physical and emotional pleasures are well distinguished. Sight and hearing are regarded as the two higher senses, because they are so little connected with body-serving or vital functions; and hence æsthetic pleasure is defined to be “the subjective concomitant of the normal amount of activity, not directly connected with life-serving functions, in the peripheral eud organs of the cerebro-spinal nervous system.” The ultimate difference of the beautiful is “that which affords the maximum of stimulation with the minimum of fatigue or waste in processes not directly connected with vital functions.” Let us briefly refer to a few illustrative examples in support of this principle. Speaking of taste, the author anticipates the objection raised by some, who ask how we can account for different tastes in different individuals? And, again, it may be objected that if our perceptions of beauty have a physiological origin, they ought to be the same in all individuals. Now, it is easily shown that perceptions differ because nervous constitutions differ. For example, the vulgar, as Mr. Allen says, are pleased by great masses of bright colour—red, orange, purple, which give their nervous organisation pleasure, as affording the normal amount of stimulus; while the refined are more discriminative, and prefer delicate combinations of complementary to primitive hues. No instance, we think, can be brought to corroborate more the nervous origin of these perceptions than that of colour. In music we find the same thing. The untutored ear delights in a chorus rather than in one of Bach’s fugues, and classical compositions are invariably counted unenlivening and unmusical by those whose perceptions can only appreciate the comic song of the music-hall. Perceptions hence arise from the law of “natural selection,” the nervous centres of cultivated persons becoming more discriminative. We might go on multiplying examples to prove that the nicer shades and meanings in every kind of composition, from the lowest sensuous to the highest æsthetic, result from a differentiation of nervous susceptibilities. A man of vulgar or coarse taste generally goes from one extreme

* See Professor Bain’s work on The Emotions, &c.

to the other: he can seldom appreciate nice gradations and distinctions, like the man of cultivation, or the artist, and this fact forces itself upon us in every art, and even among literary men, in such a manner that we take it to be one of the greatest arguments in proof of this theory. It must be admitted, too, there is a great variety of tastes. Thus, there is always a larger proportion of inartistic than artistically-minded people; but there are artists, as the author observes justly, for every class of the public, and each knows what their public requires. These facts do not detract from the doctrine, but confirm the law that individuals differ according to their susceptibilities, or personal appreciation of that which calls up emotional and intellectual activities. Taste is regarded as the personal equation of aesthetics. Nor must it be imagined that an absolute aesthetic standard is impossible. On the contrary, says our author:—"It follows from what has been said, that bad taste is the concomitant of a coarse and indiscriminate nervous organisation, an untrained attention, a low emotional nature, and an imperfect intelligence; while good taste is the progressive product of progressing fineness and discrimination in the nerves, educated attention, high and noble emotional constitution, and increasing intellectual faculties." This opinion does not certainly do an injustice to the art-talent, while it certainly places it upon a more rational footing. The author goes on to observe that though it is impossible at our present state of development to set up a final and absolute standard of taste, "we are yet bound to accept as a relative and temporary standard the judgment of the finest nurtured and most discriminative" among us, who have paid the greatest attention to aesthetic perceptions. This doctrine is equivalent to another—viz., that we can educate our taste; and no one, we fancy, can gainsay this. In architecture, as in all kinds of decorative art, the public are continually being led onwards in their appreciation. Again, though there are artists for every class of the public, it does not follow that the public lead in taste. It is a fact that we cannot overlook among architects and artists generally, that "the highest who work up to the standard of their own taste usually gain little recognition during their life-time. But the taste which they have educated gains them at last a late or a posthumous recognition; while the little artist of the day passes away and is forgotten. The works of the highest art, like the works of the highest intellect, necessarily appeal to a very limited audience." It is clearly shown that the artist is one who has trained his nervous organism in such a manner that he can perceive every wave of pleasure or pain, every delicate thrill of harmony according to the hereditary structure given him.

We pass on to notice some of the phenomena which support these views. Speaking of harmony and discord of colour, the author observes what has been established by physicists, that "colour-harmony consists in such an arrangement of tints as will give the various portions of the retina stimulation in the least fatiguing order." Colour discord is the opposite. All tasteful combinations are produced in accordance with this formula: in fact, those colours give the most pleasure which call into play the opposite fibres, while those are the most disagreeable which stimulate the same class of nerves. The complementary colours are founded on this fact. If red be present, the eye—to find the agreeable balance—requires green; but if we juxtapose green and blue, orange and red, we produce the greatest fatigue of the nerves, and the most unpleasant result. As colour depends on the optic-nerve fibres differentially affected, form

depends on the number and relative position of them. We have only space to point out here one or two of the numerous exemplifications of this theory. Agreeable form is the perception produced by the most agreeable muscular actions of the eye in cognising adjacent points. All graceful lines and curves produce least fatigue, and harsh and perplexing forms the reverse; and although it is difficult to carry analysis on this subject very far, we are constrained to admit that to the optic nerves we must look for an explanation of these matters. These are questions, it is admitted, belonging entirely to the intellectual half of our nature, and the author fairly places the organ of sight as the first in the aesthetic hierarchy on this account. He shows hence that the higher arts are architecture, sculpture, and painting. We may another time refer to some of the special applications of the theory, and to the author's allusions to architecture. In the last it is shown that the intervention of the intellect (of numerous complex emotional factors) is concerned. A perfect architectural composition is thus the objective counterpart of those mental states which give us the greatest pleasure and stimulation, with the least amount of fatigue—while a vulgar piece of building or engineering is exactly the opposite.

EUROPEAN TIMBER.

THE real area, capable of producing valuable wood in Austro-Hungary, amounts to something above 9,270,000 hectares (about 19,000,000 of English acres.) This area is decreasing, though in some provinces it does so in a small proportion and gradually. On an average, 31 per cent. of the surface of the country has remained under the cultivation of trees, and in some of the provinces more than 50 per cent. of the whole surface is devoted to forests. Provided, however, that care is taken to replenish all the area of the forest in different gradations from the youngest to the oldest trees, it may be stated without exaggeration that an annual increase of 32,000,000 of "test cubic metres" (the official and usual measure) may be reckoned upon. This does not include the wood that may be made use of in the intervals of clearing, nor of the quantity of wood kept as stock or provision. The means for transporting timber are so insufficiently developed in Eastern Galicia, the Bukovina, and, owing to their inaccessibility, in the upper regions of the Alps, that the forests in these places have remained in all their pristine grandeur and luxuriance, and are still unavailable. The country produces pine, larch, fir, beech, oak, elm, willow, and poplar, and the export trade averages about 67,400,000 cubic metres decennially.

The forests of Hesse Darmstadt and Baden cover about 591,975 English acres, leaving only 162,145 acres for agrarian purposes. There are besides about 9,797 acres of wood belonging to Hesse in Prussian and Bavarian territories, which swell the total area of land covered by woods to 604,772 acres—in other words, four-fifths of the Grand Duchy is wooded. In Baden the forest-covered land occupies an area of 1,268,956 English acres, which is equivalent to one-third of the whole Grand Duchy. There is no appreciable decrease here, as every thirty years the land which has once belonged to the cultivation of trees, must return to its original employment. The forests contain some of the finest timber in Europe, and consist of pines, oaks, firs, &c. The various provinces of Prussia produce timber as follows:—

Province of Prussia.—Pine, larch, beech, oak, Norway maple, sycamore, elm, alder, birch, willow, linden, ash, and aspen. Pine wood comprises three-fourths of the total extent of forest in this province.

Province of Posen.—Pine, oak, birch, beech, alder, elm, maple, aspen, and hornbeam.

Province of Pomerania.—Pine, oak, birch, beech, alder, larch, elm, maple, hornbeam, aspen, linden, and hazel.

Province of Silesia.—Pine, pitch, fir, oak, alder, birch, and beech.

Province of Brandenburg.—Pine, oak, beech, birch, ash, elm, and maple.

Province of Saxony.—Alder, birch, oak, elm, maple, beech, hornbeam, hazel, yew, pine, and pitch fir.

Province of Westphalia.—Alder, beech, oak, elm, maple, birch, pine, ash, and larch.

Rhine Province.—Beech, oak, pine, larch, hornbeam, white alder, and pitch fir.

Hohenzollern.—Fir, pine, oak, aspen, birch, alder, willow, and beech.

Schleswig-Holstein.—Beech, oak, hornbeam, maple, poplar, hazel, pine, and larch.

Province of Hanover.—Beech, oak, pine, fur, larch, maple, ash, elm, hornbeam, birch, alder, and yew.

Province of Hesse-Nassau.—Beech, fir, oak, maple, elm, birch, aspen, willow, hazel, hornbeam, alder, larch, and yew. Respecting the recently annexed provinces of Alsace-Lorraine, we have no available statistics. Exclusive of these, the forest land covers 23 per cent. of the whole area of the kingdom. Seventy per cent. of the total annual produce of the entire country is hardwood, of which one-fifth is timber, and thirty per cent. firewood of stumps, roots, and brushwood. Probably in no country is greater care taken of forests than in Germany. Strict precautions are taken to prevent anywhere a greater area being cleared than is annually replanted. Most large forests are mapped out according to their size and the age and quality of the trees; a section being annually felled, and an equal area replanted. The timber trees of Saxony are similar to those of Prussia, and the whole forest area covers about 465,000 hectares. There is a general tendency to diminution arising from the forest land being constantly thrown into cultivation by small proprietors, and about one-third of the forests and woodlands belong to the State. Competent authorities give 1,000,000 cubic feet as the quantity cut in all Saxony every year, and the amount is not considered to be excessive. Wurtemberg may be generally divided into five distinct natural timber-producing districts, following the geological and climatic conditions of the kingdom. They consist of, 1, the pinewood districts of the Saxe Circle; 2, the hardwood district of the Unterland; 3, the pinewood district of the Black Forest; 4, the hardwood district of the Swabian All; 5, the pinewood district of Upper Swabia. In the pinewood districts the spruce and the silver fir largely predominate, although Scotch fir is to be found, chiefly on southern slopes, chiefly in conjunction with spruce, and sometimes separately. In the hardwood districts, the beech, interspersed more or less with oak, furnishes the bulk of the growth. Of other trees there are the small beech, ash, maple, elm, birch, alder, lime, and various kinds of willow. Wurtemberg has a superficial area of 4,819,675 English acres, of which 30.6 per cent. are forest lands. The area of timber-producing lands is rather on the increase than diminishing, and between 1861 to 1873 there was an increase of about 10,000 acres. As might be supposed, the State exercises a vigilant control over the forests, and neglects no opportunity of increasing its forest property by the purchase of contiguous lands, so that any general diminution arising from clearances elsewhere is more than counterbalanced.

As near as can be ascertained, the extent of timber-producing forests and lands in Sweden (exclusive of Lapland, which has never been surveyed), is 3,190 $\frac{1}{2}$ geographical square miles, or about 30,000,000 acres, being 42.8 per cent. of the whole area of the country. It can hardly be said that the actual area of timber-producing forests is diminishing to any great extent, since comparatively small quantities of forest land are being brought under cultivation. The same cannot, however, be said of its productive power, which is rapidly getting smaller. The red pine or Scotch fir, and the white or spruce fir, form the staple of the forests—the greater portion of which are situated in the northern and central provinces. They also produce oak, beech, birch, aspen, elm, and larch. The timber and deals exported to this country are of red and white pine. Birch only attains to a small size, and is chiefly used for firewood. Aspen is used for making matches, which industry is one of the most flourishing in the country.

Sweden exports her timber to almost every country in the world; perhaps China and Japan are the only exceptions. Great Britain consumes the most, and then comes France, Germany, Holland, Denmark, and Belgium. Very stringent forest laws are now enforced, the good effects of which cannot be seen before the lapse of some years, but there can be no doubt of their ultimately effecting a marked improvement in the yield of the forests.

The total area of forest-producing land in Norway is computed at 66,000 square kilometres, but in this survey considerable so-called timber-producing lands consist of comparatively unproductive rocks, swamps, and moors. The pine and the fir, even more than in Sweden, constitute the riches of the Norwegian forests. The Scotch fir is found up to the most northern latitudes, and grows there up to a height of 3,400ft. above the sea level. The spruce fir ceases near the Arctic circle. The forests are principally situated in the east of Norway, near Christiania, Hamar, Thronthjem, and Christiansand. Those of Bergen have long since been exhausted. In the western districts of the country forests can hardly be said to exist. As in Sweden, strict forest laws are now in force, but the mischief done by indiscriminate felling will take long to repair. In Messrs. Churchill and Sims' circular of the 5th June, they remark—"So few deals now come from Norway that there can be no longer said to be a trade in them." Battens and prepared floor boards form the principal export, and wood, 9in. wide or upwards, cannot be supplied as formerly.

The forests of Russia are, in several respects, an important feature of the country, as a physical characteristic, in a commercial point of view, and from supplying fuel in a country only recently found to possess coal. Estimating the surface of European Russia, says Mr. Schnitzler, at 402,100,552 dessiatens, 156,000,000 of this number are occupied by forests, 178,000,000 by uncultivated land, water, houses, and roads, 61,500,000 by arable, and a little more than 6,000,000 by meadow land. The forests, indeed, constitute a source of riches which may long continue inexhaustible, and which will be indefinitely increased by strict regulations for their economy and management. Seventy-six millions of dessiatens are still covered with pines, firs, and other cone-bearing trees, without counting the oaks, maples, beeches, poplars, and elms, which are by no means rare in the latitudes within the 52nd deg., and the birch which grows in still more northern regions. The governments of Novgorod and Tver, in particular, are studded with forests, and that of Volkonski, which extends to the Valdai Hills, is one of the largest known. In the government of Perm, out of 18,000,000 dessiatens, 17,000,000 are forest. Forest economy is now being more attended to, and young Russians are constantly sent to study forestry in the German and French colleges devoted to that science. The brushwood, covering a vast extent of forest land, consists almost entirely of the hazel, dwarf birch, alder, willow, and juniper. There are many conjectures as to the results to the timber trade, should unhappily any misunderstanding arise between England and Russia. Prices of Russian deals have already advanced; but, in all probability, any further serious rise would only drive builders to use cheaper wood, which, with the contracted building operations such a calamity as war might bring about, would make us more independent of Russian supplies than some are willing to admit.

Last week, Mr. Lascelles, of Bunhill-row, erected at Chelsea House, for the Earl Cadogan, a conservatory about 30ft. by 20ft., with a waggon-head roof of bend-wood ribs. The conservatory, which was designed to take the place of the usual tent, which is commonly put up at West-end mansions for dinner parties, was made, fixed, and painted, complete, within 7 days of the order being given. The work was done under the direction of Mr. W. Young, of Exeter Hall.

The competition for the new Vestry Hall, St. Mary Abbots, Kensington, still remains undecided, but we have received the assurance that "the committee will most likely report to the vestry at the next meeting, Wednesday, July 25."

ARCHITECTURAL SCIENCE CLASS.

ELEMENTARY REPLIES.

QUESTION 52.—Describe the meaning of "coarse stuff" and "fine stuff."—"Coarse stuff" is a rough mortar formed by mixing one or one and a half of sand to one of lime by measure, and about one pound of beast hair (which should be strong and free from grease and dirt), to every 3 or 4 superficial feet of mortar. Coarse stuff is put on the walls or ceilings to form the first coat, and is scored to form a key for the second coat. "Fine stuff" is pure lime slaked with a small quantity of water, and afterwards mixed to about the thickness of cream; the water is then allowed to evaporate until thick enough for use. A small quantity of white hair is sometimes mixed with it. It is used for the second or finishing coat, and should be applied when the coarse stuff is stiff.—R. J.

QUESTION 53.—In first rate work, what are the proper number of coats required for walls and ceilings?—Three—viz., 1st coat, coarse stuff; 2nd coat, fine stuff; 3rd coat, fine stuff mixed with a little hair if to be papered, or plasterer's putty mixed with sand if to be coloured.—WILHELMINUS.

QUESTION 54.—Describe the mode of finishing walls.—There are numerous ways of finishing walls, and the following are the principal:—1. For Paint.—Surfaces which are to be painted are finished with a coat of bastard stucco, consisting of 3rds fine stuff, and 3rd fine sharp sand. 2. For paper.—The finishing coat is a kind of inferior fine stuff or stucco, mixed with hair to form a firmer coat. 3. Coloured walls are properly washed with size before the application of the colour. 4. Cement walls.—In some positions it is advisable to have a cement finishing coat to form a hard surface. It is essential that the cement coat be grounded out with cement, as it will not properly adhere to plaster. It is finished with the trowel, and when a pure white surface is required for marbling, Parian cement is used. 5. Tile walls.—Tiles, or thin squares of marble, &c., are used as dados, and are set and jointed in pure cement.—T. N.

ADVANCED REPLIES.

QUESTION 52.—What is the best cement for internal walls left for decorations?—The Parian cement is the best for such purposes. It may be procured of two qualities, known as coarse and superfine. For an under coat the coarse quality may be used, with an equal quantity of fine sand, finishing with a thin coat of pure cement of the same quality on surfaces to be wholly covered with paint or paper; or with the superfine quality when to be tinted or polished. The superfine gives a pure white surface capable of taking a brilliant polish, and is rendered non-absorbent and washable. This cement may be tinted with any colours required—either mixed with the finishing coat—worked as scagliola, or, after the cement is applied to the wall surface, it sets sufficiently hard within 24 hours to admit of painting or papering. As no efflorescence is given off, the most delicate tints may be applied with safety. It is more economical to use Portland cement and sand as an under coat, or selentic cement if quicker setting is required. Martin's and Keen's cements are also white and quick-setting cements, and may be used for similar purposes as the Parian; but the latter is considered to be most easily worked. Johns and Co.'s cement may also be used as a finishing coat on common plaster, for surfaces to be painted, &c.—S. M. E.

QUESTION 53.—In designing cement or plaster cornices and ceilings, what principles should be observed?—The outline or profile of cornices should be designed so as to suit the apartments in which they are formed; the members must be proportioned so as to give the best gradations of light, according to the position of windows, keeping in view the friable nature of the materials to be employed, and avoiding thin edges with deep under cuttings. The arrangement of mouldings in a cornice will be regulated by the relative height of various rooms, or the proportion that height bears to length and breadth of apartments. Where the ceiling appears too high for the size of room, the apparent height may be diminished by forming the cornice chiefly on walls, or by introducing a coving springing from walls to ceiling, with any curve suitable. If the ceiling is low, apparent height may be obtained by forming a cornice with slight projections thrown chiefly on ceiling—a hollow being worked at junction of walls and ceiling so as to give a lighter appearance, and prevent excess of material at that point. Increased projections require to be supported by "dubbing out"—by driving in flat-headed nails—or by bracketing; or, what is more substantial, by corbelling out the brickwork approximately to the profile required. A section of the intended cornice may, with advantage, be tried in position, and the effect of adding enrichments, or the cutting-in with different colours noted, before a final selection is made. In designing ceilings the form and height of rooms will regulate the construction; when of a good height ceilings are best formed in panels. If arched or domed the panels should be arranged to accord with direction of rafters, &c. For flat ceilings the divisions formed by roof trusses, or by girder floors, with binders between, may be advantageously used, the laths or battens being fixed to fillets nailed to sides of same. Single floors with deep joists at intervals are also well adapted for such a construction. The projecting timbers may

either be wrought, or covered with wood casing or plaster, adding mouldings or enrichments as required. The main divisions of ceiling should range, so as to come over the solid parts of walls and not over openings. On ordinary ceilings a "key" may be obtained for the required projections in forming panels, by using flat-headed nails or bracketing. The number, size, and shape of panels formed will depend on the extent of surface to be covered, and shape of room. The centre panels—especially with coved ceilings—may be more deeply recessed than the others, and should be finished with a centre piece. Deep recesses should not be given to panels when the ceiling is low, as the shadows formed tend to darken the room. In such positions the ceiling should be flat; or with slight projections formed in the plaster.—S. M. E.

QUESTION 54.—Give a specification for general plastering.—The internal plastering to be executed with well-brut chalk lime of good quality, well mixed with clean, sharp drift, or river sand, and strong hair. The laths to be strong laths and half-laths, nailed at both ends with cast-iron nails. Lath the partitions and ceilings, render the walls, and float, set, and finish for paper, and whiten the ceilings. Twice lime-white the walls of cellars and stairs leading to them, also out-houses. Run cornices to drawing, dining, and breakfast-rooms, 12in. girt, with one enrichment to each. 2 1/2in. girt, the cornice to principal entrance and hall to be 9in. girt, and to the landings, bedrooms, and dressing-rooms on first-floor, put cornices, 7in. girt. The external work to be run, moulded, and finished in Portland cement of the best quality, in the proportion of 1 of cement to 3 of clean sharp sand.—ATTNEAVE.

CHIPS.

A new new girls' industrial school was opened at Sale on Friday last. The building is a plain structure of brick, dressed with stone, and has been erected from the designs of Mr. R. C. Price, of Manchester; the contractor being Mr. Wm. Southern, of Salford. The total cost was about £5,845.

Arrangements have been made for a visit of the members and associates of the Society of Engineers, on Tuesday, the 17th inst., to the works of the Victoria Dock Extension, Mr. A. M. Rendel, M.A., engineer, by permission of the London and St. Katharine's Dock Company.

The memorial stones of new National Schools at Seaforth were laid on Monday. The building will be entirely of brick, specially moulded and faced, the style being Gothic. It will accommodate about 500 children, and cost £4,000, exclusive of the site. The architect is Mr. Henry Hartley, of Lord-street, Liverpool, and the builders are Messrs. W. and G. Johnson.

The offer of Mr. Derboline, architect, of Manchester, to supply plans for a new abbatoir at Cardiff, for the sum of fifty guineas, has been accepted by the Cardiff Town Council.

An outdoor rink and pleasure garden were opened at Southend-on-Sea, Essex, on the 29th June. The rock-work is by Mr. Streeter, of Southend, the statuary and fountain by Mr. Brucciani, of Russell-street, Covent-garden, and Mr. F. Garon is the engineer.

The Essex magistrates last week passed, in Quarter Sessions, plans by Mr. Stock, county surveyor, for erecting the first block for 360 patients, and a portion of the administrative departments, of the new asylum at Wickham Bishops, near Witham, and authorised a committee to enter into contracts, at a maximum amount of £265,000, for their being carried into execution so soon as it has been ascertained that the water supply will not fail.

The Rotunda Theatre, Liverpool, was gutted on Monday morning. The fire commenced near the stage, and spread in either direction till the roof and walls fell in.

The erection of the new buildings for the Wesleyan Connexional School, Dublin, has just been commenced. The plans, which were selected in competition, are by Mr. A. Jones, and the outlay will be about £12,000.

The timber roof of the church of St. Stephen, in course of erection on Ayres' Quay, Sunderland, was blown down on Monday, seriously injuring half a dozen men and boys who were working on it.

The Epping rural sanitary authority has recently received and accepted the decision of the Lords of the Treasury as to the terms on which the water and drainage works—carried out in the town of Epping by the Local Government Board in their default—will be transferred to them. These are, to pay the authority £5,000, the amount of Sir J.W. Bazalgette's award, with the legal expenses since incurred, the terms of repayment to be hereafter settled by an order from the Local Government Board.

The south side of Holborn, from Great Tarnstile to the fire-engine station, Little Queen-street, and from there to the Restaurant, and from the Board of Works' offices to Drury-lane—in all about 14,000ft.—has just been repaved with the patent Victoria stone.

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NEW SHOPS IN OXFORD-STREET—NEW CHURCH AT PENYCAE—PEEBLES PARISH CHURCH—ROPE WORKS AT BRISTOL—NEW SCHOOLS AT BILLERICAY—SYNAGOGUE AT BAYSWATER—"BUILDING NEWS" CLUB DESIGNS FOR CROSS AND CHANCEL SCREEN.

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OUR LITHOGRAPHIC ILLUSTRATIONS.

NEW SYNAGOGUE, PETERSBURG-PLACE, BAYSWATER.

WE give herewith an elevation of the west front of this building, which is now in course of erection, the foundation stone being laid a week or two since. The synagogue will have a frontage of about 71ft. to Petersburg-place, and a depth of about 100ft., and it will be well lighted on all four sides. The main entrance will be by a recessed porch, in the centre of the west frontage, flanked by two turrets which terminate with minarets. There will be in addition two subsidiary entrances at the north-east and south-east corners. There will be four staircases leading to the galleries. The dimensions of the building on the ground floor will be 65ft. by 61ft., and on the gallery level 83ft. by 61ft.; and it is calculated that the entire building will accommodate about 900 worshippers, although seating for a much smaller number will be provided in the first instance. The style is Græco-Byzantine. The internal arrangements will differ somewhat from those which usually obtain in the orthodox London synagogues, the Ark being intended to be in the nature of a shrine placed in an apse, or vaulted recess, as in the Berkeley-street Synagogue. The choristers will be placed in a gallery at rear of the Ark, and nearly level with the ladies' galleries. In this position they will be well heard, without being seen by the worshippers. The Ark and Almemmar will be of marble. The exterior of the building will be of red brick, with dressings of red Mansfield stone. Mr. N. S. Joseph, of Coleman-street, and Messrs. Audsley, of Liverpool, are the joint architects. The works of the substructure have been carried out by Messrs. Adamson, of Hammersmith. The tenders for the superstructure have not yet been delivered. We hope to give, at an early date, further drawings of this interesting building.

PEEBLES CHURCH.

THE parish church of Peebles, a work of the end of the last century, is a building of the old U. P. Kirk type, and may be described as four walls forming a square, covered with a flat-pitched hipped roof, and altogether devoid of architectural pretension. Our illustration shows the church as proposed to be rebuilt, or, more correctly speaking, transformed and enlarged, for the old walls are retained as far as possible, with new windows and buttress, turret and gable added. The design, which is by Mr. W. Young, of Exeter Hall, Strand, has been approved.

NEW CHURCH FOR PENYCAE, N. WALES.

THIS church (which we illustrate to-day from a drawing now on view at the Royal Academy) is about to be commenced, to afford means of public worship for a large and principally

mining population. It will be about three miles distant from Ruabon; local stone from a neighbouring quarry will be employed; and the roofs will be covered with grey slating, finished with a tile ridge. All the external woodwork will be of oak. The church will seat 300, and will be capable of future enlargement by the addition of a north aisle when required. Economy of material and labour are principally aimed at throughout. Mr. Aston Webb, of Duke-street, Adelphi, is the architect.

ROPE WORKS OF MESSRS. WILLIAM TERREL AND SON, BRISTOL.

THESE works, which are of a very extensive nature, embrace the manufacture of wire as well as hemp, rope, and, in a separate department, that of patent packing. They cover a large area of ground, with, however, a comparatively small frontage. The front and return angles of the building, as far as shown on the illustration, are executed with polled Cattybrook facing bricks and freestone dressings. The contractors for the work were Messrs. Eastbrook and Sons, who have carried it out under the superintendence of the architect, Mr. Stuart Colman, of Bristol.

NEW SCHOOLS, &C., AT BILLERICAY.

OUR view of these schools and residences, now in course of erection, is taken from the south-east, and shows the infants' and girls' schools on the left, the residences in the centre, and the boys' school on the extreme right. They are built of red brick, with black brick bands; the heads, sills, and mullions of the windows being of stone. The main timbers of the schools are of pitch pine; the roofs are covered with tiles, finished with Cooper's crested ridges and terra-cotta terminals. The accommodation is for 135 boys, 135 girls, and 130 infants. The buildings are situated on a fine site of more than an acre and a half in extent. The schools and offices are being erected by Messrs. Ruffell and Cross, of Billericay and Hutton, at a cost of £4,487 10s., including fencing all round the site, and about an acre of gravelling. The designs are by Mr. J. E. K. CUTTS, architect, of 28, Southampton-street, Strand, and were selected in competition.

SHOPS IN OXFORD-STREET.

THIS conspicuous block of buildings is now in course of erection in Oxford-street. The greater part is already finished, and a portion let and occupied. The buildings were designed by Mr. John Thos. Wimperis, of Sackville-street, and the works executed by Messrs. Patrick and Son, of the Westminster-bridge-road. The site is a commanding one, and every advantage has been taken of the situation, the corner shop having a very extensive frontage in North Audley-street, the angle being treated in a specially characteristic manner. The fronts are entirely of red brick, red terra-cotta being used for the balustrades, the large windows of upper story, and wherever else it could be well and appropriately introduced. The lower or shop fronts and cornices are of red Mansfield stone; so also are the balconets, which are furnished with a very appropriate iron railing, in character with the rest of the design. The roofs are covered with red plain tiles, the angle spire surmounted by a fine terminal and gilded sunflower; the upper sashes, casements, &c., are painted white—the shop sashes ebonised. The buildings are on the Duke of Westminster's estate.

THE BUILDING NEWS DESIGNING CLUB—A MEMORIAL CROSS AND CHANCEL SCREEN.

THE page illustrations of these subjects we now give will enable our readers to form their own ideas of the justice of our decision. We give three of the selected designs for the Memorial Cross and one for the Chancel Screen. For our critical remarks we refer our readers to our issue of June 22nd last (pp. 616-7 of last volume).

NEW BUILDINGS AT BRADFORD.

BRADFORD, says the *Leeds Mercury*, can never be considered a "fine" town; but a large number of new buildings have recently been erected there, which are not surpassed by any in England. One imposing pile extends from Kirkgate to Hustlergate, having a front-

age to the new street which supersedes the old Post-office passage. The new Liberal Club occupies the most prominent position in this new street, now known as Bank-street. The site was a costly one, varying from £46 to £52 per superficial yard; and, in order to obtain a revenue, the ground and basement stories of the club buildings have been appropriated for shops, and also for the banking office of the Halifax Commercial Banking Company. The interior accommodation of the club has, therefore, been arranged on the three upper floors of the building. The style of architecture is Italian, and the cost of the building, exclusive of land and furniture, will be about £21,000. Mr. Spencer was the clerk of the works. The adjoining pile of buildings has been erected for a drapery and silk mercery establishment. On the ground floor is a shop, 55ft. by 40ft. The plastering was done by Messrs. T. Cordingley and Sons. Mr. J. S. Wilson was clerk of works. The block of buildings at the top of the new street has been erected for a gold and silversmith's and jeweller's. The shop will be about 56ft. by 52ft. The plastering here has also been done by Messrs. Thomas Cordingley and Sons. Mr. John Wilson has acted as clerk of works. All these buildings have been erected from the designs and under the superintendence of Messrs. Lockwood and Mawson, of Bradford and London. Of a similar character to the above is the block of shop and office premises now being erected upon the site of the old White Swan Inn and other property in Market-street, from the designs of Messrs. Milnes and France. The new buildings will comprise altogether forty-four shops, forty-six offices, sixty-five market-rooms, and several warehouses. These are disposed in the three frontages to Market-street, Charles-street, and Brook-street, which enclose a quadrangle, wherein will be placed two blocks of shops and offices, separated from each other and from the outer buildings by arcades, which will be covered with an ornamental glass roof. These arcades are approached by four archways, filled in during non-business hours with handsome iron gates. The style adopted is Italian. Scoured ashlar has been freely used in the three frontages, and also in the walls of the arcade, the wall spaces being covered with decorative tiles. The whole of the floors will be fireproof, and will be laid with tiles, cement mosaic, and cement concrete. On the opposite side of Market-street more new shops and offices have been erected. The front elevation is of dressed stone, the style being Italian. The contractor was Mr. T. Holliday; the architects are Messrs. Knowles and Wilcock, of Bradford. Passing along up Darley-street, we find that the second half of the new Kirkgate Covered Markets is making rapid progress. When finished, there will be found inside fifty-two shops and eighty-two covered and open stalls, or in all 134 separate tenements. The market will have a central level entrance in Darley-street, and a spacious entrance, with steps down, from Godwin-street and Rawson-place. A second dome in the market roof, 50ft. diameter, is being constructed over the latter entrance, to correspond with the one now at the Kirkgate entrance. At the north-east corner of this market block of buildings, fronting into Darley-street and Godwin-street, and extending from archway to archway, the whole of the upper floors have been appropriated for the new Free Library. On the first floor will be the men's reading-room, 75ft. by 37ft. 6in., extending up two stories, with a gallery round the same at mid-height, and lighted by a continuous lantern light. Another room, 92ft. by 40ft. wide, will form the women's reading-room, and the issue department or lending library. On the upper floor will be the reference reading-room, 110ft. long, 40ft. wide, and 30ft. high, lighted by side lights, and also by a continuous lantern light. The Corporation, on completing the above works, will have finished the scheme of markets reconstruction which has occupied several years to develop, and has included the belt of outside shops fronting Kirkgate, Darley-street, and Godwin-street; also the "Schiller Verein" Club, the Market Tavern, the Trevelyan Hotel, and numerous large shops. The architects for the works complete are Messrs. Lockwood and Mawson, of Bradford and London.

THE BUILDING [Jews. July 13. 1877.

NEW SHOPS AND BUSINESS PREMISES OXFORD STREET
LONDON. W.
J. T. WIMPERIS ARCHITECT

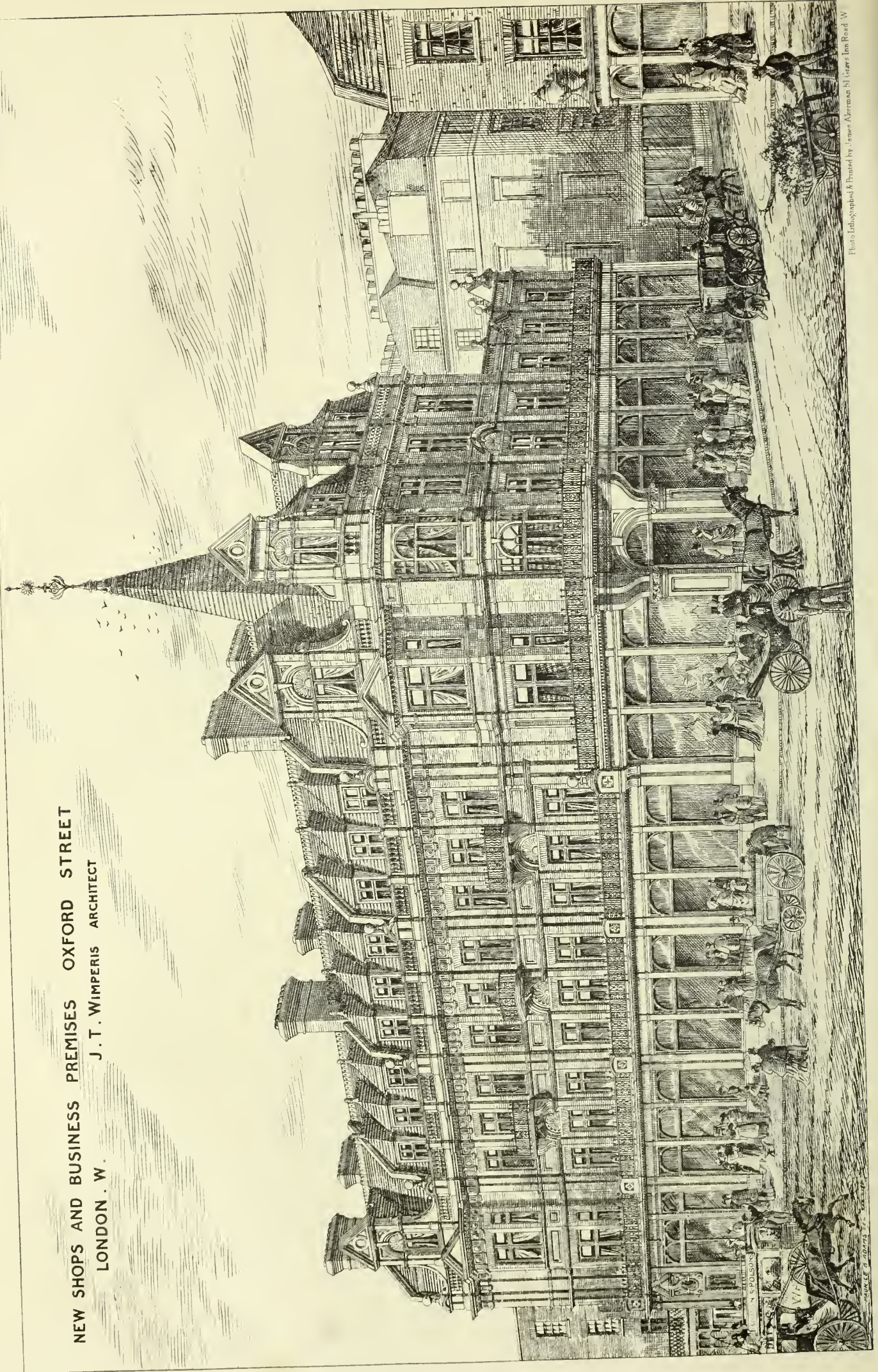
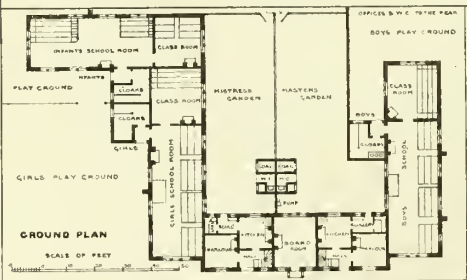
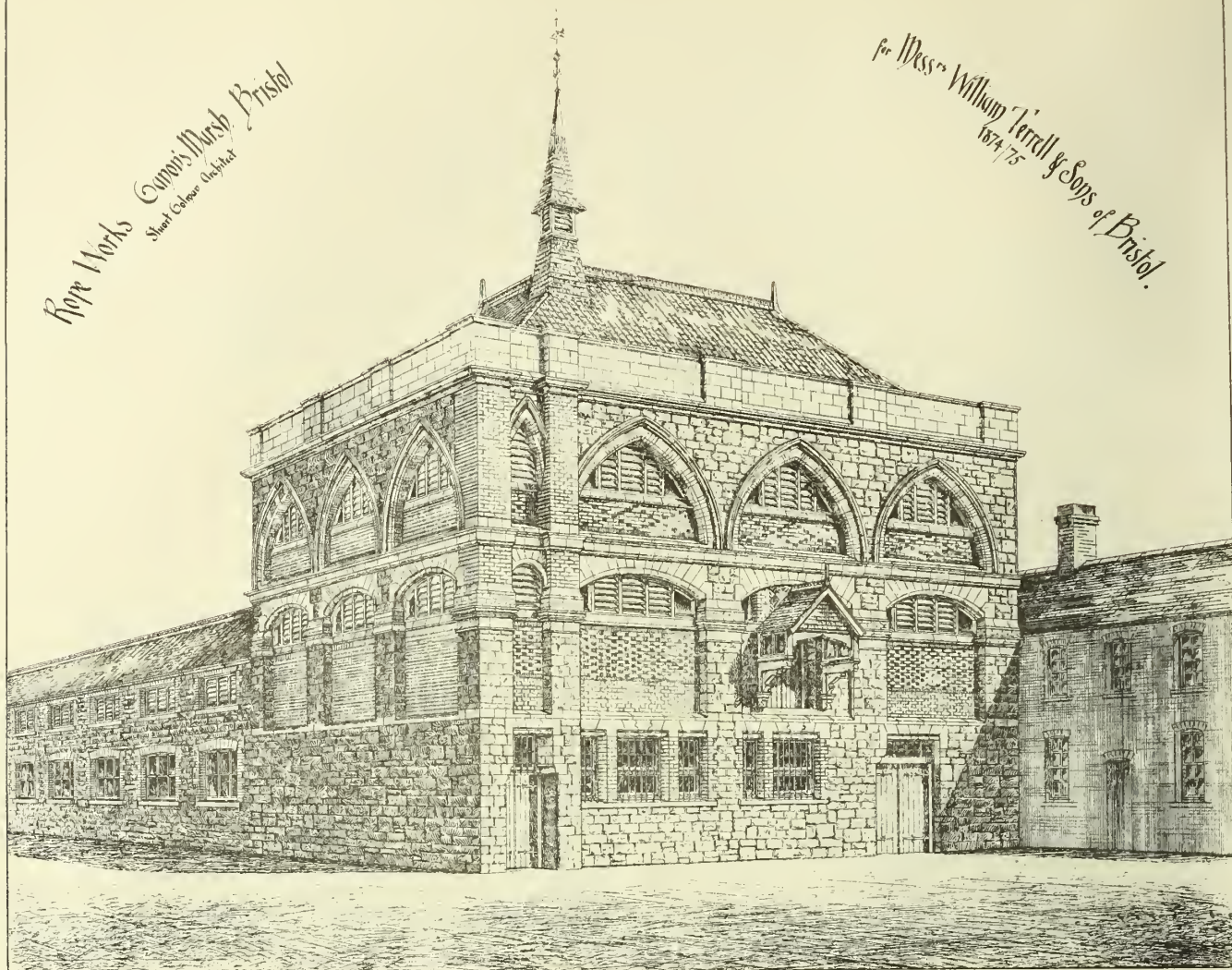


Photo Engraved & Printed by James Alderman 51 Great Inn Road W

*Rope Works
Cunors Marsh Bristol
Shoat Colours Analyzed*

*for Messrs. Wilkyn Turrell & Sons of Bristol.
1874/75*

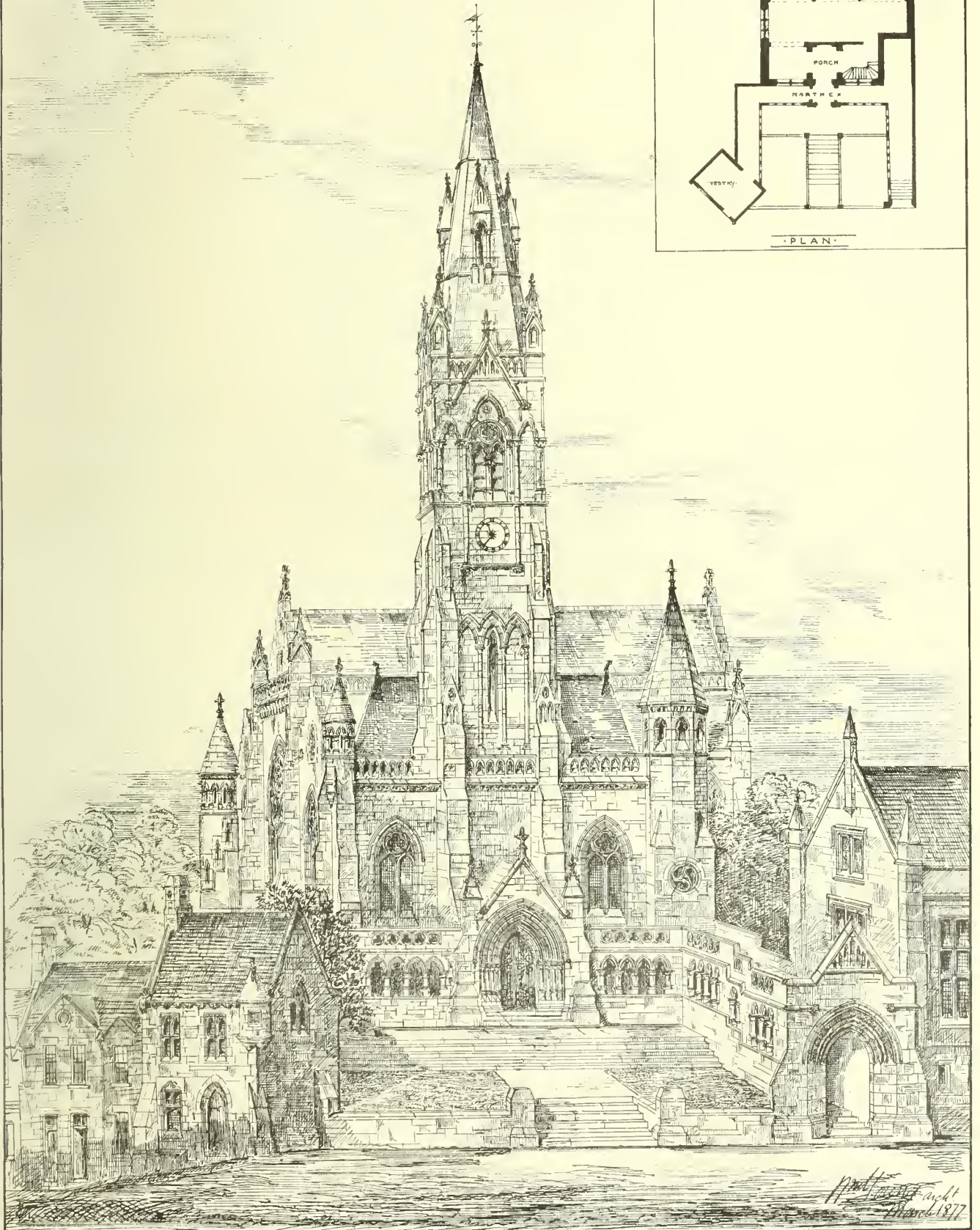
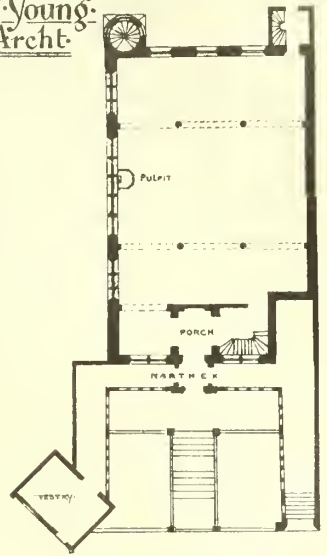


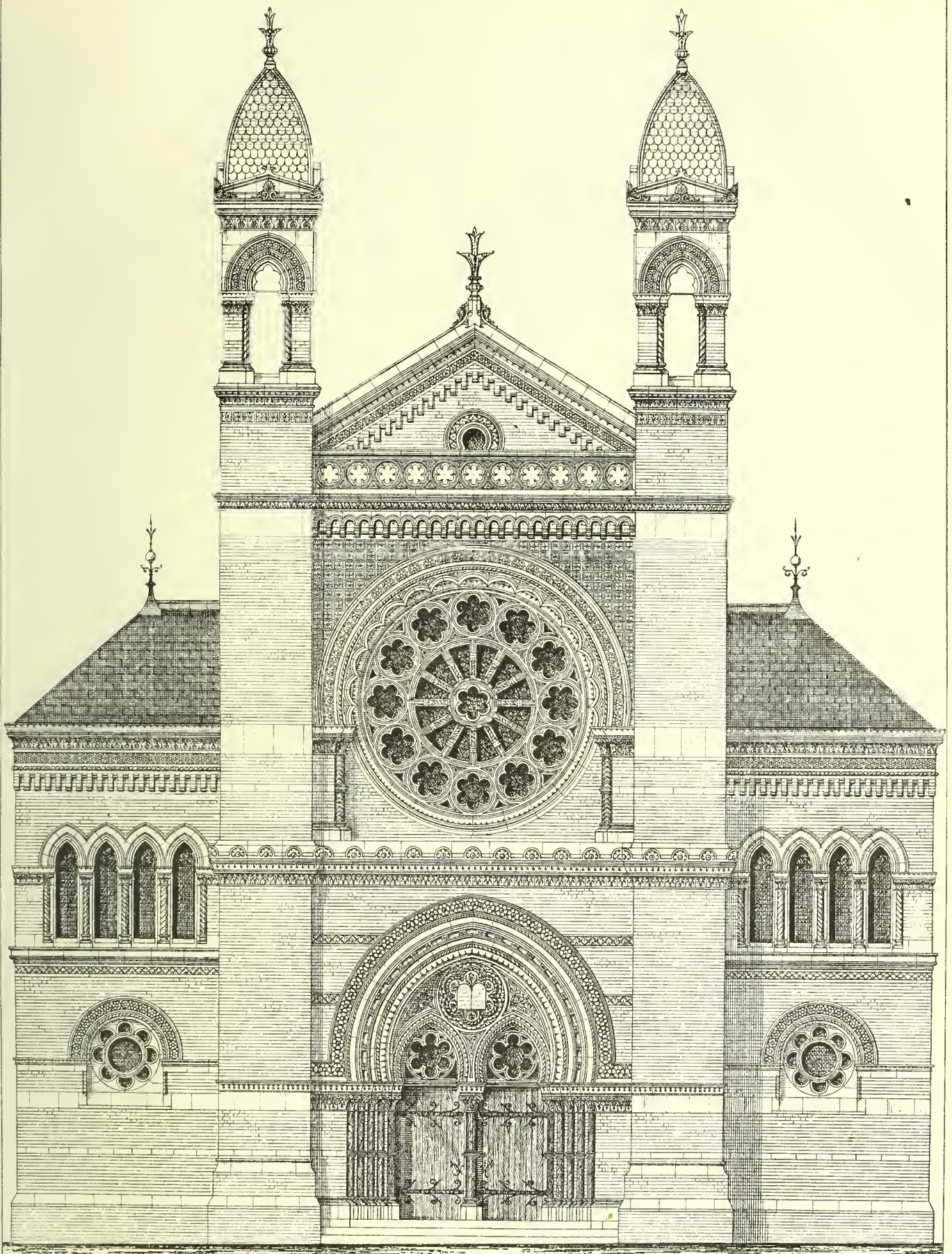
SCHOOLS AND RESIDENCE at BILLERICAY for the Great Burstead School Board. J. Edward K. Cullis Arch^t

Peebles Parish Church

As proposed to be rebuilt 1877.

W. Young
Arch't





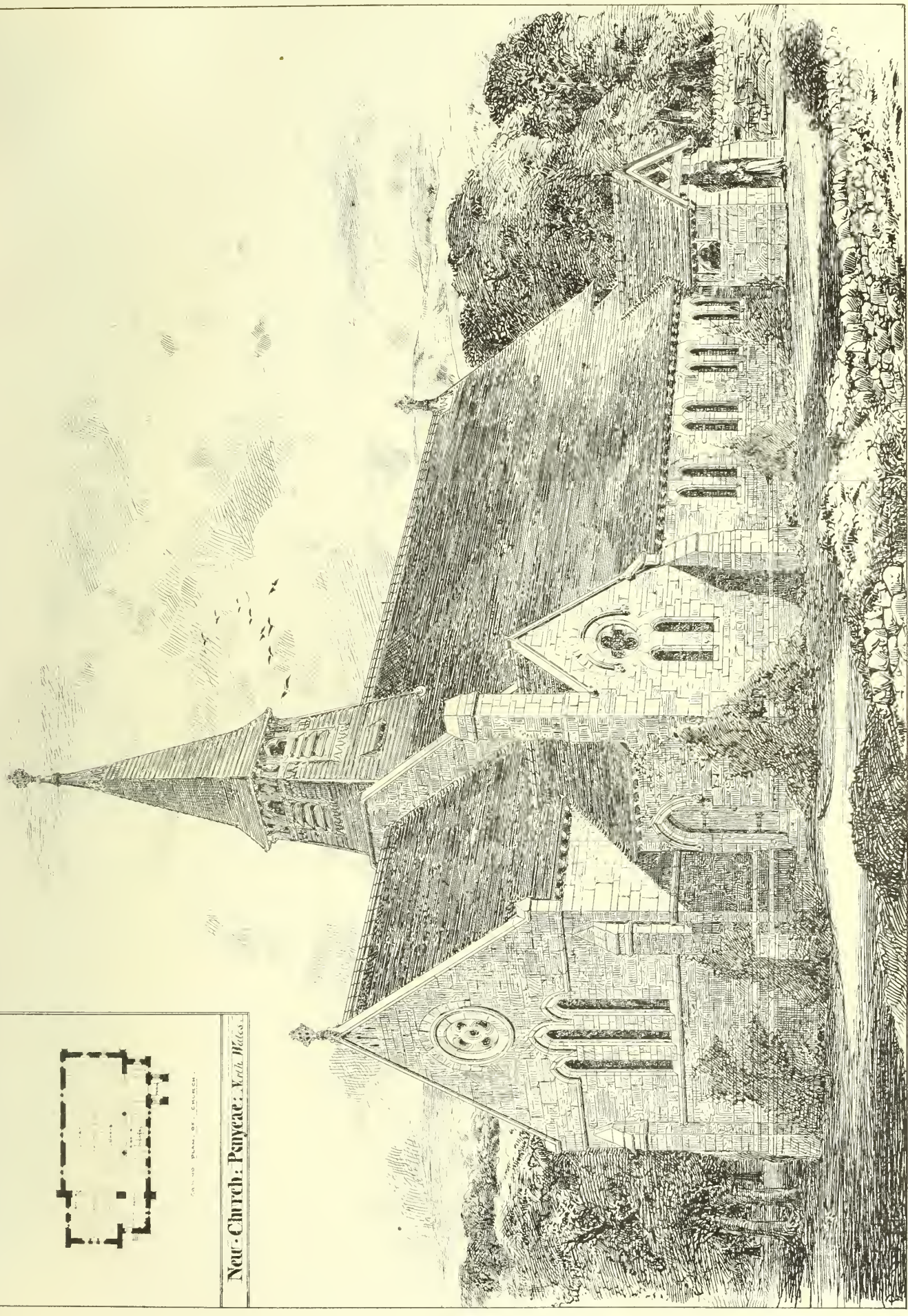
*Joint Arch^{ts}
W & G. Audsley & N. S. Joseph.*

WEST END SYNAGOGUE,
ST PETERSBURG PLACE, BAYSWATER.
FRONT ELEVATION.



GENERAL PLAN OF CHURCH.

New Church, Penycar, North Wales.



From Webb's Arch.

Published & Printed by James Alderman 51, Great Inn Road, W.

THE INSTITUTE OF CIVIL ENGINEERS.

THE award made by the council of this society for original communications, read at the ordinary meetings during the session 1876-77, or printed in the "Minutes of Proceedings" without being publicly read or discussed, have just been announced. Twelve papers were read, and eight others have found a place in the volumes; and, in respect of these twenty articles, ten awards have been made, while, in accordance with custom, a contribution from a Vice-President—Sir W. G. Armstrong, C.B., F.R.S.—on "Water-pressure Machinery" was not considered in the adjudication of premiums. Two Associates of the Institution, Mr. W. W. Beaumont and Mr. W. C. Unwin, receive Watt medals and Telford premiums for their essays on "The Fracture of Railway Tires" and "The Resistance of Boiler Flues to Collapse." Five Members—namely, Messrs. W. Anderson, J. B. Redman, H. Robinson, A. McDonnell, and R. H. Brunton, get Telford premiums for their memoirs on "The Emission of Heat by Hot-water Pipes," "The River Thames," "The Transmission of Power," "The Repairs and Renewals of Locomotives," and "The Japan Lights." Three gentlemen unconnected with the institution have also obtained awards, two of whom take Telford premiums—viz., Mr. Robinson Souttar and Mr. I. J. Mann—for their articles on "Street Tramways" and "The Testing of Portland Cement"—while the other, Mr. C. Norman Bazalgette, for his inquiry as to "The Sewage Question," has the Manby premium. Out of 11 papers submitted by students, seven have been deemed worthy of rewards. Mr. P. R. Allen has gained the Miller scholarship of £40 a year, for three years, for his communication on "Machine Tools," and Miller prizes have been adjudged to Messrs. A. C. Hurtzig, C. G. Smith, R. J. G. Read, N. Watts, W. J. Chalk, and J. C. Mackay.

COMPETITIONS.

CARLISLE FEVER HOSPITAL.—The design submitted under the motto, "Nightingale," has been accepted in this competition. The authors are Mr. Fredk. W. Roper, of Adam-street, Adelphi, and Mr. I. Murchie, of Carlisle and Barrow-in-Furness, joint architects.

PARLIAMENTARY NOTES.

ST. MARGARET'S CHURCH.—The Chancellor of the Exchequer last week, in reply to Mr. Baillie-Cochrane, said the commissioners of the Exhibition of 1851 had recently leased some land on which a lofty building was to be erected, but it could not be so lofty as to injure the view of the Albert Memorial. The Government had subscribed a sum of £15,000 towards the restoration of St. Margaret's Church. The designs for that restoration were in the hands of the authorities of the parish—the rector and the churchwardens. Her Majesty's Government had nothing to do either with postponing or accelerating the alterations.

FETTER-LANE IMPROVEMENTS.—In answer to the Earl of Shaftesbury, Earl Beauchamp stated, on Tuesday, that the accounts which had appeared in the newspapers of the eviction of the tenants of certain buildings in Fetter-lane were somewhat exaggerated. The buildings had been reported by the Sanitary Committee of the Commissioners of Sewers to be in a disgraceful condition, and the proprietor had given his tenants the usual three months' notice to quit, in order that the necessary improvements might be carried out. At the end of that time, however, the tenants persistently refused to leave, and the proprietor was obliged to call in the assistance of the police to obtain possession. Whether the evicted people had been unable to obtain other quarters he (Earl Beauchamp) was unable to say; but they were certainly reminded more than once that they would be obliged to remove at the expiration of the legal term of notice. Of course, when large blocks of buildings had to be pulled down, it was impossible that some cases of hardship should not occur, but he was sure their lordships would agree that it was undesirable to extend indiscriminate sympathy to people who had deliberately set themselves to defy the law.

The Limerick Corporation has just purchased for £27,000 the works of the United General Gas Company in that city.

The only gold prize medal for wood-working machinery at the Cape Town Intercolonial and International Exhibition, has been awarded to Messrs. F. W. Reynolds and Co.

Building Intelligence.

BEVERLEY.—On Friday the memorial stone of a new church at Beverley was laid. The style will be Geometric Decorated of the 13th century. The exterior will be faced with Bradford parpoints, with Whitby stone dressings. The interior will be faced with red brick. The church will consist of nave, north and south aisles, two vestries, organ chamber, chancel, narthex, and south porch. At the south porch there will be a tower and spire, rising to a height of 175ft. The length of the church, exclusive of the narthex, is 101ft. Sin., and the width of the nave and aisles 48ft. The chancel is 38ft. by 23ft. 6in. Open benches of pitch pine will be provided, affording accommodation for about 300 persons. Mr. A. Richardson, of Beverley, is the builder, and the plans have been prepared by Mr. J. S. Crowther, architect, Manchester. The work is being carried on under the superintendence of Mr. Dickenson.

CANTERBURY.—A new cemetery at St. Thomas's-hill, Canterbury, was consecrated on Wednesday week. The buildings, which comprise two chapels, have been erected from the designs and under the directions of Mr. John Green Hall, architect, Canterbury. There is also a lodge for the curator, a mortuary, and a hearse house. The chapels on either side have their entrances under a central tower, which rises to a height of 106ft. The style is late 13th century. The exteriors of all the buildings are faced with Kentish rag stone with Bath stone dressings, and the roofs are covered with plain and ornamental tiling. The roofs of the chapels on the interior are open timbered, stained and oiled, with arched ribs resting on stone corbels. The length of each chapel internally, exclusive of the chancels, is 30ft. by 18ft. wide. The works have been carried out by Mr. H. B. Wilson, at a cost of £4,160. The carving has been executed by Mr. Candy, of Croydon.

FOUNTAINBRIDGE.—There was opened on Sunday a church erected by the Evangelical Union congregation at Fountainbridge, near Edinburgh. The new church, which was designed by Messrs. W. and J. Hay, Liverpool, presents in style Early Pointed architecture. The dressings of the door and windows are of Binny stone, and the general facing of the wall from the Hailes quarry. Of the church proper no part is visible from the street. It is approached from the central corridor, which leads to an inner porch. The church is divided by iron pillars into nave and narrow aisles, of four bays, with longitudinal and transverse arches, and is capable of accommodating 400 persons in comfortable pews of varnished pine.

METROPOLITAN BOARD OF WORKS.—A new committee of fifteen members, to be called the Special Purposes and Sanitary Committee, was appointed by this Board on Friday, to deal with the questions connected with the ventilation of sewers and the sale of gas, the Gas and Petroleum Act, Slaughterhouses, Explosives, and other Acts. The sanction of the Board was given to the borrowing, by Kensington Vestry, of £11,578, for defraying the cost of purchasing horses, carts, harness, shoots, and skips, at an annual rate of interest not exceeding 5 per cent., the principal to be repaid by instalments over five years. A second application from the same vestry, for permission to borrow £8,600, to defray the cost of works at Cremorne and Hammersmith wharves, and purchasing certain leasehold premises in Warwick-road, Kensington, and for buildings and repairs at the same, was granted, the amount being advanced by the Board on condition that the vestry take up the loan at once at £3 15s. per cent., the principal to be repaid by instalments within fourteen years. A £10,000 loan was granted to Newington Vestry, for granite paving works, on similar terms to the last, the principal to be repaid, with £3 15s. per cent. annual interest, within twenty years. Upon similar terms, but repayable in thirty years, a loan of £20,000 was granted the guardians of St. Olave's Union, for making additions and alterations to their infirmary at Rotherhithe. Mr. Lloyd moved:—"That it be referred to the Building Act Committee to

ascertain and to report to this Board the number of houses adapted to the artisan class that have been built within the last three years, or are now in course of construction, distinguishing whether they are four, six, or eight-roomed houses, or larger combined dwellings to be let in rooms or flats, also locality of the same, and the number of residents the houses would accommodate. The motion was criticised as being too vague in its reference to "houses adapted to the artisan class," and Mr. Lloyd eventually withdrew it.

PUBLIC HEALTH.

The Leading Journal of Sanitary Science and Progress. The number published July 13 contains Index and Title to last volume, together with articles on Consumption and its Cause, The Remedies for River Pollution, on the Exclusion of Sewer Air from Houses and Public Buildings, The Sanitary Institution of Great Britain, A Remarkable Water Analysis, The Borough of Houlton and its Medical Officer, Sanitary Novelties, Public Health Reports, Parliamentary Notices, Legal Intelligence, Water Supply, Correspondence, Intercommunication, The Editor's Table, Gleanings, &c. Price Two-pence. Annual Subscriptions post-free, Eleven Shillings. E. J. KIBBLEWHITE, 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

TERMS OF SUBSCRIPTIONS.

(Payable in Advance.)

Including two half-yearly double numbers, One Pound per annum (post free) to any part of the United Kingdom; for the United States, £1 6s. 6d. (or 6dols. 40c. gold). To France or Belgium, £1 6s. 6d. (or 32l. 60c.). To India (via Southampton), £1 6s. 6d. To any of the Australian Colonies, New Zealand, the Cape, the West Indies, Canada, Nova Scotia, or Natal, £1 6s. 6d.

N.B.—American and Belgian subscribers are requested to remit their subscriptions by International P.O.O., and to advise the publisher of the date and amount of their remittance. If the last-mentioned precaution is omitted, some difficulty is very likely to arise in obtaining the amount. Back numbers can only be sent at the rate of 10d. each, the postage charged being 6d. per copy. All foreign subscriptions, unaccompanied by an additional remittance to cover the extra cost of forwarding back numbers, are commenced from the next number published after the receipt of the subscription.

Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—W.—Rev. Dr. A.—T. P.—J. T. W.—J. R. S.—T. R. and Son.—E. J.—J. S.—J. E. T.—J. A. M.—U. E. L. O.—Nemo.—B. and Co.—R. T. M.—A. J. B.—H. and B.—J. D.—A. M. R.—W. E. M.—Wandsworth.—A Non-Competitor.—W. and M.—C. and G.—J. B.—E. and R.—J. T. W.—W. L.

J. R. HARDING, Epsom. (Your letter on the small-pop is inserted in this week's Public Health.)—W. E. SALT. ("Intercommunication" is intended, as we have said a dozen times, for the instruction of our readers in general, and is not to be used for private purposes.)

Intercommunication.

QUESTIONS.

[5059].—Cast-Iron Girder.—Wanted (for comparison with own figures) the dimensions of a cast-iron girder for a fire-proof floor, having 16ft. bearing, and being 9ft. 1 1/2 in. from centre to centre. For a honing warehouse is 3cwt. too much to allow as a permanent safe load? Whether is it preferable to curve the bottom plate or the web of the girder?—CAST IRON.

[5060].—Measuring Buildings.—Will some of your readers kindly inform me on the following? Where is there a small town or village within 50 or 60 miles of Bradford, Yorkshire, where a student might spend a week or fortnight, measuring and sketching some good examples of mediæval domestic architecture? Also what good books are published on the subject, with prices? Any hints as to the best mode of proceeding will greatly oblige—A STUDENT.

Our Office Table.

MR. ALEXANDER KELBY has sent for our inspection one of his "American Premium Door and Gate Springs," and we are well satisfied, both with its action and appearance. It is cheap and effective, of simple construction, and easy application and adjustment. It consists of a coil of finely-tempered steel wire, specially manufactured, we believe, for the purpose, and which we have somewhat severely tested so far as its quality is regarded, suspended on pivots, so that it will accommodate itself to the angle of the door as it is opened and shut. By this means, also, all bulging or straining of the spring is prevented, and the very great advantage is obtained, that it can be attached and detached without removing the screws that fasten it to the door. It can be adjusted so as either to open or close, or partly close, a door, as may be desired, and either change can be effected in a few seconds by anybody. Its appearance is ornamental to the door rather than otherwise; and altogether we think it is the best spring for external use that we have seen.

MR. WILLIAM MORRIS, as hon. secretary to the Society for the Protection of Ancient Buildings, has addressed to the Dean and Chapter of Canterbury Cathedral a protest from the committee of his society against the reported intention of the Dean and Chapter to remove from the choir the ancient stalls. The society considers such a course of action injurious to the history and art of the country. The memorial proceeds:—"The society begs to point out that this woodwork is remarkable for its intrinsic beauty, and although of comparatively late date is a noble example of the art of its period, and in no way interferes with, but rather adds to, the architectural effect of the building. It is stated that these stalls conceal portions of more ancient work, part of the fittings of Prior Eastry; but as the work of that eminent architect is left in a very fragmentary condition, and any restoration must be, on the whole, conjectural as to design, and modern as to workmanship, the society feels that it would be a loss, rather than a gain, to remove, for the purpose of such restoration, a beautiful and untouched work of a former age. The society takes this opportunity of deprecating any attempt at imitating the supposed condition of the choir at any past period of its history, being convinced that, however lamentable former destruction of ancient fittings and decoration may have been, the restoration of them is impossible, and can only lead to a condition of things still more grievous to all lovers of art, and still more destructive of the history and dignity of the cathedral."

MR. JUSTICE MANISTY, in his charge to the Grand Jury at the recent Newcastle Assizes, adverted to the two great agencies now at work throughout the kingdom for ameliorating the social condition of the poorer classes by education, and by improving their homes. He did not know which movement they might consider of the most importance, as they should ever go hand in hand, but he thought they could expect very little good results from educating children during the day if they had to return to scenes of vice, filth, and misery at night. He knew there was great diversity of opinion on this matter, but he for one doubted whether they should expend the larger amount of money on education and the smaller on improving the dwellings of the poor. As there is no place in the kingdom where the adoption of the Artisans' Dwellings Act is more urgently needed than Newcastle, and as the learned judge is connected with the district by family and other ties, and therefore well acquainted with its sanitary deficiencies, we trust his remarks may have some effect in expediting the long-deferred improvement scheme of the Corporation under the above Act.

THE general annual meeting of the subscribers and donors of the Builders' Benevolent Institution will be held at Willis's Rooms, King-street, St. James's, on Thursday, the 26th July, at 3 o'clock p.m., to receive the report for the past year, to elect president, treasurer, directors, and auditors for the year ensuing; to sanction the alteration of Rule 1, increasing the pensions; to alter Rule 15, section 2,

authorising the committee to use instead of funding the donations for the general purposes of the institution, and to otherwise generally amend the rules of the institution. A copy of such revision may be seen at the office, 4, Vernon-place, Bloomsbury-square, W.C.; and other matters connected with the welfare of the institution.

LEGAL INTELLIGENCE.

ABRUPT TERMINATION OF CONTRACT JUSTIFIED BY THE CONTRACTORS' NEGLIGENCE.—Trevena v. Watts and Another.—An important point has been decided in the Court of Appeal, at Westminster, before the Lord Chief Justice and Lords Bramwell and Brett, by which the opinion of the lower court (Justices Mellor and Lush) was confirmed.—The plaintiff is a builder of Plymouth, and the defendants, Messrs. John Watts and Co., engineers and founders, of the Broad Weir Engine Works, Bristol. The parties entered into a contract for the erection of a range of foundry buildings, under the direction of Mr. Henry Masters, architect, of Park-street, Bristol, and it was alleged that, in consequence of the builder not proceeding with proper despatch, and in neglecting to comply with the architect's reasonable orders, the plaintiff, after having legal notices served upon him, was dismissed from the further execution of the works, and the works have been finished by others. The plaintiff claimed a large sum alleged to be due to him for work he had executed. This question, also all other questions, were referred to Mr. Alfred Wills, Q.C., to decide all differences between the parties. In the progress of the arbitration the plaintiff considered he had a point of law in his favour, and the arbitrator granted him a special case upon the following questions:—(1st). Were the defendants justified under the 18th clause of the contract in entering upon and taking possession of the works? and (2nd) apart from the 18th clause, were they justified in putting an end to the contract? By the decision of five judges it has been settled that Messrs. Watts and Co., the defendants, were justified in both cases; and the court decided the question that if a builder employed under a special contract wilfully delays the works so that injury is inflicted on the employer, the employer may remove him and get the work done by some one else, and not the less so because there may be special provisions in the contract to prevent undue delay—as, for instance, the imposition of penalties.

THE ARTISANS' AND LABOURERS' DWELLINGS COMPANY.—The Secretary of the Artisans, Labourers, and General Dwellings' Company, Mr. W. Swindlehurst, and an estate agent, named Saffery, were brought up at Bow-street, on remand, on Tuesday, charged with defrauding the company of upwards of £30,000. The case entered into was that of the purchase of land in Harrow-road from All Souls' College, Oxford, for £32,000, which the prisoners sold to the company for £45,000. The prisoners were again remanded, and Mr. Swindlehurst's bail was increased.

BACKING OUT OF A SUB-CONTRACT.—At Scarborough County Court, on Saturday, an application was made on behalf of W. Peacock, builder, of Scarborough, against J. K. Pexton, joiner, of the same town, who is insolvent, and has filed a petition for liquidation. In August, 1874, plaintiff entered into a contract with Mr. J. Kitchin for the erection of 10 houses on the Ransdale Closes Estate, belonging to that gentleman. The amount of the contract was £22,250. Pexton submitted an estimate to plaintiff for the woodwork, which he offered to supply and execute for £6,100. He found, shortly afterwards, he had made a mistake, and refused to proceed with the work. Owing to Pexton's repudiation of his sub-contract, the houses were not completed, and plaintiff was a loser, his claim being now submitted for £1,614. Plaintiff's estimate was based, to some extent, on Pexton's figures. The latter at one time said that rather than see Peacock lose he would go on with the work at the sum named. Plaintiff went on with the buildings, and when ready for the first floor joists, Pexton sent some timber for the purpose, but it was condemned by the clerk of works as not agreeing with the specification. The work was stopped, and it was then that, in answer to plaintiff requesting Pexton to go on with the work, the latter replied that he could not do it for less than £6,700, as the price of wood was greater than he thought it would be, and that he had sent his revised quantities to Mr. Bury, the architect. Plaintiff replied that he should hold defendant to his contract. Plaintiff's solicitor now contended that the case came fairly under the 4th section of the statute of frauds, and that where a party signed a written proposal to do work and that proposal was then accepted and acted upon, it was a sufficient memorandum, and damages could be claimed for non-fulfilment. For the defence it was argued that there was neither a written contract nor any part fulfilled, plaintiff having admitted that his acceptance of Pexton's offer was a verbal

one. The Judge held that there was a contract between the parties, and gave judgment for plaintiff. The case, he said, came under the 17th sec. of the statute, and the evidence of both parties proved the verbal acceptance of the tender. Plaintiff expressed willingness to submit the question of positive amount of damage to a referee, and a verdict was entered accordingly, costs being allowed out of defendant's estate.

SLATES — SLATES — SLATES.—Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each; 28ft., 2s. per foot; 35ft., 2s. 4d. per foot.

DEALS—BATTENS—FLOORING.—Send for price list.—R. MAY & SON, Timber and Slate Merchant, Acorn Wharf, Old Kent-road, London, S.E.

Trade News.

WAGES MOVEMENT.

FALKIRK.—The slaters in Falkirk have resumed work at the masters' terms—a month's notice, on the expiry of which their demand of ½d. more per hour will be granted.

WESTON-SUPER-MARE.—The master hinders and contractors throughout the Weston-super-Mare district have conceded the demand of the labourers for a general advance of half a crown per week and a reduction of one hour's labour on Saturdays, making the men's wages £1 2s. 4d. for a working week of 5½ hours.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—[ADVT.]

Holloway's Ointment should be well rubbed upon the pit of the stomach and region of the heart, in that particular form of indigestion which gives rise to palpitation, shortness of breath, and a suffocating sensation. Every distressing symptom soon yields, digestion becomes easy, the spirits light, and good health returns.

TENDERS.

ANDOVER.—For the erection of new farm buildings at Middle Wyke. Mr. J. Hillary, architect:—

Brown, G. W.	£1,025
Eyles	600
Brule (accepted)	575
Sainsbury	499

ANERLEY.—For alterations to the Railway Hotel, and two new houses, with shops, adjoining. Messrs. Bird and Walters, architects. Quantities supplied:—

Downs	£2,755
Nightingale	2,740
McLachlan and Son	2,684
Smith, R. and E.	2,514
Taylor, G. (accepted)	2,437

BARNES.—For additions to schools at Friern, for the Rev. R. Morris. Messrs. E. Habershon and Brock, architects:—

Woodhall (accepted)	£555
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BISHOPS STORFORD.—For additions to Church of All Saints, Hockerill. Mr. Joseph Clarke, F.S.A., diocesan architect; quantities supplied by Mr. Sidney Young:—

Hill and Higgs	£6,960
Dove Brothers	6,900
Roberts Brothers	6,667
Bell and Sous	6,356
Gibbons	6,290
Parmenter	6,200
Glasscock	6,180
Gregory	6,145

BLACKHEATH.—For repairs and decorative works to be done for W. C. Birch, Esq., at 13, Vanbrugh-park. Mr. W. Huts, architect:—

Hockley and Co.	£502
Pitman and Cuthbertson	475
Adams and Son (accepted)	445

BRIGHTON.—For the erection of a shop and warehouse in Whitecross-street, Brighton, for Messrs. Delland Wicks. Messrs. Holford and Clayton, architects, Brighton:—

Lockyer	£718
Garrett	746
Keup	700
Newham	619

BRIGHTON.—For the rebuilding of a range of workshops in North-street, Brighton. Messrs. Holford and Clayton, architects:—

Botting	£1,263
Cheesman and Co.	1,255
Lockyer	1,230
Barnes	1,227

CROYDON.—For a new branch bank at Croydon for the London and South-Western Bank, Limited. Messrs. J. and J. S. Edmeston, architects. Quantities by Mr. O. N. McIntyre North:—

Philipson	£6,079
Hyde	5,986
Cowland	5,984
Nye	5,960
Marriage	5,910
Coles	5,834
Williams	5,802
Legs	5,575
Adams	5,569
Taylor	5,475
Clarke and Bracey	5,397
Jarrett	5,330
Smith (accepted)	5,276

THE BUILDING NEWS.

LONDON, FRIDAY, JULY 20, 1877.

THE ARCHITECT AND THE EMPLOYER.—I.

BUSINESS and art qualifications frequently go but ill together. It has been recorded by a well-known author that genius delights in solitude. Men of letters and art have been generally prone to avoid a life of energy and excitement; conversationalists have rarely proved to be the ablest writers; and artists and philosophers have certainly not been distinguished for "a ready mind." We suppose an analogous habit has unfitted the architect for active business. It is quite certain, however, that business tact and art ability are very rarely combined in him. It was said of a scintillant wit by a celebrated man that "he vanquished me in the drawing-room, but surrenders to me at discretion on the stairs." In like manner it is a fact of daily observation that the architect of business capacity vanquishes his more competent brother in professional pursuits. To qualify an architect for the active work of his profession we need hardly remind the reader of the importance of a business training. The pupilage system gives but a poor insight into the official routine required in the active practice of a profession in which so many commercial interests have to be mastered. How can the young architectural student hope to master the intricacies of a practice in which the artistic, the financial, and the legal minds are supposed to be blended? Confined, to use a Pecksniffian expression, to that "hotbed of architectural genius, the two-pair front," there is not much chance for the rising Martin Chuzzlewit in the profession to obtain even a modicum of business qualifications; whilst as for the less favoured Tom Pinche there is positively none. Except copying now and then a specification, the student has no means of becoming acquainted with the usual instruments or processes required in carrying on a business. We are constantly being asked questions relating to the liability of architects, their relations with their employers and with builders, forms of contracts and agreements, certificates, and a variety of other matters connected with architectural practice. It is our intention in this and the following chapters to give some hints on these questions; and with this object in view we shall follow the order of building operations, beginning with a few remarks on the duties and responsibilities of architects. The responsibilities of architects have been a prolific theme of disagreement from time immemorial, and nothing very definite has been laid down or determined. As a rule architects have to buy this kind of experience rather dearly, and lawyers have not aided them much. The author of one book says:—"After the plans are settled, and the work commenced, it must be distinctly understood that the client yields himself absolutely to his professional adviser." This is perhaps a rather uncompromising way of stating the case, and to the "client who pays" may look a rather one-sided arrangement. It is obviously fair to the architect that he shall not be unnecessarily interfered with by the employer, especially in those matters of experience and knowledge for which the latter pays. It is certainly unfair that he should be questioned and interfered with in matters of plan or construction after the drawings have been approved, though every architect knows to his cost how frequently this is the case. It may be urged that the client has a right to interfere if, when the work is progressing, he discovers something that he

did not quite understand when the plans were prepared, and on the first blush of the question this objection may appear a valid one; but it will be at once seen on reflection that if this questioning were permitted, the architect would be subjected to constant interruptions in the work, entailing probably expense, besides other graver inconveniences, such as that of breach of contract, &c. A recent writer (Sir Edmund Beckett) objects to the doctrine of the submission of the employer to the architect, but we cannot see where he would draw a line. It is only reasonable to suppose the authority of the architect must begin somewhere, if he is to be made responsible for his work, and every architect is well aware how ready some clients are to charge them with any mistake that may arise from vacillation or lack of firmness on their part. No doubt this is one of the *veacte questionnes* of architectural practice, and one we should like to see the profession take up and settle, for its own peace of mind.

Of course, every employer assumes his professional adviser competent; if he finds him not to be so he has a remedy. The question involves mainly the appointment of the architect, or rather the approval of the plans. In speaking of this question, Sir Edmund Beckett, whose authority as a lawyer may be taken, proposes the following condition as applicable to a competition:—"The committee will not be bound to accept any plan, nor to proceed with any one which they do accept, unless they find that a contractor with sureties in one-third of the amount of the estimate, to be approved by them, will undertake it for that sum. If no such contract can be made to their satisfaction, the whole proceeding is to be void, and the architect to have no claim upon them." This condition may appear a rather harsh one, though in this initial matter of selecting plans we can see no objection to what appears to be a just one to the party or individual who pays for the services or plans of the designer, as architects are not bound to compete under such a condition. It is evident the same terms apply to any individual who proposes to build and requires plans. If he finds the design too costly, he should not be bound to carry it out, and this might be made a stipulation at the outset. Unfortunately, however, it is not as a rule; hence the architect has a claim upon the employer for the plans prepared, and is fairly entitled in this case to be paid for them at the usual rate of 2½ per cent. on his estimate, or any fixed sum that may have been agreed. We are inclined to think an agreed sum should be fixed beforehand for this preliminary work, and it is certain much unpleasantness would be avoided if the architect made this a rule in his practice.

It may be as well to allude to the Government code of rules of agreement with architects. Here it is expressly stipulated that, if the commissioners abandon their intention of building, the architect shall be entitled to a sum to be fixed beforehand; that the plans and documents shall be the property of the employers (except sketches); if, after the working drawings have been made the work is not proceeded with, the architect to be paid a fixed sum; or if only a part is executed, he shall be paid a proportionate part of the remuneration fixed upon, and also a part of that upon the works abandoned. If the works are proceeded with, the remuneration (a fixed sum to be agreed) shall be paid as follows:—One-third on the execution of the contract, another third when half the contract price has been paid to the builder, and the remainder when the last payment is made. We are led to consider here the question of architect's charges. That the percentage system works badly most architects who have had any experience must ad-

mit. That it has been a cause of injustice no one will deny, and hence the Institute of Architects in 1862 laid down a more reasonable scale of charges. Before this scale was adopted, architects were paid by the unvarying 5 per cent., whether for a complex or a simple structure, whether for one or for any number of similar houses. This was manifestly unfair either to the architect or his employer, as the case might be. It further led architects into a pernicious plan of charging for extras or exceeding their estimates whenever a chance presented itself. The Institute rule has considerably modified this charge by providing that, in complicated structures, the extra labour entailed of arranging with artists and tradesmen should be paid for at the rate of 2½ per cent., and in settling other points that were previously left to custom merely. Still there is much that is unsatisfactory; and, as Sir Edmund Beckett has said, the R.I.B.A. has varied it chiefly in their own favour, and has not taken into account the differing degrees of labour the architect is called upon to perform. The 5 per cent., in fact, is made the minimum for all classes of executed work, no matter how simple or otherwise it may be. It is true the Institute observes that in a number of houses from the same design the percentage might be reduced, though this is only hinted, and no positive charge is laid down, as there should have been to make the scale a differentiating one, which it by no means is at present. Let us take for instance two extreme cases—one a row of small houses, costing about £200 each, and of exactly the same plan, and a restoration of a parish church, in which a great deal of Perpendicular woodwork exists. Now, the thought and labour entailed in designing the houses would scarcely take a day—the subsequent labour would be repetition and superintendence. If there were 20 houses in the row the cost would be £4,000, and at 4 per cent.—if an architect took it so low—he would receive £160. Let us look at the restoration. The plans in this case would involve a month's labour at the least, and the execution of the work would demand constant vigilance and numerous details; the thought and care bestowed would be unremitting; yet, supposing the contract to be the same in amount as the houses, the architect would only get his 5 per cent., or £40 more than the houses. It is true he would probably have a claim for arranging with artists, and say he received £300, the disproportion in the payment for skill and labour would still remain ridiculously great, and the architect in the first case would be paid at least thirty times, as well as in the second instance. Such instances are by no means unusual, and we think that in a fair scale of charges the degree of labour should have been considered. A new building is invariably less troublesome than a restoration in which a great deal of architectural detail is involved. But there are also classes of new buildings in which the differences are quite as great. For example, how much more complex is a well-appointed house than a warehouse, or even a school; and supposing the cost to be the same in both instances, the percentage on the latter would be at least 30 per cent. more remunerative. We might multiply instances. Shop premises and fittings are a great deal more troublesome than factories, hospitals than prisons; a vestry or town-hall is a vastly more complex structure than a church, and so on through a variety of other structures. In these cases it appears to us the proportion of plain walling and inclosed area, or capacity, should become the measure of charge, and if architects were paid on the plan, or by a scale regulated to the complexities of internal structure and arrangement—a graduated form of which might easily be prepared—

the anomalies of the percentage system would disappear. It is evident the division into four parts of $1\frac{1}{4}$ per cent. of the 5 per cent., though meeting the requirements of ordinary buildings, does not agree with the extremes we have indicated. Thus the preliminary sketch and design for a complex building like a town-hall, or a large house, is inadequately paid at $1\frac{1}{4}$ per cent. Again, in the other three divisions of general drawings, working details, and personal superintendence, the labour bestowed on such a structure would be fifty times greater than that on a plain building, such as a skating-rink or factory. It would be a simple matter, we contend, to suggest a classification that would meet all the cases likely to occur. Thus we might classify all works into three distinct groups—constructional, architectural, and decorative. Again, we might still more systematically divide all buildings into simple cellular and compound cellular, according to the number of apartments in plan; while architectural design in the abstract we might divide into classes denoting the material and the degree of complexity of detail. The subject is too large, however, to enter upon in this article.

THE THAMES EMBANKMENT.

THIS promenade yearly assumes a greater degree of completion. The plane trees on each side are beginning to throw a grateful shade on the wide foot pavements; the roadway itself is being remodelled, or macadamised, and the current of traffic since the opening of Northumberland Avenue has gradually increased from one of a thready intermittent character into a continuous stream. The clearing of the gas-works near the site of De Keyser's Royal Hotel, Blackfriars, has been followed by some architectural improvements, amongst which may be mentioned the blocks of offices in red brick and stone, in the Tudor style, at the bottom of Surrey-street; the completion of the areas of ground near the Temple station, and the erection and unveiling of the statue of Brunel at the corner of the triangular open space on the east side of Somerset House. The last-named object is a conspicuous feature, and its *localité* could not probably have been better chosen. The great engineer stands over a tunnel, which, as a work of modern times, may be considered to be one of the greatest, and to bear to the present age somewhat of the same importance as his own great tunnel under the Thames at Rotherhithe bore to a previous generation. Again he stands facing a work of equal engineering importance, if not of skill—namely, the Embankment itself. As to the character of the design we cannot say it is quite so poor as public works are generally credited to be; the best part of it is the winged base or background of masonry against which the great engineer stands. This screen or winged wall, if we may so term it, completes an awkward corner of one of those waste bits of reclaimed ground the Metropolitan Board of Works have done their best to adorn. It makes an easy turning, and utilises a corner in at any rate an unobjectionable way. We hope the space within the enclosure will be rather thickly planted with trees. The figure of Brunel, cast in bronze, is rather heavy, but the engineer himself was a heavily-built man. He is shown dressed in a light overcoat, displaying a loose vest, and standing in an attitude expressive rather of conversation than of thought. His right hand holds a pair of compasses, with which he appears to be playing with a nonchalance acquired from habit. As a work of the modeller the figure is quite above the average. The simple but expressive inscription, "Isambard Kingdom Brunel, Civil Engineer, born

1806, and died 1859," is cut in the stone pedestal, which on each side has a stone seat, moulded, and forming a portion of the base. The mouldings are bold, and of good design, rather French, and the upper part of the screen is terminated by flat scrolls or trusses, carved on the front with festoons. A little further eastward, and within the Inner and Middle Temple grounds, the new buildings, known as the Temple Chambers, are progressing rapidly, and already the façade towards the Embankment may be completed in the architectural imagination. The front is wholly of dressed stone, Portland apparently, and will be a striking addition to the architectural frontage of the Embankment. The elevation is pleasingly varied in plan by circular turret-like projections at the angles, and by three bays, two of which are bold canted projections, or windows, carried up the façade. In style, the architects, Mr. J. P. St. Aubyn and Mr. E. M. Barry, have adopted one of the richest varieties of the French Renaissance of the time of Francis I.; and the design recalls to mind the châteaux style, as we see it in the Châteaux de Blois and de Chambord. The panelled pilasters of the three main stories, with their diamond-shaped panels, the richly moulded window heads and shafted mullions, the fine carved work in the friezes and the trussed balconettes to second-floor windows, seem almost too refined for the adjacent buildings, and contrast rather singularly with the Temple Library and the surroundings of the eighteenth century Vernacular brickwork to which the new building is an adjunct. We are led to speculate on the result of this rapid importation of Renaissance. From the St. Stephen's Club-house to Blackfriars the leading buildings are, or will be, of this phase. It is true the new Opera House is still in abeyance, but we know what it is to be. The *embouchure* of the new street from Charing-cross will probably be in the same architectural dress; the proposed hotel, near Waterloo-bridge, recently illustrated by us, is also Renaissance; the new School Board Offices are conceived in a similar style; and now we have the Temple Chambers, while the large hotel facing Blackfriars-bridge forms the eastern *finale* of this series of attempts. There are evidently two schools now wedded to Renaissance—one taking the English phase and using brick, and the other French, aiming at a more refined sort of expression, in which the effect is sought to be produced by a more abstract use of architectural detail. Both kinds admit of considerable freedom and lightness of treatment, and they lend themselves to our civil structures with great ease. Let us hope at last the vagaries of Gothickesque and Queen Anne will be supplanted by a style of architecture in unison with our great thoroughfares. It is quite certain a row of quaint buildings in the picturesque garb of the seventeenth century would badly harmonise with the boulevard-like spaciousness of our Embankment; it would be like widening, levelling, and paving our narrow City lanes, retaining the old dingy buildings on either side. By the way, we notice Fleet-street is at last being paved by the Asphaltic Wood Company. Will the process have any effect upon the architecture essentially picturesque at present?

AMERICAN ENGINEERING.

AN historical record of engineering must always possess a great interest to the student of a civilised society, and especially instructive must be the engineering progress of a great country like America. We read of difficulties overcome by works of daring and enterprise that have scarcely their parallel in ancient times—the forces of

Nature brought into subjection, and harnessed to the work of piercing the mountain, or crossing a ravine, or some herculean task performed in which mind has overcome matter. The work of the engineer must always precede that of the architect; the "rough ways must be made smooth" before the refinements of art can be duly appreciated. America pre-eminently presents to us a nation rapidly transforming the obstacles of Nature, and we may say confidently she is passing through the engineering phase of her existence. In no country has engineering science made such rapid advances within the last half a century. We can point to bridges and viaducts and aqueducts that surpass in scientific ingenuity the more massive constructions of Rome, and to a railway system that can rival any of those of the older nations; while the art of canal construction has attained a development truly surprising. We can name the Erie Canal, the Chenango Canal—98 miles long, with 100 locks, extending from Utica, on the Mohawk, to the Susquehanna River. The progress of engineering, like that of other arts of civilisation, takes place by a series of successes and failures, and we look to the works of our Transatlantic brethren as a series of achievements in this art unexampled in the history of the world. One reason for this is that the American engineer has not been unduly led by traditional forms, and has relied mainly on his own resources and skill. Each great problem of construction, whether it be in bridge-building, reservoir construction, or canal formation, has been solved by the united experience and science of the age. In every branch there is a tendency to a uniform type of construction, as in architecture, and one might trace certain stages of progress, just as the scientific sociologist can, from certain facts and social phenomena, account for laws and societies of various types. Into this view of the subject it is not our intention to enter here, however interesting it might be; though it may serve to indicate the various influences at work if we briefly record the experiences of Mr. John B. Jervis, C.E.—a veteran in engineering, as detailed in a memoir read before the American Society of Civil Engineers, in October last year. The paper read furnishes us with the individual experiences of a practical engineer, who has taken part in the engineering constructions of his country during the present century. Mr. Jervis's first work was on the original construction of the Erie Canal, between Buffalo and Albany, in the State of New York, commenced in July, 1817. The author tells us his introduction to the engineering profession was as an axeman to his father in clearing a field of cedar swamp for the new line. The young axeman soon discovered a liking for the work; as an assistant to the rodman or "target-bearer" he examined the surveying instruments, and the idea of learning the mysteries of the art soon occurred to the young operative. The science of engineering was thought by the young aspirant to be a rather formidable study. Yet he appears to have overcome this idea, and soon engaged himself as a rodman at the modest sum of 12 dollars per month. At that period the art of engineering required little more than a knowledge of surveying, which was regarded as its basis. Full of youth and enthusiasm he started from Rome, N.Y., with a locating party, in April, 1818, and in July completed the location of the Seneca River, at Montezuma. A portion of the line was put under contract, and several small parties, each with a resident engineer, was organised to direct the execution of the work. Young Jervis was assigned to a party, having 17 miles in charge, under Mr. David S. Bates, who was a good land surveyor, but nothing more.

To show the limited engineering qualifications of this early period we may mention that the resident engineer gladly availed himself of his assistant's knowledge of levelling, which was greater than his own, and the young surveyor was allowed to run the levels. In the next year Jervis was made resident engineer, his master having more extended duties given him, and the salary was increased to 1.25 dollars per day and 0.50 expenses. We are told when this canal was constructed, the State of New York contained about 1,250,000 people—a large portion of it was a wilderness, and the surplus earnings of the citizens were employed in draining, clearing the forest, erecting houses, mills, and other works required by a newly-settled colony. Well might such an undertaking as this canal have been deemed insuperable at the time! It was thought it would sink the State in ruin. The aid of the Government was sought, and after the plan had been represented at Washington Mr. Jefferson remarked, "We are trying to make a canal three miles long at this city, and we have not been able to obtain funds from individuals, the State Government, and the General Government, to complete it, and now you ask us to aid you in building a canal, 300 miles long, through a wilderness. Preposterous!" Thus, in both the Erie and the Champlain Canals, the New York State entered single-handed into the schemes. Such was the state of the country when Mr. Jervis began his engineering labours, and we can only recall the difficulties overcome by Stephenson in the first railway adventure in England—the Stockton and Darlington line—as a parallel. Like the prejudice and traditions which our own Edward Pease and Stephenson had to encounter and surmount, Jervis had to stem a current; but the difficulty in this case was not so much prejudice and tradition as lack of money. One of the criticisms the Erie engineer had to meet with was the question of his skill to establish a true level of 60 miles long. To run a water level for 60 miles requires considerable care. When the water was let in the level proved to be correct. This was the first canal of any importance, and we gather from the paper various interesting particulars of it. The canal was at length commenced, after a preliminary survey and estimate had been made by two eminent land surveyors—Hon. Benjamin Wright, of Rome, N.Y., and Hon. James Geddes, of Onandago, who were appointed the chief engineers of the Erie and Champlain Canals. Mr. Canvass White, the assistant engineer, discovered the material to be used for the hydraulic cement, and prepared the plans for the structures of the great canal. As indicating the period, it is said that the chief engineer called on a carpenter—a Mr. Cady—to prepare a plan for the wooden trunks of aqueducts, which was adopted. In 1823 Mr. Jervis was assigned the duty of superintending the canal for a section of 50 miles from Minden Dam to the Mohawk River, having been made a resident engineer in 1821. This gave the author experience in the working of the canal. Weak points presented themselves, and the cost of keeping the section in repair was 600 dollars a mile. We are told there were no politics to be eared for, and the cost then compares in a remarkable manner with subsequent expenditures of 3 to 10 times the amount. In 1825 the canals were completed and opened for navigation, and Mr. Jervis resigned his employment. The success of the canals and the magnitude of their traffic gave impulse to canal enterprise.

The Delaware and Hudson Canal and Railway, projected by Messrs. Wurtz, of Philadelphia, in 1825, was the next work in which the author was engaged as principal assistant-engineer. The cost was estimated at 1,208,000 dollars, but the actual cost was

double. The rivers were not favourable to the piecemeal scheme proposed, or the slack water plan by dams and locks, and an independent canal was decided on—the sizes of which were 4ft. depth of water, 20ft. width of bottom, and 28ft. width at top water-line. The locks were 76ft. long, 9ft. wide, and capable of receiving a boat of 30 tons. From Kingston to Honesdale the canal is 106 miles, and has 110 locks, after which a railway of 16 miles is constructed to the coal mines of the proprietors in the Lackawanna valley, by a rise of 900ft. to the summit of the Mosaic mountain, and then a corresponding descent to the mines. Describing the canal at Kingston on the Hudson to the Delaware, the locks were of stone, with hammered face, and laid in hydraulic cement, the backing being in quick lime mortar. This last was a mistake, we are told. On the Delaware they were of dry masonry faced with timber and plank. The canal was finished in 1828. The railroad from Carbondale was an ascent 3 miles long by 5 inclined planes on an angle of one-twelfth, and these were worked by stationary engines, the cars being moved by endless chains passing over sheave wheels at the head and foot. The chain frequently broke, and hempen rope was substituted, which was found to work well, the sheaves being grooved to prevent slipping. Subsequently the hempen rope was replaced by one of wire. The descent was 500ft. in a mile, and to resist the weight of loaded trains, a friction brake was not considered safe, and Mr. Jervis proposed an ingenious mode of making use of the resistance of the atmosphere to overcome the preponderating force. Experiments upon a surface were made with different velocities, and at last the author attached to the shafts, or sheave wheels, sails, which, as the wheels revolved, gave motion to them, and retarded gyration. Each shaft had 4 sails of thin boards of about 20ft. square in area, and one of the sail shafts had a powerful brake to stop the trains at the head and foot of the planes. By the sails the velocity of the train was reduced to about 4 miles an hour. As business increased, the speed of the trains was augmented, and it became necessary to reduce the area of the sails. This plane was three quarters of a mile long, with a vertical height of 350ft. Rapid changes have followed; the planes ultimately were worked by steam and gravitation alternately. Thus the railway is now worked by stationary steam and gravitation, with no moving power. This combination of steam and gravitation has been used with success in other lines in connection with mines. Thus the railway from the mines at Pittston, 40 miles in length, is worked in this way in both directions, but the method is desirable only in mountainous countries, and this means of transportation has been largely developed in America. In time the traffic on the Hudson Canal increased, the locks were rebuilt with chambers 90ft. by 15ft., and the depth of water was raised to 6ft.; but the widening of the canal was not corresponding, and the ratio between the section of the boat and canal was defective. Mr. Jervis was appointed chief engineer when Mr. Wright resigned.

The Mohawk and Hudson Railway was the next work to which Mr. Jervis directed his attention. This passenger line extended from Albany on the Hudson to Schenectady on the Mohawk. Before this line the Erie Canal and stage coaches transported passengers from Buffalo to the latter place. Here, again, the sudden rise from the Hudson of 200ft., and another from the Mohawk, demanded the same method of inclined planes, then considered the only means available, and such planes were made at each end of the railway, which traversed a table land between.

The adhesive power of locomotive engines was not known at that time. After a few years the requirements of a miscellaneous traffic showed the utter inefficiency of this form of transport, and the author was a member of a commission appointed to consider the practicability of dispensing with it. A grade of 80ft. per mile at the Albany end, and of 40ft. at the other, was proposed and formed, and locomotive power is now employed. This early attempt at railroad construction is especially deserving of note, as indicating the initial idea. The rails were of wood, capped with a plate of iron, which in the cuttings was laid on stone blocks, and on embankments with timber cross-ties. The first locomotive weighed between 4 and 5 tons, had 4 wrought-iron wheels, and carried 75 to 125 passengers, at a speed of 25 miles an hour. Robert Stephenson, of England, constructed another of 7 tons, and it was called "John Bull." Landed proprietors were hostile to railways, as they were in this country; and we find this early pioneer of railways in America reproached as a barbarian, and his opinion that railway trains would be able to travel at a speed of 30 miles an hour pooh-poohed and made the pretexts for jests and effusions. The next step made was to improve the wheel base of engines, and the author made an improved locomotive with a 4-wheeled truck under the forward part as a support and a guide. Less vibration was experienced. Our own Stephenson built this engine, and it is said to have moved with "perfect beauty." At last this railway was extended, till it now reaches the Pacific Ocean at San Francisco. As our readers may be aware, the front truck plan is general in American locomotion.

The Cheroquo Canal, 98 miles in length, with 100 locks, was another undertaking in which resort was had to artificial reservoirs to supply its summit with water. It was thought that one-third of the rainfall could be depended upon over all loss. The proportion of rainfall estimated by rain-gauges and sluices was 40 per cent. as that to be depended on. In 1836 Mr. Jervis accepted the position of chief engineer to the Croton Aqueduct, and his connection with the Erie Canal (at which he was engaged in enlarging to 5ft. depth and 50ft. wide) was broken off. The Croton scheme was intended to introduce the water of the Croton river to New York. The location of the line of aqueduct had been made by Major Douglass from the Croton river to the north bank of the Harlem river, 33 miles, the grade being proposed to be 13¼ in. to the mile; but to Mr. Jervis, his successor, belongs, we are informed, the elaboration of the design and plans. Some interesting details are furnished of the work. One of the great features was the dam across the Croton for the head of the aqueduct. This was 40ft. above the river surface. At the south side was a rock rising from the river at an angle of 1 to 1½ to the head of the aqueduct. "The dam and its abutments on the river side were built on rock, and the extension of the weir was made by excavating the rock into the hill." The length of the weir was too short for the first flood before the dam was finished, and the embankment at the north shore gave way. The dam remained undisturbed, though the water rose 12ft. above the overfall. It was afterwards extended from the old abutment on the south side to the high level of the north side, thus extending the weir to 180ft. All the works had to be artificial, there being no rock. The great fall of water was broken by giving a curved form to the lower side of the dam, by which the falling body of water is gradually changed to a horizontal direction, when it reaches the apron, "and the reaction of the water in the river below." The curve, in this

case, has worked satisfactorily, the water in a high or low stage following close on the face of masonry." We are informed the ordinary width of the river is 100ft., and its greatest depth, 15ft. No settlement has occurred of any account since its completion, now 33 years. In Sing-Sing Bridge one peculiarity is the cast-iron lining of the conduit. This was to guard against leakage, which if only amounting to a sweating of the arch masonry, would speedily disintegrate the stone. To counteract the effect of longitudinal expansion and contraction, the author recommends an iron pipe, put together with the common faucet and spigot joint. The centring adopted at Sing-Sing Bridge was on the principle adopted by Rennie for Waterloo Bridge. To show the close jointing of the arch, a level taken showed its settlement to be less than $\frac{1}{2}$ in. The span is 88ft. We have no space to describe the Harlem river bridge, a quarter of a mile in length, half of which, or 600ft., crosses the river. Its height is 114ft. above tide water. These dimensions will convey some idea of the work. Some of the piers had to be placed on piles, others on solid rock. The foundation of the centre pier in the channel was carried down 40ft. without finding anything but sand. Piles were driven 12in. square, 35ft. in length, and in some cases they were driven 80ft. below the river surface. The shafts of the pier are hollow. We leave these details and those described for the conduit. The last was made for two 4ft. pipes. Against the engineer's protest 3ft. pipes were laid, and when the Water Commissioners often required a larger supply of water another pipe was placed on the top of the two others, which incurred a greater expenditure, and marred the simplicity and economy of the original design. Of the distributing reservoirs we may only remark that the main feature is the plan of hollow walls, whose retaining power had to sustain a pressure of 40ft. head of water, and hence it was deemed more economical to have a hollow wall, or two parallel walls, connected by cross walls, and these connected together at the top by brick arches. About 12ft. of the upper part was solid. Openings in the cavity were left to allow a man to examine the walls inside, and discover any leak. This ingenious mode of cellular construction has proved a success. We have no space left to detail other works by this engineer. The Boston aqueduct to supply that city with water, first abortive, was afterwards placed in Mr. Jervis's hands. The Hudson River Railway, the Pittsburgh and Chicago Railway, and the great railway from the head of Lake Erie to Chicago, called the Michigan Southern, and Northern Indiana Lines, were mainly constructed under the author's directions. In all these works a great deal of enterprise, tact, and engineering ability of the conquering sort were required, and Mr. Jervis seems to have been well fitted for this task. Statistics and passenger traffic had to be mastered to convince capitalists of the success of some of these great schemes, which have changed the character of the country. As he tells us, he had to encounter all kinds of opposition; to show that natural scenery would be improved by combining works of art with those of nature, and to prove a remunerative success. As regards scenery, perhaps American landscape has suffered less than the English. Mr. Jervis's narrative is instructive, at least, as showing us that the engineering progress of America has passed through similar stages to those of England, and that the impulses given to the railway system were of the same order, and had to encounter the same obstacles. It was first a struggle between the canal companies, then a compromise and combination, till at length it has assumed a special character of its own. Mr. Jervis,

like our own Stephenson, Fairbairn, and Brunel, was just the man required in the first period of enterprise of this kind, and for the building up of the engineering science.

LEAVES FROM A SKETCH-BOOK, A. A. EXCURSION, 1876.

AUGUST once more is almost here, and the season of holiday-keeping has again come round. People of nearly every rank and degree are looking forward to or are now enjoying their annual trip out of town, no matter how brief that trip may be. Arrangements are daily being made of every sort and kind, and architects with the rest are thinking of how and where to spend their holiday. With this intent the Architectural Association has just completed arrangements for its "annual excursion," which this year is to take place from Aug. 13th to 18th. The neighbourhood of Warwick and Coventry has been determined upon, with the first-named town as the headquarters of the party, which is to be limited to thirty. Last year, it will be remembered, a visit was made into Hampshire and Wilts, Winchester being chosen as a centre. The excursion was a thoroughly successful one, however far short it must rank for actual work done in comparison with its predecessors, conducted, as they were, under the immediate direction of their founder, the late Mr. Edmund Sharpe, whose energy and zeal inspired those accompanying him on the last occasion to such an extent that no less than 662 sketches, and these mostly elaborate and measured, were made in fourteen days by fourteen (chiefly) of the twenty working members of the party who visited La Charente in 1875. The results of their labours were made conspicuous by the unparalleled collection of drawings brought together by Mr. Sharpe to illustrate his celebrated lecture on the architecture of La Charente last year.* Such a result, and such work as that which produced it are too great, it is to be feared, again to be realised; while the loss of Mr. Sharpe cannot be over-estimated in this matter. However, the lines which the founder of these excursions laid down, will, as far as possible, be followed, and much good work will no doubt be done by those who join the excursions from year to year. The few sketches which we propose to give are taken from some made last year, and may not be without interest just now, although they cannot lay claim to being more than quite holiday work.

An account of the points of interest at Winchester, with an outline of those places visited during the excursion, were given in an article published in the BUILDING NEWS for Aug. 4th last year, given as a prospective review of the excursion; so that little remains to be described here save a few notes on the particular buildings referred to by the accompanying sketches. The two which are selected for publication to-day were made on Aug. 18th, the day arranged in the programme which governed the proceedings, for a visit to Salisbury. Before the duties of the day commenced, an early walk to St. Peter's, Cheese Hill,† Winchester, which lies to the east of the city, resulted in our sketch herewith; the building not being visited by the body of excursionists until the concluding day of the excursion. The chief peculiarity of this church is the square shape of its ground plan, which consists simply of a nave with a south arcade of three arches, a south aisle, and a square tower at the south-east corner, there being no chancel. The length of the nave is 37ft., with a width of 39ft. 8in., including the aisle. The nave arcade is Transitional Norman. The west windows are Decorated, while those of the east and north sides are of Perpendicular work. The tower is of much earlier date, having an interesting small square-headed window next street, of Early English, if not anterior, character. The roofs are covered with tiles, and the upper stage of the tower is tile-hung, and contains three bells. Some ancient open work crest tiles remain on the ridges of the roofs. The font is of Norman date, and is of Petworth marble, like many

* See BUILDING NEWS, June 16th, 23rd, and 30th, 1876.

† Cheesehill, anciently called Chishull or Chusull Street. It is near St. Giles' Hill.

other examples in Hants. The bowl has slightly-sunk circular-beaded panels. We have here also one of the several instances in the county of the use of chalk for somewhat elaborate work. We refer to the two Decorated niches in the south and east walls; they are of very good character, and are interesting examples though defaced. Adjoining the church, and extending on plan half way up the nave on the north side, commencing from the west end, is a house (formerly the residence of Chief Justice Fleming—now for many years the property of the Earle family), possessing the peculiar advantage of direct communication with the church on the chamber floor, by means of a shuttered opening, so that the inmates were able to hear the services from this sort of gallery, so to speak, without going into the church. Several remains may be traced in this house which seem to indicate the existence of some conventual establishment in connection with the church. From the many indications which remain, especially on the north and west sides, it is thought that at some time the church was much altered, probably at the Reformation era, and features, such as windows, built in from other, and not always similar, positions; and this idea is confirmed by Mr. C. R. Pink, architect, of Winchester, to whom we are indebted for our introduction to this church; the view from the west with its foreground of foliage, a branch of the river Itchen forming a base to the picture, with the water-mill and bridge to the left, being pointed out as one of the most "charming bits" in the whole city of Winchester. In a drawing published by the late Owen B. Carter a porch seems to be shown to the entrance; but if this was so, the porch no longer remains. The church was repewed in 1834; the parish school was built in 1840; and the parsonage in 1845. The rectory is valued at £100. Leaving Winchester at 8 o'clock, Salisbury was reached by about 10 a.m. The party first visited the Museum, and examined the fine collection of flint implements, and other varied specimens both of general and local interest, especially the large model in the museum of Stonehenge, which for want of time could not itself be visited. Leaving the museum, an approach was made to the cathedral by way of St. Anne's Gate, an interesting example of a rather late Domestic Gothic gateway, with later additions. This building was illustrated in the BUILDING NEWS from our sketch published Oct. 18th, 1872, when a few particulars were given. Passing the new college buildings, at the entrance to the Close, and then in course of erection by Mr. Butterfield, we at once obtained what Rickman calls "the best general view of a cathedral to be had in all England, displaying the various proportions of this most interesting building to the greatest advantage." Commenced in 1220 and finished in 1258, Salisbury Cathedral exhibits in perfection the Early English style, which attained its highest excellence at that date. The spire is of the time of Edward III. It rises 400ft. above the pavement line, 30ft. above the top of St. Paul's, and only 74ft. below that of Strasburg—the highest cathedral in the world. It was at this spot already referred to, from whence this fine *coup d'œil* of Salisbury Cathedral is obtained, that a friend brought his guest, who had just arrived from town, to enjoy a first view of the building of which he himself was so justly proud; and so careful was the host that the effect of grandeur should be realised at the right time by his London friend that he desired him to close his eyes until he reached the spot. "Now," said the chaperon, "what do you think of that?" "How wonderfully like the cork model I have in London," was the unappreciative reply. This anecdote was recalled to our mind by the equally appreciative and critical remarks on the proportions of the tower and spire by some of those who were with us on the occasion we are now recording. At the Cathedral the party was met by Mr. King, from the office of Sir G. Gilbert Scott, R.A., whose work of restoration here is so well known. All the chief points of interest were alluded to, including the questioned position of the high altar. The restoration of the choir was just on the point of completion, so that the work was seen to advantage. The choir stalls, by Wyatt, we need

hardly say, have been removed, though probably the new doctrine on restoration would have pleaded even their retention, and certainly an example might well have been preserved in the local museum as an historical record. The curious way in which these stalls were enriched with putty crockets and composition ornaments was interesting, however debased and bad they might have been. We are glad to have ourselves preserved a portion of one of these, secured from the debris when the stalls were broken up some few years since. After having visited the vestry and examined the celebrated cope chest (illustrated by Mr. Wm. Burges, in his "Architectural Drawings"), the triforium, roofs, and spire were explored, the system of iron ties and bondings introduced by Sir G. Scott being pointed out and described. A fine view of the surrounding country having been obtained from the spire, attention being drawn to the various churches and points of interest in the landscape by Mr. F. Bath, architect, of Salisbury, the party adjourned to the White Hart Hotel for luncheon, which, after such a morning's work, was readily done justice to, as may easily be imagined. Every one now in the brief time which remained was allowed to follow his own bent on promising to put in an appearance at half-past three for the group photograph, and the "gentle reader" will be lenient in passing judgment upon any work which was done during the interval which preceded such an auspicious event. One incident with regard to the "group" occurred which, had it taken place a moment earlier, would have seriously interfered with the tout ensemble. No sooner had the "artist" said "All right," or the cap put on the camera, than the doors of the portals in which the "group" stood were thrown open, and set the afternoon congregation free. But to return to our sketch in High-street of the Old George Inn. This building is one of the many interesting examples still to be found in Salisbury, and, although not probably quite so well known as some, is not second in interest to any. The other examples referred to may be briefly enumerated as St. Nicholas Hospital, near Harnham Bridge, founded by William Longspee, first Earl of Salisbury, 1227; the Poultry Cross, of sixteenth-century work; the Hall of John Hall in "New Canal," it was built in 1470, and was restored by Mr. Pugin; the Barracks in Brown-street, of the time of Henry VI., has a curious chimney-piece in one of its rooms; the Joiners' Hall, in St. Anne-street, temp. Elizabeth; the Tailors' Hall, in ruins (or was recently), at the end of a passage in Milford-street; and some houses in Minster-street, illustrated in the BUILDING NEWS, Jan. 12, 1877, from drawings by Mr. F. Bath, architect.

The following by way of description of the Old George: In 1412, when John Becket was Mayor of Salisbury, an account was rendered of rents and tenements within the city held under the mayor and commonalty, and among them is the hospiciam called the George Inn, held by Thomas Randolph at the yearly rent of £20. About 1570 the building was let for thirty years at £10 per annum, the tenant doing repairs. The George Inn is mentioned in the will of Alice Meriot, whose first husband, William Teynterer, jun., bequeathed it to the Mayor and Commonalty, as forming the confraternity of St. George, for charitable purposes, and to the inhabitants for their prayers. The executor, William Warmwell, a citizen of note, neglected to fulfil the directions of the will, and Alice, widow of Teynterer, who subsequently married George Meriot, and died in 1406, introduced an English clause into her Latin will, calling attention to the circumstances. It is probable that the inn derived its name from St. George, the patron saint of the corporation guild. The carved work at the entrance is said to be of the time of Edward III. or Richard II., and the woodwork of the George is "chiefly chestnut;" but, not having made a personal examination, we cannot vouch for this. We learn from an inventory of the furniture of the Old George, dated April 9, 1473, that there were thirteen chambers for guests, including the Earl's, the Principal, the Oxford, the Squire's, the Lombard's, the Garret, the Clarendon, &c., &c. There were, besides the tavern or wine cellar, the buttry, the kitchen,

the hostelry and hostler's chamber, and the parlour called the warehouse. The furniture was of the most homely description; the beds, of which there were one, two, and three in a chamber, were classed according to the number of planks which formed the bottom of the bed, and which were from two to five in each bed. The guests appear to have messed together in their respective sleeping rooms, as in each chamber there was the same species of accommodation—viz., a dining table of oak or beech, tressels to support it, and forms evidently adapted to the table. In the "Principal" chamber there was a cupboard. Robert Hungerford, second Lord Moleyns, on his way to join the English army at Blaze, in Guienne, commanded by his relative, the famous Talbot, Earl of Shrewsbury, in 1444, stopped at the George. Pepsys records his stay in 1668; he had "a silken bed and very good diet," as well as a most unwelcome bill of charges, "at which I was mad, and resolved to trouble the mistress about it, and get something for the poor, and come away in that humour."* The oldest portion of the Old George is still preserved, though the original purpose of the house has been changed. A carving knife of the early part of the fifteenth century, bearing the effigy of a king, was discovered during recent alterations, and is now deposited in the Salisbury Museum. The party returned to Winchester by the train leaving Salisbury at 4.25.

M. B. A.

PUBLIC OFFICES IN LONDON.

THE Select Committee of the House of Commons, appointed to inquire into the annual expenditure on public offices and buildings, and to see whether the adoption of a more comprehensive plan for the extension and improvement of the public buildings would not be more economical and advantageous than the present system, has reported in the affirmative. Three plans have been submitted to the committee for the concentration of certain public departments. The first plan is that of Sir Henry Hunt, the consulting surveyor to the Office of Works. He proposes to purchase all the block of buildings bounded by Parliament-street on the east, St. James's-park on the west, Great George-street on the south, and Charles-street on the north. This contains 133,000 superficial feet of building area, and the estimated cost of the ground amounts to £1,300,000; on this block Sir Henry Hunt provides accommodation for the War Office, and the Admiralty, and the Council Office; he proposes to remove the old buildings in Downing-street, and to erect houses fronting the Park for the First Lord of the Treasury and the Chancellor of the Exchequer; to add a story to the Treasury offices, to place the Board of Trade between them and the Horse Guards; to retain the Horse Guards, and to place the Office of Works and the Office of Woods between the Horse Guards and the present Admiralty, and thus to leave the existing Admiralty building at the disposal of the Government. Sir Henry Hunt stated to the committee that he calculated the whole expense of his scheme, including his Great George-street site, at two millions and a half, and that he further estimated that it would set free, and render available for sale, property belonging to the Government, including the existing Admiralty building, as well as release the houses which are now hired, represented by a capital value of a million. This plan, Sir Henry Hunt said, does not provide for the Civil Service Commission, nor for temporary commissions. It appears to the committee undesirable to add a story to the existing Treasury block of buildings.

Another plan was submitted to the committee by Mr. Mitford, the permanent secretary to the Board of Works. The witness proposes that the public offices should be placed on the west side of Charing-cross and Parliament-street, and that incidentally to this scheme the narrow part of Charing-cross should be widened, and the Mall extended into Charing-cross at the point where Messrs. Drummond's bank now stands. On the park side the Horse Guards would form the centre of a group of public buildings, and there would be no encroachment on the Parade.

* See Diary, Vol. II., p. 257.

For carrying out this scheme it would be necessary for the Government to acquire the whole of the Crown property and private property which lies between the corner of Spring-gardens and Cockspur-street and the present Admiralty, together with Dover House, which belongs to the Crown, and a portion of the block bordered by Great George-street to the south, and Parliament-street to the east, setting back Parliament-street to the line of the new Home Office. From a statement which appears in the appendix it will be seen that Sir Henry Hunt estimates the probable cost of Mr. Mitford's scheme at three-quarters of a million in excess of that of his own. Mr. Mitford proposes by his plan to obtain an additional building area of 25 per cent. over that of Sir Henry Hunt.

The third plan is that produced by Mr. Cates, one of the surveyors of the Office of Woods, and includes one side of Whitehall-place and the houses in Whitehall-gardens up to Montagu House. It makes use of the land known as the Fife House site, the vacant space of ground lying between the public gardens on the Embankment to the south of Whitehall-place and to the west of the public gardens of the Embankment. Here it is proposed to place the War Office, the Admiralty, and most of the other departments provided for in Sir Henry Hunt's plan. Mr. Cates estimates the cost of this site at £850,000.

The committee strongly insist on the expediency of the Government losing no time in proposing some plan by which the evils complained of may be remedied. It is their opinion that delay will lead to greater expense in the future, and that immediate action is demanded for the efficiency and comfort of the public departments and the dignity of the country.

LECTURES ON ANCIENT ROME.

THREE very interesting lectures, illustrated by photographs shown by means of the oxy-hydrogen limelight, were delivered by Mr. John Henry Parker, C.B., F.S.A., &c., at the Rooms of the Institute of British Architects, on Tuesday, Wednesday, and Thursday week, to select audiences. The proceeds are to go towards the Roman Exploration Fund—a work in which Mr. Parker has for years taken an active interest. The subjects of these lectures were the four walls and thirty-seven gates of Rome, the Forum Romanum, Via Sacra, and Colosseum, and the tombs and catacombs. Some time ago we gave a short account of Mr. Parker's published works on these subjects, one being the "Forum Romanum." What the author in those works has detailed and illustrated with such minuteness was explained to the audiences at Conduit-street with the advantage of magnified photographic representations of the principal portions of the Roman remains and excavations. Mr. Parker's second lecture was, perhaps, the most interesting from an architectural point of view, and we may just glance at some of the leading objects illustrated on Wednesday afternoon week. That lecture was an imaginary walk through the Forum Romanum, the Via Sacra, and the Colosseum. Commencing at the north end of the Forum, Mr. Parker described what he has called the Capitolium, which included the principal public offices of the municipality in the time of the Kings and of the Republic. It is now called the "Municipium" on this account. Under the building, in the basement, were the *Ærarium* or treasury, the *Tabularium* or Record Office, and the *Senaculum* or Senate-house. It stands on the south slope of the Hill of Saturn. The last-named offices were partly cut out of the rock, and portions of the excavated parts were illustrated. The Senate-house or *Curia* was on the level of the third floor, behind and above the *Tabularium*. The doorway of the *Curia* was the south-east corner, 20ft. above the market-place level. At this point, on the top of the flight of steps, the herald on certain occasions made proclamations to the people below. Mr. Parker contends that the Senate-house could not have been the Temple of Concord as believed by some, because it was the vestibule of it. He says the space was not large enough, and that it is more probable that the Senate assembled for debate in the great building behind the temple. He also shows

that, as the upper part of this great public structure was of wood, and the lower of stone, the latter would escape destruction by fire. The west end is of tufa of the time of the Tarquins; the east end of travertine of the early Empire, and belongs to the rebuilding after the great fire. The general view of the Forum, taken from the Palatine Hill, is an admirable key to the excavations. The photographs shown by the limelight included the half-buried columns of the Temple of Saturn as it appeared before the excavations in 1810. At that time it was named the Temple of Jupiter Tonans. The basement of this structure, showing the circular doorway of the *Ærarium*, with its massive walls of squared masonry, and the moulded plinth of the podium, were admirably indicated; so also were excavations of portico of the *Dii Censentes* (household gods), excavated in 1835, with its colonnade of light composite columns, between which were the bronze statues of the gods. In front is the well-known Ionic temple, generally called *Saturu's*, though, by Mr. Parker, *Vespasian's*. No traces of vaults exist under this temple, and the temple is described as having been rebuilt in the third century. In going on, the *Miliarium Aureum* or gilt mile-stone, in the exact centre of old Rome, and the Arch of *Septimus Severus* were illustrated; the column of *Phocas* (the nameless column of *Byron*); the basement of the Temple of *Vesta*; the marble screens in the *Comitium*, found in 1872, showing a procession carrying tablets, probably of citizens about to burn the bonds of the public debt; and also a magistrate, seated on a curule, together with the long flat panel from the Arch of *Constantine*. Other views shown were the *Basilica Julii*; the celebrated columns of the Temple of *Castor and Pollux*; the Church of *St. Maria Liberatrice*; a part of the *Cloaca Maxima*; Temple of *Constantine*, with its magnificent side vaults, &c.

The most interesting part of Mr. Parker's illustrative lecture was the description of the Colosseum. Photographs of the superstructure—external and internal—the work of the *Flavian Emperors*, were first exhibited, in which the magnificent arcades of *Travertine*, built against the outer sides of the galleries, were admirably depicted. The inner tufa walls, with brick facings; the wonderful substructures of different ages, recently excavated at Mr. Parker's suggestion by *Signor Rosa*; the dens for wild animals; the gulf, canals for water, the lifts for animals and men, the brick arches, the grooved walls, the vessels, the network of passages, were all shown in these photographs. The author maintains that the substructures are earlier than the time of the *Flavian Emperors*, and that probably part of them belongs to the great theatre of *Scaurus*, the stepson of *Sylla*, which held 80,000 people. A section exhibited the means by which the spectators were covered by the movable awnings over the galleries. Corbels for masts or poles appear round the upper story of the outer wall; upon these the poles rested which supported the awnings. The cords were so strong that it is recorded an elephant was trained to walk on them with a Roman knight on his back! It is also recorded that naval fights even took place in the canals of water, which were parallel to each other, and ran down the centre of the arena. These were covered by boards on other occasions.

THE PROPOSED CANNING COLLEGE, LUCKNOW.

SOME dissatisfaction appears to have been expressed among the competitors at the recent award that has been made in reference to the proposed college at Lucknow. From what we hear, the premediated design is by a native competitor, Mr. *Tockeram*, a draughtsman in the chief engineer's office, *Rajpootam State Railway*. A premium of £250 (in English money) has been awarded for his design, and the plan, elevation, and details are now before us. It certainly appears to us the committee of selection have not exercised the best taste. The photographic views sent in—taken from the "*Roorkee Treatise on Indian Engineering, 1876*"—shows an elevation reminding us of some of the earlier imitations of Oriental de-

signs. The centre of two stories, surmounted by a dome of square form, and flanked by spindling-angle minarets, has a low one-story wing on each side, terminated by a cupola of the usual Indian Saracenic type. The features of the building are mosque-like, but the detail is a mixture of poor classical with Oriental forms. The centre portion may be roughly compared to a very inferior imitation of the *Alhambra Palace*, in *Leicester-square*. The plan has a large examination hall in front (100ft. by 43ft.), forming the centre block, on one side of which are the library, principal's rooms; and, on the other, the professors', opening into one another. Behind a longitudinal corridor, with a porch at each extremity, opens upon a suite of seven class-rooms, each 24ft. 8in. by 35ft. A verandah, or arcade, surrounds the entire building (the corners of which are bath-rooms), the surrounding apartments all opening upon it. The main entrance is reached by a flight of steps from a covered porch in front. The design is intended to be constructed in brick and lime masonry, plastered internally, and externally picked out in colour. The entrance arches, decorated with a kind of running foliage over the members, and abutting against the weak post-like angle minarets, and the single segment arch above, inclosing three windows similarly decorated with leafage along the top, display ignorance of architectural design. Another design before us, "*Excelsior*," by a firm of *Bombay architects* (Mr. *F. W. Stevens* and Mr. *J. Adams*), has rather confirmed our conclusion that the committee have not displayed the best taste in their decision. The authors adopt a \perp -shaped plan, in which the examination hall is made an octagonal structure, behind the front block, and connected with it by a lobby. At the back of this hall is the library (60ft. by 30ft.), surrounded by a corridor with a carriage porch. The front building has a central hall and staircase, with side wings devoted to the professors' rooms, and two large class-rooms on each side; on the upper plan the class-rooms are repeated. An arcaded corridor surrounds the whole building, and the front is well broken by recessed portions, which have flights of steps. While there is more economy and condensation in the premediated plan, we are bound to say it is defective in the communication between the professors' rooms and class-rooms, and that the former are not central enough. The native professors' room is not lighted apparently. In external design, "*Excelsior*" exhibits a reasonable treatment of the local material, and that very essential feature of tropical architecture, the verandah. The design displays a European knowledge of style, in which brick and lime masonry are the principal materials used. The work was intended to be pointed externally, and plastered internally, with cornices, dressings, arches, parapets, &c., in cut white sandstone, procurable near *Lucknow*. The lower arcade has horse-shoe and pointed arches of Saracenic form, the *voussoirs* being of brick and stone alternately. Above these arches in the centre portion is a corbelled balconette projecting from a second range of pointed arches, with sub-arches and pierced heads of local stone. The arches of this story, in the wings, are cusped. The entrance is pronounced by circular turrets, capped with domes. The wings are crowned by domes of octagon shape, covered with coloured *Mooltan* tiles in a reticulated pattern, and the octagon examination hall is surmounted by the highest dome, of bulbous shape, resting upon a pierced drum. Angle turrets, with cupolas, accentuate the main angles of the structure. The estimate of the building was 120,000 rupees, or £12,000.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE members and friends of this society made their annual excursion on Saturday, the localities selected for exploration being *Whalley* and *Stonyhurst*. The party left the *Liverpool Exchange Station* at nine o'clock, and arrived at *Blackburn* soon after ten. Having a little time to wait, they walked into the town and inspected the new library and museum and the Exchange. They then resumed their journey on the railway, and arrived at *Whalley* at eleven o'clock, and proceeding to the abbey viewed the ruins. Attention was

next directed to the parish church, in the vicinity of the abbey. Three crosses in the churchyard, apparently of Saxon origin, were minutely inspected, and their date and origin discussed. The party next proceeded by conveyance to *Stonyhurst*. On the way a call was made at *Mitton Church*, the date of which is believed to be earlier than 1593. Leaving *Mitton*, the party soon arrived at *Stonyhurst*, where, by the permission of the rector, they were shown over the college by the *Rev. Mr. Lucas*. The inspection lasted more than an hour and a half, but so numerous were the objects of interest that only a superficial idea of them could be gained in the time. The libraries, with their collection of antique and illuminated books, the sculpture, and the paintings of the secular portions of the college, together with the artistic decorations of the religious apartments of the edifice—more especially the *Lady chapel*—won universal admiration. Works are in progress for enlarging the college, and the extent and nature of the enlargement were explained to the visitors. The party returned to *Whalley*, and, at five o'clock, dined together at the *Swan Hotel*. Mr. *J. M. Hay* (president of the society) occupied the chair, and Mr. *James Montgomery* (treasurer) the vice-chair. The toasts, after dinner, included "The President," proposed by Mr. *Montgomery*. The President, in responding, said: In thinking of what they had seen that day, the mind was carried to a period of English history and a phase of English society which had for ever passed away, and it was impossible to revive it. The whole formation of monastic institutions was a mistake. It originated from a grand and noble motive, but the point of departure, as the French would say, seemed to be a mistake. In our large towns and cities there were dark spots and places which ought to be swept away, that the pure air and light of heaven might be let in. It was the architect's mission to do that, and in doing it he became the truest missionary, or at least the handmaid of the missionary. That appeared to him to be the truest Christian philanthropy, and the whole system of monastic institutions was one that was false from the very commencement. However, it was not with those eyes that they had looked upon the old abbey they had seen. They had looked upon it more as architects and archaeologists. It was a genuine structure; the hand of the restorer had never been laid upon it, and what they did see was the genuine work of men who lived 500 years ago. It was also valuable as a link of that grand style which extended from the *Norman Conquest* down to the period of the Reformation. They had been interested in the churches they had seen, and also in *Stonyhurst College*. The contents of some of the apartments there would have permitted them to have spent a very much longer time. He must say he had looked at it also with another kind of interest—the association with that precious vagabond—that "nobleman who was now languishing in a felon's cell," and who attempted to wrest from the rightful owners the lands and title of a noble family. Mr. *Montgomery* proposed the health of Mr. *Joseph Boulton*, and alluded to the time which Mr. *Boulton* had devoted to the interests of the society. Mr. *Boulton*, in acknowledging the toast, said he regarded the society as one of very great importance to the profession, without which there would be no opportunities of meeting each other as merchants and brokers did on 'Change. The society was also desirable for checking any practices which might come into existence. They all knew that in other businesses there were persons who accepted inducements for recommending clients, and they had reason to believe that there were architects who accepted such inducements. He believed that when an architect recommended any particular course to his client he should be unbiassed in his judgment, and that his recommendation should be in the honest conviction that the person or thing recommended was the best. He considered that no architect could afford to work for 2½ per cent. in the ordinary occupation of the profession, and that if an architect did agree to work for that commission he made up a part of it, though not perhaps the whole, in other ways. Dinner over the party returned to *Liverpool*, where they arrived at eleven o'clock.

THE LATE MR. JOHN WIMBLE.

WE alluded a fortnight since to the death of Mr. John Wimble, of Queen Victoria-street, which unhappily terminated prematurely a professional career of considerable promise. Mr. Wimble, after completing his education at Tunbridge School, was under articles to Messrs. Whichcord and Son, of Maidstone, his native town, and on the expiration of these at once entered into business in London as an architect and surveyor, and by his energy and soundness of judgment soon gained the confidence of a valuable and influential connection.

Although dying at such an early age, the deceased gentleman had acquired a large experience, and unusually accurate judgment of the capabilities of City property, and had been regarded for many years as a prominent authority upon the development and adaptation of all kinds of commercial premises. Indeed, it is probable that during the last ten years he had carried out more work of this kind than any other member of the profession.

The following are among his principal works:—The block of offices at the corner of Gresham-street and Coleman-street; the Peninsular and Oriental Steam Company, West-end offices, Cockspur-street; Messrs. Boosey's premises, Regent-street; residential chambers, Ryder-street, St. James's; Nos. 59, 60, and 61, Haymarket; the premises lately occupied by the *Echo* newspaper in Ludgate-circus; London Salvage Corps stations, Watling and Queen-streets, E.C., and the Commercial-road; the corner block of warehouses at the juncture of Fenchurch with Leadenhall-street; Mildmay-chambers, Bishopsgate-street, covering the site of the famous Old Four Swans Tavern; various works to the Royal St. Anne's Society at Streatham, including the new Albert wing; the whole of Dyer's-buildings, Holborn; premises for Messrs. Mather, Farringdon-road, North-street Church, Brighton; the Countess of Huntingdon's chapel, Tunbridge Wells; Sittingbourne Cemetery; and many warehouse and office buildings in Queen Victoria-street and Southwark-street.

During his later practice Mr. Wimble was frequently retained upon compensation cases by the City authorities, the Metropolitan Board of Works, and the School Board for London—more especially in those relating to the Northumberland-avenue, and to the widening of the Poultry.

Mr. Wimble had been suffering for nearly a year from a serious illness, which, however, till within 48 hours of his death gave some promise of yielding to the influence of quiet and rest. By a large circle of professional and private friends his loss will be deeply felt, for few men were held in higher estimation. His practice will be continued by his brother and partner, Mr. William Wimble.

THE DIFFERENTIATING WASTE-WATER METER SYSTEM.

A LITTLE pamphlet now before us, published by the Waste-Water Meter Company, of Liverpool, points out the great advantages arising from a meter such as that invented by Mr. G. F. Deacon, C.E., engineer to the Liverpool Corporation. Our readers probably are aware that the Liverpool water supply has been changed from a restricted intermittent to an unrestricted constant system. This change has been effected with great benefits; waste has been reduced to such a degree that the municipality is said to have emerged from a state of poverty to abundant wealth. Mr. Deacon's meter system was introduced in 1873. At that time the intermittent service supply for domestic use, hotels, warehouses, offices, and shops, was about 22 gallons per head per diem, while under constant service the quantity was 31 gallons. Before the end of 1875 it is recorded "the waste had been so far checked by the new system that a constant supply was given, and the quantity taken is now only about 15 gallons per head per day." Thus a saving of more than half the former supply has been made. The money value estimated out of this saving is £40,000 per annum, the population being 656,000. At Glasgow Mr. Gale, C.E., estimates the saving to be still greater, or more than 25 gallons per head per

day, and the authorities are about to extend the meter system. To those not acquainted with Mr. Deacon's meter we would explain that it records on a diagram the rate of flow at each instant, and distinguishes the water used from that wasted—a valuable feature not found in other meters. The apparatus is placed under the footway as near a line of service as possible; pipes are laid to it from the main, so that all the water may pass through the meter before being distributed. A fac-simile of diagrams from a fire-ucter on a main supplying a district of 2,176 persons is shown. The sheet is ruled horizontally into a series of lines representing gallons per hour, and vertically into lines indicating from noon to noon, or 24 hours. When water is being drawn off for use, the rate of flow being variable, it is shown by irregular vertical lines from noon to 11 p.m., and from 5 a.m. to noon. When waste takes place, the flow being uniform, it is shown by horizontal lines from 2 to 5 a.m., broken only by occasional vertical lines caused by persons drawing water during the night. The filling of cisterns through ball taps is distinguished by sloping lines as from 11 p.m. to 2 a.m. The apparatus is a very ingenious application of the piston principle. It consists of a conical-shaped tube or gauge, in which a disc equal to the smallest or top diameter of gauge-tube works, suspended from a fine silver wire, which passes watertight through a small aperture to an upper chamber, and over a pulley, its end having a weight attached. To the wire is a cross-head carrying a tracer, which rises and falls with the disc as the latter is acted on by the weight or the flow of water through the tube. This vertical action, in conjunction with the movement of the paper, which revolves by clock-work round a vertical cylinder, produces the diagram. The whole is enclosed in a small east-iron box with hinged lid, which is let into the footway. Thus a flow of water presses the disc down, and the tracer describes a vertical line; but if waste takes place the element of time, or the lateral movement of the paper at the same time, produces a horizontal line, or an oblique one, on the paper, if the movements are compounded. It is found that the waste discovered by a given number of men in a certain time by this system is three or four times that detected in the same district by the old system. We commend the pamphlet to all water-consumers and companies.

SHOGUN AND MIKADO; OR, NIKKO AND ITS WOOD-CARVINGS.

"NEVER say *kekko* (beautiful) till you have seen Nikko," is the Japanese proverb fully justified by the splendid scenery in which are placed the shrines of the Shogun Iyemitsu and his grandfather. "No scenery in the world," says a recent visitor, Mr. W. C. Borlase, "surpasses in beauty the gleu down which from the sacred mountain a torrent rushes over its granite bed. . . . See it, if you can, in the early light of morning, when the hazy yellow sky is just changing into blue, and choose the season when the underwood of azaleas is in flower, and the hillsides are a mass of pink, dotted here and there with dark fir-clumps." Cross the bridge which spans this gleu, and you come to flights of steps and terraces, leading zig-zag fashion through courtyards lined with temples, each more elaborate than the last, until you reach the top of the hill on which stands the tomb. Many of the temples, as well as the palace formerly occupied by the Shogun during his yearly visit to his ancestor's shrine, have been burnt to the ground by order of the Government; but enough remains to prove the good taste and magnificence of these "Mayors of the Palace," to whom Japan owes her art-culture. Bronze lanterns forty feet high, granite lavers, huge candelabra, and incense-burners and vases, all in bronze, adorn the grounds. But the gem of all is the wood-carving and brass-work of the screen round the great court. "It is," says Mr. Borlase, "divided into compartments, each one filled with a choice subject of birds or flowers, so exquisitely treated, and coloured with so much delicacy and taste that it is hard to realise they are of native workmanship, until we remember that Europe at that time possessed nothing to compare with them. Harder still is it to believe that we are gazing at them in no palace or exhibition of fine arts, but in the centre of a damp-dark forest, where no roof shelters them, and, worse than all, no pious hands save them from decay." The central gate of this screen is described as a marvel of workmanship, full of carving—groups of children at play, fighting dragons, Chinese sages—as spirited as they are elaborate. All this, which, in the Shogun's or Tycoon's day, was yearly painted and

gilt by the best artists of the capital, is now rotting away in a cryptomeria forest, and must ere long be irreparably ruined. Mr. Borlase, in his little work on "Nipho and its Antiquities," hopes that "the liberal views of the Mikado's Government will be extended to preserve a work which is unmatched in the world." We cannot, however, expect much from a Government which has sold nearly all the fine bronzes in Buddhist temples for old metal, and which would have broken up and sold the Dai-Buts (Great Buddha), a grand bronze figure 64ft. high, but for the strong representations of the foreign consuls. If the Nikko carvings are to be preserved, the same kind of pressure which saved the Dai-Buts must be put on the Mikado's council; for everything at Nikko belongs to the fallen dynasty, and therefore reminds the nation of the 700 years' tutelage in which the Shoguns kept the Mikados. Hence, while stone arrows and spear-heads, leaf-shaped swords (like the Irish), as well as all that pertains to "puro Shintoism," find a place in the South Kensington Museum, the triptychs, and statues, and lamps and other fittings of Buddhist temples are the prey of every wandering dealer, and the exquisite carvings of Nikko are left out in the cold. They are the work of "the usurpers," and therefore the restored dynasty wishes them to be forgotten. The feeling is natural; but such meanness is surely inconsistent with the grand pretensions of the restored dynasty. If the Japanese rulers have grown civilised, now that they have taken to ruin native manufactures by wearing broadcloth and felt hats, let them show that no petty spite will make them forget their public spirit.—*Echo*.

CHIPS.

The Corporation of Tyemouth are about to erect extensive ice stores in connection with the Fish Market at the Low Lights. The proposed building, which is the commencement of a more extensive scheme, has been designed by Mr. J. P. Spencer, C.E. The contracts have been let to Mr. R. Bolton, of North Shields.

On June 27 the memorial stone of the Alma-street Schools, Aston, was laid. The buildings will be Gothic in design, and afford accommodation for 280 boys, 220 girls, and 400 infants. The total cost amounts to £12,897.

A memorial cross, in memory of the late Sir John Taylor Coleridge, has been erected at the new east-end entrance to the churchyard of St. Mary, Ottery. The cross stands about 12ft. high, and measures round the base below between 5 and 6ft. It is a solid piece of granite weighing from four to five tons. The design is by Mr. George Wollaston, of London. The cost will amount to about £150.

A printers' wayz-goose is not, as a rule, distinguished for the intellectual enjoyment provided, but the staff of the *Exeter and Plymouth Gazette* last Saturday week somewhat improved on the usual programme by organising an excursion for the purpose of visiting some of the adjacent places of interest. St. Saviour's Church, Dartmouth, Totnes Church, Berry Pomeroy Castle and church were successively examined, and the party dined together at Totnes in the evening.

The subjects for discussion in the Art Department of the approaching Congress at Aberdeen of the Social Science Association, are—1. What principles should govern the restoration of ancient buildings, or their preservation as memorials? 2. Is our modern system of art competition favourable or unfavourable to art progress? 3. How can art be best introduced into the houses of persons of limited income?

The memorial stone of a new church now being erected at Beswick was laid on Monday by the Bishop of Manchester. The new building, which is to be dedicated to St. Mary, will contain seats for 600 persons. The style is English Decorated. The architects are Messrs. Paley and Austin, Lancaster; and the contractors Messrs. Cordingley and Stopford, builders, of Manchester. The amount of the contract is £8,700.

The Boston guardians are about to erect a new workhouse infirmary from plans by Mr. Wheeler, architect. Last week the tender of Messrs. Harrison and Leng, of Boston, amounting to £734 10s., was accepted for the carrying out of the work.

Mr. Woods, sanitary inspector of St. Helens, was last week elected surveyor to the Penrith Local Board of Health, in succession to Mr. Todd, resigned. There were 12 applicants for the office.

Mr. John Somes Story, late engineer of the Midland Railway Company, has been appointed county surveyor for Derbyshire. The salary is £100 per annum, to cover all expenses.

The foundation stone of a new Board School was laid at Holden Colliery on Saturday. Mr. J. J. Lish, of Newcastle, is the architect, and the building will hold 660 children, at a cost of £1,000.

A new Baptist chapel in Marshall street, Edinburgh, was opened last Friday. The building has been erected from designs by Messrs. Thornton, Shiells, and Thomson, of Edinburgh. The style is Lombardic, of a severe type, and accommodation is provided for 650 people at a cost of £1,000.

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ILLUSTRATIONS.

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OUR LITHOGRAPHIC ILLUSTRATIONS.

VILLA RESIDENCE, LEIGH WOODS, CLIFTON.

THIS house is now being erected for Dr. Wheeler, of London, from the design of Mr. Henry Shaw, architect, of 25, New Broad-street, E.C., by Messrs. Stephens and Baston, of Bristol, for £1,362. The walls up to plinth are of local stone, and above same to first floor of red brick, built hollow; the chimney shafts also are red brick; the gables and upper portions being in half timber-work. It is roofed in with Bridgewater tiles.

SUMMERTOWN PARSONAGE.

THIS house is shortly about to be erected. From the nature of the site, which has a main road at the front and back, and a third road at the side, the design of the elevations has had to be considered from several points of view. The hall is a large room, intended to be used partly as a parish room. The walls will be built of local bricks, and the roof is to be covered with tiles. The architect is Mr. John D. Sedding, of 18, Charlotte-street, Bedford-square, London. Our illustration was taken from the architect's drawing, now at the Royal Academy Exhibition.

ST. LAWRENCE'S CHURCH, NORTHAMPTON.

THIS design, which we illustrate to-day from drawings now on the walls of the Royal Academy, was selected in an open competition of ninety-one architects, Mr. Ewan Christian being the arbitrator. The aim of the architects has been to produce a town church of simple detail and inexpensive materials, which shall depend for any effect it may possess upon the breadth of treatment and general massive proportions. The plan consists of a wide nave and chancel, with narrow aisles, used only as passages, the bulk of the congregation being seated in the nave. There is also a chapel on the south side of the chancel, for week-day services, available also for use with the rest of the church. Additional seats are obtained behind the metal screens shown in the view, which separate the choir from the passages for communicants returning to their seats, for the general congregation, or available for an increased choir on special occasions. The contractor for the work is Mr. J. Watkin, of Northampton; Mr. E. Wickham has charge of the erection as clerk of the works; Mr. Alfred W. N. Burder and Mr. Arthur Baker, of 14, York-buildings, Adelphi, are the joint architects.

LEAVES FROM A SKETCH-BOOK.

THE Church of St. Peter, Winchester, and the Old George Hotel, at Salisbury, will be found described in the article, "Leaves from a Sketch-book," on p. 46.

BUILDING NEWS DESIGNING CLUB—
A CHIMNEY STACK.

THIS week we publish the selected designs for this subject. "Début" was placed first in order of merit; "B," in a circle, came second; "Mechlin," third; and "St. Lucy," fourth. For our criticism the reader is referred to the review.

SCHOOLS OF ART.

FEMALE SCHOOL OF ART.—The annual distribution of prizes to students in connection with this institution took place on Wednesday week in the theatre of the Museum of Geology, Jernyn-street. The report stated that the success of the students during the past year had been of a very satisfactory character, her Majesty having given an extra special mark of her approbation by granting an additional sum of £10 to the Queen's Scholarship, and by purchasing two works from the selection sent for her inspection. The committee had again to congratulate Miss Gann on having been awarded to her by the Lords of the Committee of Education a premium of £10, her name being fourth on the list of 138 competing schools. In the first division, national awards, five have been won by the students of this school. In the second division, local awards, the Queen's gold medal was apportioned to Ida Lovering, and it was recommended that Alice Hanslip should retain the Queen's Scholarship, value £30, for another year. The Gilchrist Scholarship of £50 was awarded to Miss Mary Ann Burney, student of the Female School of Art, Queen-square, Bloomsbury. The committee had also to receive the generous gifts of £10 10s. from Lord Hatherly, and of £10 10s. from Mr. Henry Bicknell, which had enabled him to sanction three scholarships for this year.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.—The annual country congress of this body has been fixed for Llangollen for the week commencing the 27th proximo, and the arrangements, so far as they can be made beforehand, have been completed. The meeting is held under the presidency of Sir Watkin Williams Wynn, whose seat, Wynnstay, is not far from the locality of the gathering. The opening meeting and dinner will be held on Monday, the 27th, and there will be excursions every day in the week, and meetings at night for the reading of papers. Among the places set down to be visited are Offa's Dyke, Denbigh Castle, Chirk Castle, Castell Dinas Bran, Valle Crucis Abbey, Elyseye's Pillar, the Gaer, an ancient British encampment, site of Owen Glendower's house, an ancient stone castle, and several ancient churches at Dolgelly, Denbigh, Wrexham, and other places.

COMPETITIONS.

HINDLEY CEMETERY COMPETITION.—In the recent competition for cemetery chapels, and for the laying out of the ground, the Burial Board have awarded the first premium to Mr. Geo. Heaton, of Wigan (the surveyor to the board); the second to Mr. R. K. Freeman, of Bolton-le-Moors; and the third to Messrs. Garside and Johnson, of Southport.

SCARBOROUGH.—On Monday a committee of the Scarborough Cliff Bridge Company decided the premiums for the plans sent in on the 20th of March for the renovation or reconstruction of the Spa-buildings, consequent on the fire of the last season, and the need of more promenading space. Some 26 plans for renovation were sent in, out of which 4 were, with the assistance of Mr. E. P. C. Cockerill, of the Royal Institute of British Architects, selected to send in an alternative scheme of reconstruction. The first prize of £300 (to be merged in the commission) was awarded to Messrs. Verity and Hunt, of 27, Regent-street, London, who, in their account of the reconstruction scheme which the committee decides to recommend for adoption in preference to the lesser plan of renovation, give the following summary of the accommodation:—It

embraces a grand hall for promenade in dull weather, concerts, and other large gatherings. A smaller, or floral hall, subsidiary to the former, which may serve for a crush room or lounge, small concerts, or theatrical representations, and a variety of other purposes. Largely increased promenade space on the roofs, the terraces, and parade, for the greater part within hearing of the band. A café for gentlemen on the higher level, where smoking might be permitted, and where it could not interfere with the comfort of others. A reading room or retreat for ladies, to which might be affiliated a lending library. An extensive refreshment buffet, with a properly arranged kitchen department. Every convenience for ladies, gentlemen, and children. A grand central well-lighted vestibule and staircase, giving easy communication to all parts of the establishment. Caretaker's quarters, and all necessary offices, and all the requisite stores for seats, coals, wood, earth for closets, gardeners' tools, &c. The other three architects whose plans had been selected for inspection, and who received £60 each, are Mr. George Dale Oliver, of Newcastle-on-Tyne; Messrs. Gibson and Son, Malton; and Mr. W. Watson, of Wakefield, formerly of Scarborough. The cost of the work, it is understood, should not exceed £40,000. We are promised the drawing of the successful design by the architects, and shall shortly give an illustration of the same.

THE following are the special questions selected for discussion by the Art Department at the forthcoming Social Science Congress at Aberdeen:—1. What principles should govern the restoration of ancient buildings, or their preservation as memorials? 2. Is our modern system of art competition favourable or unfavourable to art-progress? 3. How can art be best introduced into the houses of persons of limited income? Papers volunteered on other subjects, coming within the scope of the department, will be read and discussed.

MR. WALTER, M.P., opened an art loan exhibition at Wokingham, on Wednesday, and spoke of the advantages of such a collection in educating the tastes of the working classes. An art collection, he believed, had the same effect on the taste of those who took an interest in it as the cultivation of their minds in early life by the study of the best models of English composition, both of music and poetry, and would protect them against the sickening rubbish of which so much was poured out in the present day; and the chief object of that splendid exhibition, though some might consider it useless in a small country town, was to improve and develop the taste of the people. He did not think that, however much Englishmen had the power of appreciating and imitating the works of Greece and Rome, and also of France and other countries, art was the line in which they themselves were specially qualified to excel. They rather occupied the position of Rome in the matter. They had still higher and nobler duties to perform.

THE Common Council of London has again altered its mind, and resolved to authorise the Bridge House Committee to take the necessary steps to obtain the requisite Parliamentary powers for raising funds to widen the present London-bridge. Mr. Deputy Lawrence Taylor pointed out what every one in his right senses knows very well that if they widened the bridge they brought a greater amount of traffic upon it; but if they could get rid of the congestion at the north end, then to widen the bridge might be a desirable thing; but it was the traffic at that particular point which continually blocked up the roadway. If the citizens of London are contented to have their money frittered away in useless endeavours to obtain plans to carry out impracticable ideas, and meanwhile to allow the heart of the capital to be blocked by traffic which has no business there, no one else has much right to complain. As things go at present, the Corporation of London is likely to be reformed before a new bridge is built or the present one widened, and when the incompetence and hesitation of the present Common Council is considered no one need much regret the probability.

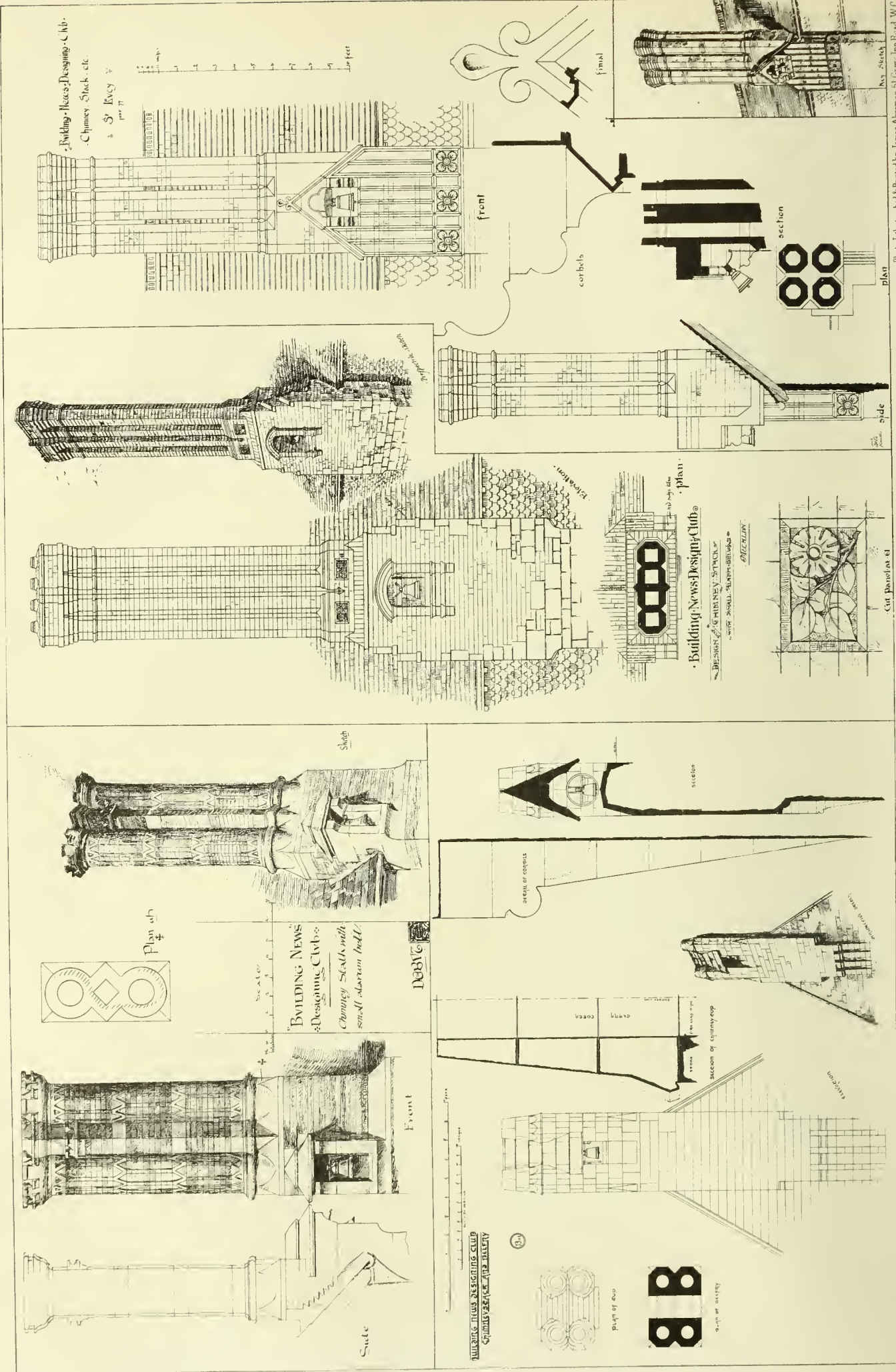


Photo Lithographed & Printed by James Abernethy 51 (now) 53, Abchurch Lane, E.C. 4, London, E.C.



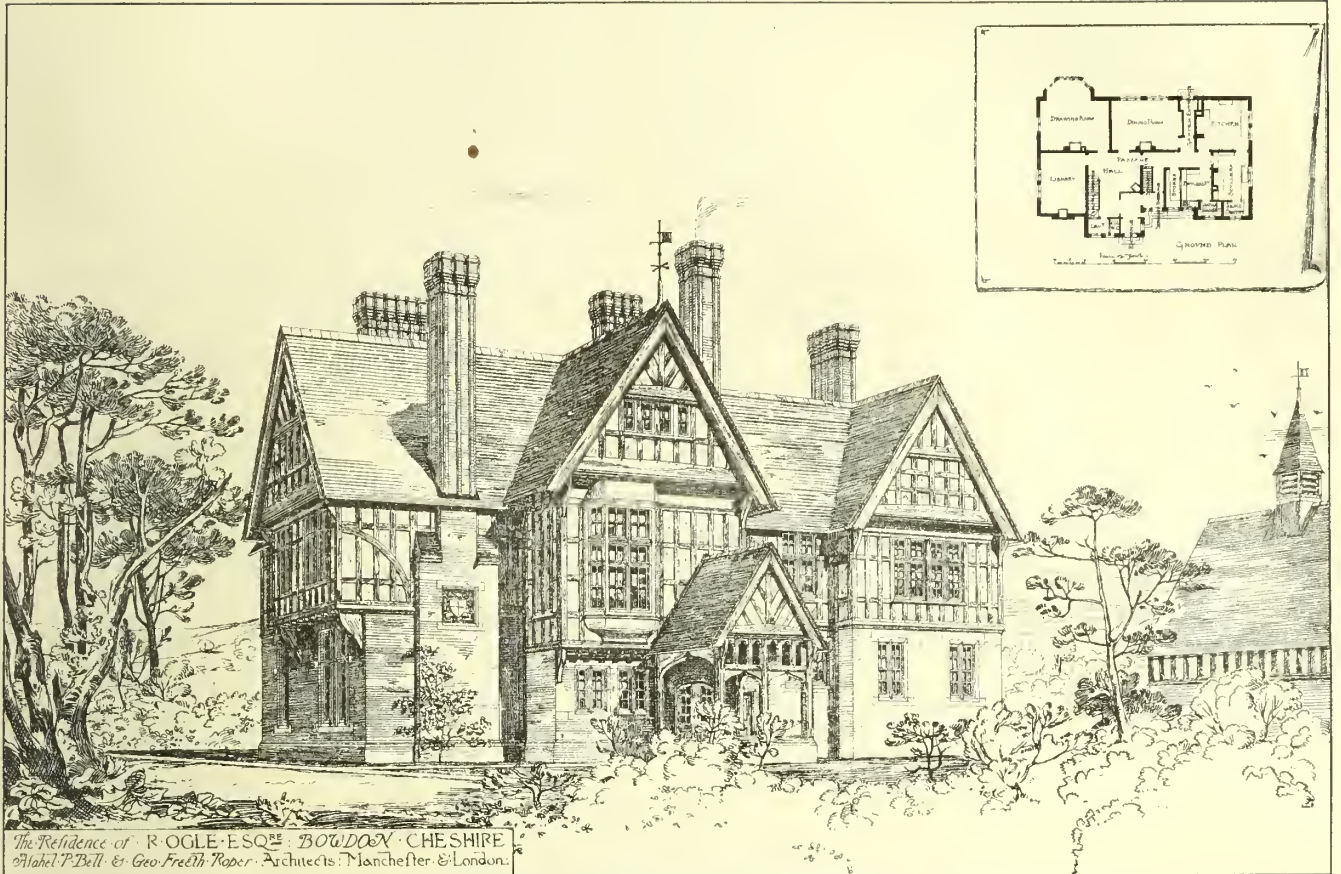
Church of St. Peter. Cheese Hill. Winchester.

Leaves from a Sketch Book. A. A. Excursion. Aug. 1876. N^os 1 & 2.



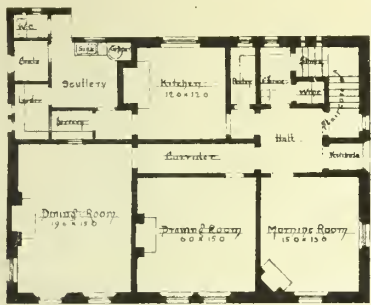
The Old GEORGE High Street Salisbury

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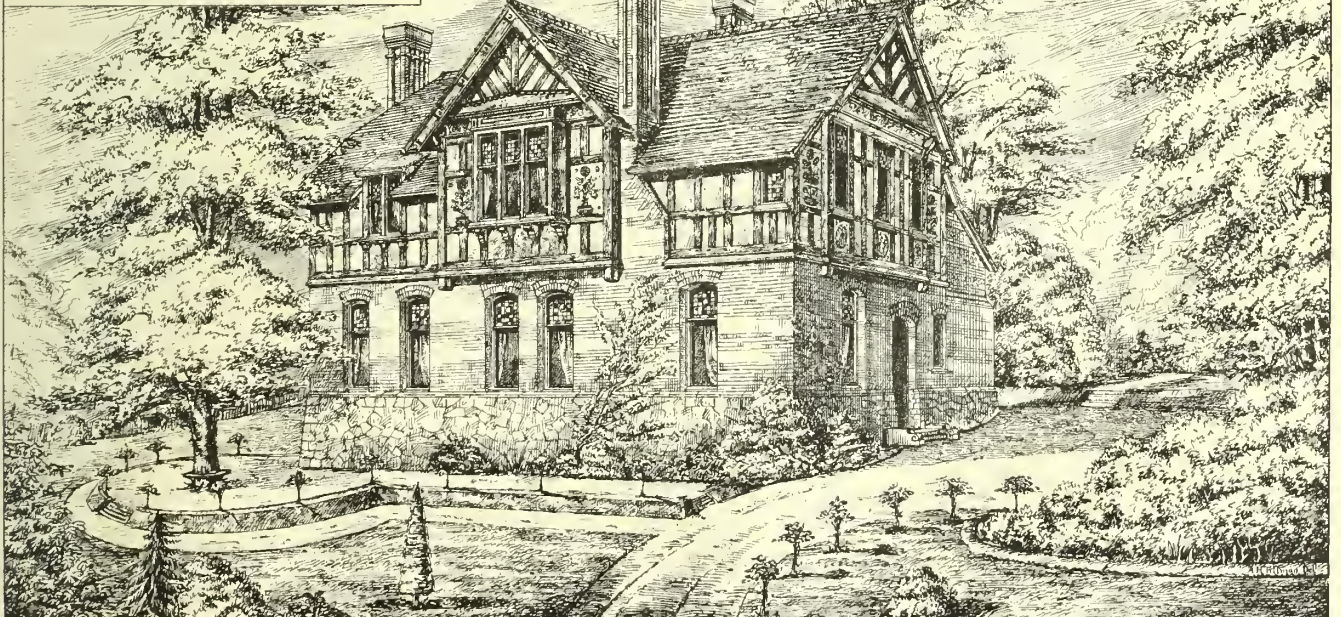


The Residence of R. OGLE, ESQ., BOWDOEN, CHESHIRE.
 Nathl. P. Bell, & Geo. Fredk. Roper, Architects, Manchester & London.

Villa Leigh Wood CLIFTON
 Henry Shaw ARCHT. LONDON.

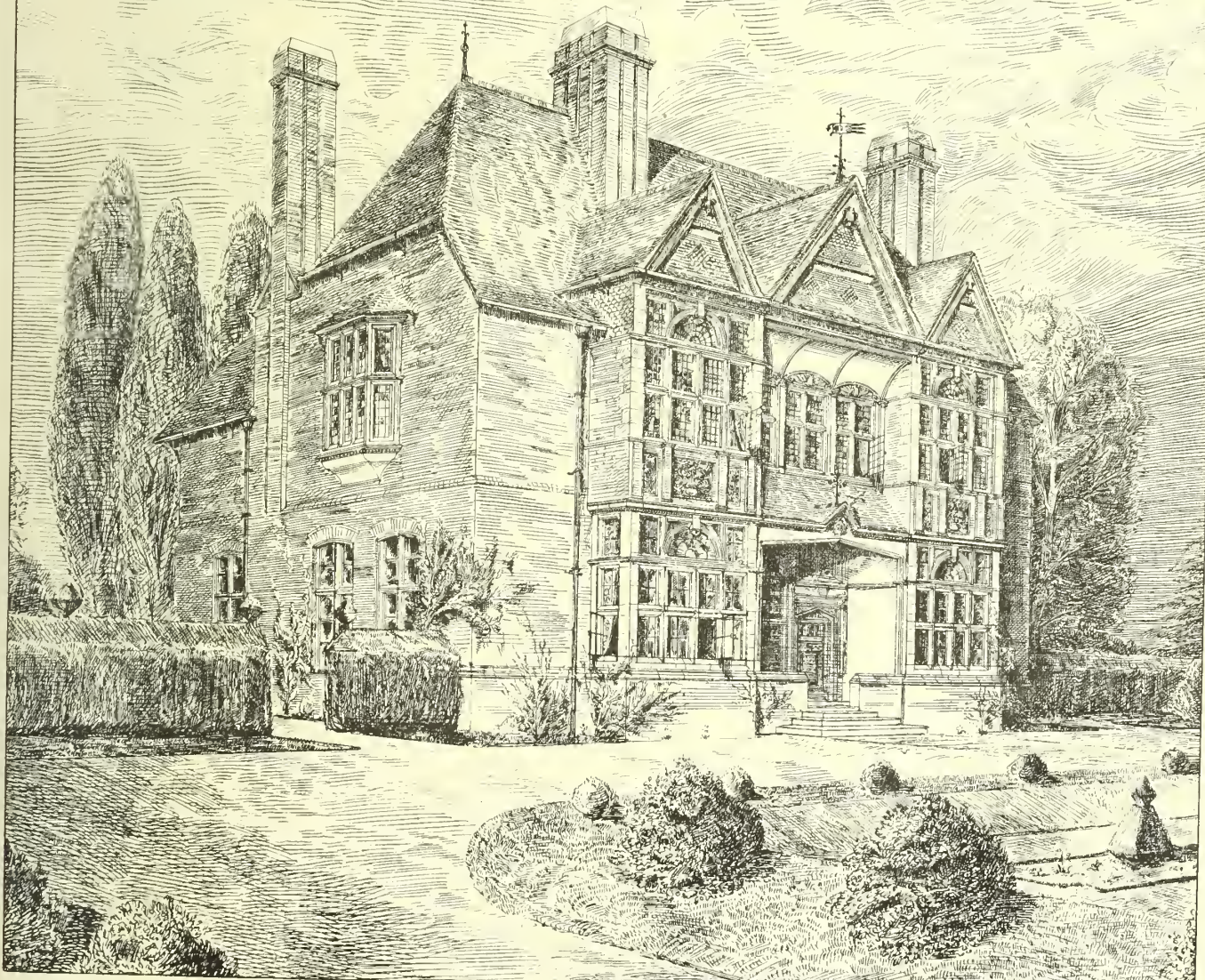
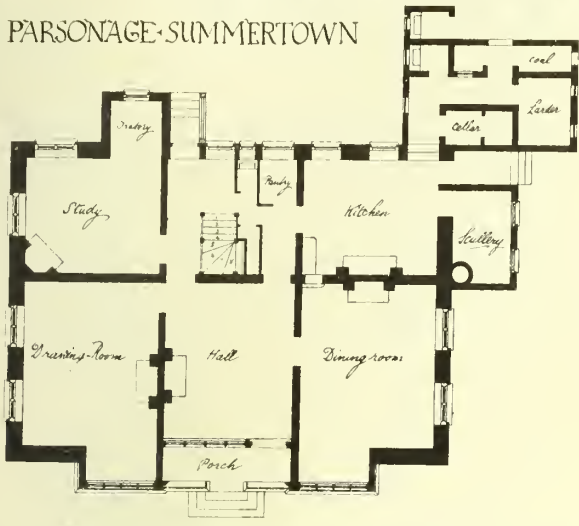


Ground Floor



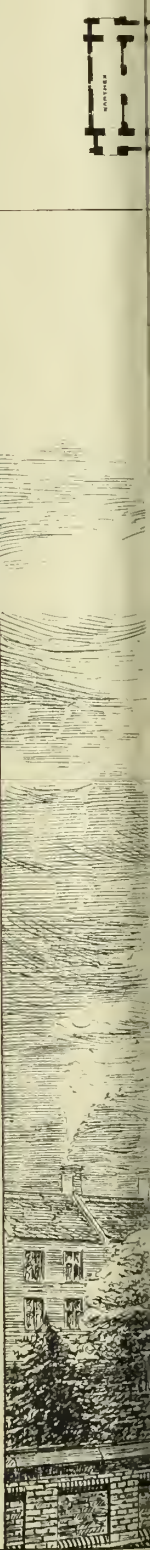
THE
LIBRARY OF THE
MUSEUM OF MODERN ART

PARSONAGE-SUMMERTOWN

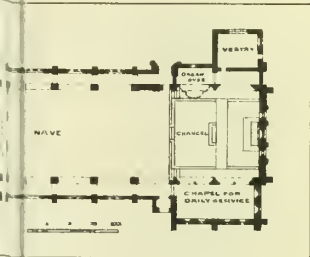


J. D. Sedding Arch^t.

Photo lithographed & Printed by James Akerman 51 Gray's Inn Road W.C.



CHURCH OF S. LAWRENCE ·
NORTHAMPTON
Alfred W. N. Burder } ARCHITECTS
Arthur Baker }



BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XII.

A Covered Carriage Entrance.

THE designs we have elicited for this subject do not come up to our expectations, and only two realise the idea of a covered park entrance, or *porte cochère*. The conditions required a covered carriage entrance 10ft. wide, with a two-roomed lodge attached. "Fleur-de-lis" sends the best attempt. The lodge and entrance are united, and are conceived in a free Renaissance, picturesquely handled. A circular turret stair adds a very characteristic feature to the lodge, and this is placed between the living-room (12ft. x 10ft.) and the scullery (projecting exteriorly). The living-room has an entrance from the foot passage-way of gateway, and is lighted by one window in front of too wide proportion, and two narrow lights on the park side. Between the latter is a fire-place, with a kitchen range. A door leads direct into the scullery, which is narrow and kept low. The author has pleasingly finished his turret at the top with a curvilinear roof of ogee flexure, with a belfry underneath it, in the shape of a series of panels filled with grilles. At the side, the bedroom has a dormer window breaking out from a pyramidal roof, the corners of which, together with the attic, are slightly splayed, forming an irregular octagon on plan. We doubt the effect of this in perspective, particularly when the angles of the lower square part of the lodge are seen protruding beyond the attic walls at the corners. We should, also, have preferred the stone archway without the hipped roof over it, and the appearance of the parallel ends of roof would not be very satisfactory. The author groins the interior in pitch pine; and the other materials proposed are, for the wall, stone; for the roofs, brinded tiles; and wrought iron gates. "Début" is a composition far more simple, more original in conception, and pleasingly handled. The carriage-way consists of four plain piers treated as pilasters, which support a simple flat roof, with gabled ends placed transversely. The entrance is joined by a covered passage-way (in which are the side gates) to the lodge, which is of one story, and compactly arranged in a square, with a high pyramidal roof, the chimney being carried up in the centre. There is a severe French feeling displayed in the design, while the carriage entrance may be almost called Schinkeleyesque in detail. The author gives a sketch perspective of the composition, and shows some well-designed wrought iron gates. At a considerable distance from the last in point of merit of design is "J'Espere." But for the careful drawing, this design has little claim to notice. The author places his rooms on one floor, and these are unnecessarily large and not well proportioned, and the bedroom is without a fire-place. Exteriorly we have a range of three circular arches with a cornice and balustrade over. Two of these are blank, being filled up with the front of lodge, and the other arch is made the entrance. The whole composition is, in fact, nothing more than a screen, one-third of which is open. The windows of the lodge are too palatial, and we certainly do not admire the preposterously high pediments over them, nor the way in which the circular moulding finishes. The superimposed upper range of pilasters, the heavy capitals of the lower order, and the weak pier jambs of the archway are all defective points. But the acme of absurdity appears to be reached in the large circular pedimented window over the archway. We are at a loss to know what purpose it can serve, or what it can light? Is it for the clock pendulum, and weights? The author of "Eclipse" has a better notion of the lodge, but the composition is spoilt by the lofty domical entrance and the bad detail, particularly the pilasters resting on the outer sides of the jamb piers. We recommend the author to avoid meaningless ornament, such as he has shown in the upper part of gateway. The design of "Felix" has more the character of a single-story penny-savings' bank than a park entrance. The plan of lodge is certainly not arranged with regard to the comfort of the inmates, there would be a draught through the living-room from the opposite outer doorways. "E." errs as much

one way as "Felix" does in another. Instead of combining the lodge and entrance they are completely detached. Why the passage through living-room into kitchen? "E." has no conception of architectural fitness or propriety, or he would never have perched such weak-looking pilasters upon such heavy battered pedestals as he has done in the piers of his entrance, nor drawn such an archway without a keystone. What is the intention of the sarco-phagi-looking terminals at the corners of balustrade?

Church Roof.

For this subject we have not received many designs, and those submitted are not marked by originality. We place "Trefoil," in circle, first as showing a form of church roof best adapted for modern wants. The design shows a single-framed pair of rafters, cross-braced with collar, the timbers being all 6in. by 4in. Beneath those framed rafters is a simple pointed barrel vault of wood, the boarding being nailed to longitudinal pieces 3in. by 2in. Each bay is divided into three by two main ribs, moulded, 9in. by 4in., between which are intermediate ribs, 6in. by 4in., also moulded. The former rest in stone corbels, and the latter spring from the cornice. At the springing and apex are longitudinal air trunks, perforated in front for ventilation. There is also a similar panel of perforation running along the vault in the centre. The visible ribs are bolted through to the rafters and braces, the plates are framed; from the inside plate on each side are upright studs to the rafters, and the plates are tied together by iron tie rods, supported in centre of span by a king rod. We should have preferred a more obtuse-pointed vault and the apex lower down the roof, which could have been done by shortening the radii. "Saint Lucy" is the next best. It is an open timbered roof boarded up the back of rafters and collar, and showing internally the common rafters and purlins. The principals, 10ft. from centres, are framed into a hammer-beam at the bottom, and tied together by an iron tie. Above they are framed into a collar, and the underside stiffened by curved ribs moulded at the edges and joggled together, these being bolted through the principals. Were it not for the tie rod this form of roof would be very weak at the middle point of ribs, though the author has thrown the pressure of the ribs upon the short hammer-beams, by which it is transmitted by curved wall struts to the corbels below. We notice the purlins are 10in. by 6in., placed vertically. These are shown notched considerably into the principal, a decided objection tending to reduce the strength of the timbers. They would have been better placed the usual way. Arched vertically-placed braces notched into the lower purlin, and abutting against the two principals, are shown in the elevation of bay. These would help to strengthen the roof, but slightly. The principals are not figured, and the detail of connection between purlins and rafters should have been shown. Ventilation is obtained by perforation of the flat ceiling over collar. "Mechlin" is a carefully drawn open-timbered roof of flat pitch, and so much like the typical examples of the Perpendicular period, many of which may be found in Brandon's *Mediæval Roofs*, that there is little to be said for its originality. The principals are framed with collars, moulded braces, or ribs, and hammer-beams filled in above collar with Perpendicular panelling. These are intended to be of oak. We note that the hammer-beam mouldings are too projecting, and would conceal the small panels resting upon it. The mouldings are also not the most effective. "Torpedo" is a design of some ingenuity, though it will not quite explode existing ideas of construction. The author shows a double-framed ribbed roof, with collar, hammer-beams, and braces. The inside curved braces or ribs springing from the hammer-beams are strutted to the wall-posts, and the whole lateral pressure is well brought down the walls. As the construction for a framed truss to be filled in with panelling, the design is not without merit, as the weak points of the principals are well strengthened, the curved ribs not touching the principals at those points, but are strutted to them. The open panels are proposed to be filled with fretwork, but the kind is not shown. No scantlings are

given, and the section of roof is drawn to a smaller scale than required. "Ashlar" shows another roof of low pitch, with cross braces. The truss consists of two principals, 9in. x 6in., joined at top by a collar, but which do not continue to the apex; cross braces, 9in. x 6in., with hammer-beam and curved braces below filled in with uprights or panelling. The ceiling of plaster is continued at the back of the lower portions of the cross braces, with a perforated opening at the crossing for ventilation. We note several objectionable points—namely, the upper struts from collar-beam, the purlins framed into principals—which would seriously diminish their effective strength, the junction of the curved brace upon hammer beam, with a cut end put on separately, and the details generally. The detail of corbel shows a want of knowledge of mouldings. The author does not understand that in drawing sectional woodwork it is not necessary to outline in black the parts joined, as he has done, in the stops at end of hammer-beam. As shown, the meaning conveyed is that the stops are movable instead of fixed, which, of course, is not intended. The designs, as a rule, are wanting in constructive detail.

A Mahogany Bookcase.

For this subject we have placed "B," in a circle, first. The design is divided into three vertical portions—the centre one forming a narrow and slightly projecting part. These divisions are marked by flat pilasters, grooved on face, carrying a cornice, with upper railed shelf for old china. The centre projection is carried up a trifle higher, and has its top railed off as a rest for a vase. With the exception of the centre door in the cupboard, which is rather too cut up with panel mouldings, the design is a sensible treatment. The cupboard doors at the sides are pleasingly framed, but no details are given. "Sperabo" is a more commonplace treatment. The author gets a useful shelf for portfolios, &c., under the centre division of his bookcase, which is divided into three bays. The book shelves simply rest on upright standards—the outer standards being carried up and rounded at the top. The statuette on the top is certainly rather heavy for the cornice. Leather valances fringe the shelves, which are open, and a space is left in the centre upon the cupboard top for nick-nacks. The shelves are fixed with Tonks' patent flush fittings. We do not like the detail of cornice. "Noah" sends a design of the ordinary type in three divisions—the centre one being the deepest and highest. We do not admire the cornice of the centre, which seems ludicrously high for the paltry balustrade over the sides, and there is certainly a discordance between them. The framing of the cupboard doors is sensibly handled, but the details are poor. "Bee," in circle, is a weak attempt at Japanese—the proportions of the cupboard doors and the cove at the top are not satisfactory. Otherwise there is something to be said for the design; for instance, a useful cupboard for MSS. and pamphlets forms the centre bay, and a useful opening is left underneath on the table top. The side shelves are screened by a curtain running on a rod, and a rack for china is shown over the centre at the top. The cove is intended to be painted in oil on a blue ground, and the panels of framing to be decorated with folial ornament on gold ground. "Student" sends a Gothic design, but the details are of an order we cannot commend. The divisional pillars springing out of ramps, the embattled cornice, and the meaningless tracery in the heads of the bookcase doors are not in keeping with the lower framing. The composition would have done well enough in the days of James Wyatt, but it is scarcely up to modern taste.

NOTICE.—In pursuance of our former plan we have determined to postpone the work of the Club till the first week in September, when the next list of subjects will be published. Of course the subjects given in our last list will be received in due course as usual.

RECEIVED.—"Fleur-de-lis"; William Lees (yes); C. E. Kemp (we can find no drawing with that motto, but if it comes to hand it will be returned).

ARCHITECTURAL SCIENCE CLASS.

PLASTERING—PRINCIPLES OF DESIGN.

IN reply to Question 52, "T. N.," "A. L. B.," "Spero," and "Wilhelminus," send good replies; Egbert, "J. S. A. M.," also are correct in the main. It is unnecessary to comment upon this question, as the processes and composition were described in our previous remarks upon plastering. No. 53 has been fairly replied to by "T. N.," who says, speaking of rendering walls, that the wall should be left rough to form a "key" or hold for the plaster, and if applied to an old wall the joints should be raked out, and the wall well wetted before the coat of coarse stucco is applied. "T. N." observes that this first coat varies from $\frac{1}{4}$ to $\frac{3}{8}$ in. thick. "A. L. B." and "R. J." also reply fairly to the question, though the terms "pricking up" and "rendering" are not very clearly distinguished. "Spero" indiscriminately calls the first coat by the first name on both walls and ceilings. Question 54, on the modes of finishing walls, has been rather inadequately answered. "A. L. B." mentions stucco "trowelled" or "bastard," rough stucco, rough casting, scagliola, and distempering, but no mention is made of Parian or Keene's cement, or any of the methods of finish adopted. "Spero's" reply mentions the latter cement, upon a ground of Portland cement, as a good finish. Replying to the advanced questions, "Atneave" says, "where decoration is required to be done immediately Keene's cement should be used." "S. M. E." sends a good form of specification for general plastering. Referring to the walls the specification says, "The walls for painting to be rendered or plastered if on laths, and set with trowelled stucco or with Parian cement; if for paper hangings, to be set with fine stuff, or with coarse Parian cement; the skirtings to be run as per drawings, with Parian cement on a Portland cement backing; where wood skirtings are fixed the space at back to be made good with coarse stuff; the angles of chimney breasts to be formed with a return bead in Parian cement, stopped at top and bottom with moulded stops."

The principles to be observed in designing cement or plaster work have been well stated by "S. M. E." in the published reply, and "Atneave" points to some considerations that should not be forgotten. Thus, he justly says, in designing a cornice it should be borne in mind that it is above the eye. Its members, he goes on to say, should be made to appear as bold as possible, at the same time not too heavy. It would have been better to say that the members should be distinguishable, and of sufficient variety to produce a pleasing play of light and shadow. One of the chief defects of modern plasterer's cornices is, that the members are too coarse; another is that they are not well juxtaposed to produce variety. We often see, for instance, ogees and beads placed together, or combined in such a manner that the effect below is to create a sense of monotony. Another very common defect is over-enrichment or placing large flat patterns on the ceiling or wall, without a sufficient contrast of plain members. All these mistakes arise from not considering that the members of a cornice should be arranged with as much care and discrimination as the colours in a piece of decoration, or as the words in a well-pointed epigram; just as two words of the same or ambiguous meaning produce a pleonasm or tautology, so in like manner, two or more members of one sort produce an unpleasing monotony on the eye. But there should not only be separation and variety with accentuation and contrast, but the shadows should culminate in one deep shadow or hollow between the wall and ceiling, or if in an outer cornice under the corona or chief member. External and internal cornices should be designed on principles determined by the position of the spectator—the light and the height of wall. The height of the room is a very necessary consideration in determining the proportion, whether the cornice should be mainly on the wall or on the ceiling. To produce apparent height in a room the vertically-disposed members should be small and few, and the cornice should be chiefly a flat margin to the ceiling. To reduce height the oppo-

site treatment is necessary. The cornice should be a deep crowning to the wall, and of small projection. There is considerable art in so designing each moulding that it will have the desired effect upon the eye. In lofty rooms a deep frieze is an admirable plan of taking off the height. Another thing to be guarded against is the using a mass of material in any member. The old Queen Anne cornices are very piquant and handsome in large halls and rooms, but they are not a logical mode of treating internal plaster. We prefer infinitely the surface treatment adopted in the Renaissance, as we see in the interiors of the Adams Brothers. In ceiling decoration the principle should be to make the members shallow and surface-like, to avoid deep undercutting, and to indicate as much as possible the nature of the material. Running and simple casting are the only two modes of treatment applicable to plaster, and in no instance should a kind of ornamentation be employed that at all indicates a fibrous material like wood. In the more decorative treatment the same rule should be observed. Heavily-cast enrichments, with undercut flowers and foliage, however admirable as works of the modeller, are absurd when used in plasterwork, and we consider that the most correct mode of decoration is that in which the raised parts are in shallow relief. Hence flutings, medallions, panels of flat-stamped ornament, which can be enhanced, if required, by light tints, are far more consistent in such a brittle and friable material as plaster.

NOTICE.—As we have now gone through the various branches of trades connected with building—a course which has rather exceeded the time we anticipated it would take—we bring this class to a termination at a period of the year when its cessation will be felt as rather opportune by many about to take their vacation. We cannot do so without expressing our thanks to those who have steadfastly remained by us through a rather arduous though pleasing duty. Its pleasure to us has been the knowledge of the fact that our course has been thoroughly appreciated both by those who have taken a part in the class as well as by outside readers. We could fill pages with expressions of approval, while the mutual advantages the class has afforded students are patent to all. The course completed forms, in fact, an encyclopædia of constructional and technical study. It was our intention to follow the science class with a series of questions on the history of architecture; this we defer for the present. For the purpose of the award we shall be obliged if those of our correspondents who have not yet done so will send us their names and addresses.

CHIPS.

Lord Ronald Leveson Gower has accepted the office of President of the Art Department at the ensuing Social Art Congress, to be held at Aberdeen.

Mr. George C. Strawbridge was on Tuesday appointed urban sanitary inspector to the Taunton Town Council.

At the usual monthly meeting of the Council of the Surrey Archaeological Society, last Wednesday afternoon, Mr. Joshua W. Butterworth, F.S.A., in the chair, the annual excursion to different places in Horley, Burstow, &c., was fixed to take place on Monday, the 30th instant, under the presidency of Mr. J. R. Daniel Tyssen, F.S.A.

A public institute and "British workman" public-house was opened at Grangemouth, Glasgow, on Monday. The building has cost £2,600, and is two stories in height, with a spirelet in the centre of the chief front, containing a public clock and bell. The meeting hall seats 400 persons.

A new bridge has been erected at Houghton, West Sussex, by Mr. Bushby, builder. The contracts and extras amounted to £3,025, but it was reported to the county magistrates last week that the contractor was a considerable loser, and that Sir John Hawkshaw had estimated the cost at £5,000.

The memorial stones of a new Wesleyan chapel have been laid at Sandiacer. The building is Gothic in style, and will seat 462 persons, and cost £2,100. Mr. A. H. Goodall is the architect, and Messrs. Henshaw and Son and Mr. W. Bailey are the contractors.

Mr. William Thornes, of Bradford, has been appointed assistant surveyor for the borough of Dewsbury, at a salary of £150 per annum. There were 43 applications.

The chancel of St. James's Church, Moor-park, Fulham-road, was consecrated on Saturday. The chancel has been designed by Mr. E. Christian, and has been erected at an expense of £1,600.

Building Intelligence.

BLACKPOOL.—The foundation stone of the new Church of St. John, Blackpool, has been laid. The plans are by Messrs. Garlick, Park, and Sykes, Talbot-square, Blackpool. They provide for a church to be built of brick, faced with Yorkshire parpontois, and Longridge stone dressings. The edifice will be cruciform, with a nave, north and south aisles, north and south transepts, chancel, vestry, organ-chamber, &c. The height of the nave will be 35ft. to the roof junction, and 60ft. to the apex of the roof, and the projected tower will be at the south-west angle, 14ft. square, and will rise to a height of 139ft. from the ground. The principal entrance will be through the tower. The church will accommodate 1,300 worshippers. The contract, including the tower up to the second string-course, amounts to over £9,000.

BRISTOL.—A new warehouse has just been erected in Christmas-street, Bristol, for Messrs. Clutterbuck and Griffin, from designs by Messrs. Foster and Wood, Park-street, Bristol, the whole of the contracting for the different branches of labour having been carried out by Messrs. Stephens and Bastow, under the superintendence of Mr. Stacey. The height of the building from the pavement line is 50ft., and the space covered is about 80ft. square. It is built of Cattybrook bricks, the window sills and impostes being of Bath stone, the latter having dental mouldings. Each window is surmounted by a hoodmould in brick. There are four floors, the gross area of which give a warehouse room of 25,000ft.

CHELSEA.—The first stone of the new Roman Catholic Church of St. Mary, Chelsea, was laid yesterday week. The building will be in the Early English style, its dimensions being 135ft. long by 82ft. wide, and 66ft. high. It will consist of a nave of five bays, flanked by two aisles of unequal widths (owing to a peculiarity in the ground), and a chancel 45ft. deep. At the end of each aisle there will be a chapel, the one on the south being the old cemetery chapel, which will be incorporated in the new building. The exterior will be somewhat plain. The materials will consist of stock bricks for the walls, Bath stone dressings and Staffordshire tiles for the roof. Mr. J. F. Bentley, of John-street, Adelphi, is the architect.

CROOK.—On Saturday last the foundation stones of two new schools, which are about to be built by the Crook and Billy Row School Board, were laid at Crook and Helmington Row respectively. The school at Crook will afford accommodation for 434 boys; it is estimated to cost £3,575, and will be built from plans prepared by Mr. J. Graham, architect, Sunnyside. The building will be in the form of the letter L, with two class-rooms, reading gallery, and porches back and front. It will be in the mixed Gothic style of architecture to correspond with the adjoining British School. Helmington Row school will accommodate 350 mixed scholars. Mr. Graham, of Sunnyside, is architect for the building. It will be in the Gothic style, and is estimated to cost £3,170.

GREAT BLAKENHAM.—The parish church of Great Blakenham, Suffolk, has been restored at a cost of £600, under the superintendence of Messrs. Cory and Fergusson, architects, of Carlisle. The gallery has been removed, the church reseated, a triplet lancet window opened out above the altar, and the roof restored. Very little has been done externally, and the tower still needs attention. The old brickwork has been restuccoed, and the south porch cleaned and retimbered where necessary. The old Jacobean pulpit, with its rich carving and sounding board, has been retained—not swept away as in too many churches.

HARROGATE.—A new United Methodist College was opened at Harrogate on Tuesday. The original building not being large enough for its intended use, plans for its enlargement were prepared by Mr. Potts, architect, of Oldham; and the different works were contracted for by Mr. Jos. Stephenson, of Harrogate, by whom they had been carried out. On the basement are spacious kitchens; the ground floor consists of entrance hall, dining and reception rooms, master's room, schoolroom, house-

keeper's room and pantry, from which room the kitchens are communicated with by a hoist fitted up upon the most approved principles. The first floor is occupied by classrooms, dormitories, lavatories, and bath-rooms, and the second and third floors also contain dormitories and other useful apartments. All the rooms, and especially the dormitories, are lofty, light, airy, and well ventilated. The whole of the building is warmed by Constantine's hot-air apparatus.

LAINDON HILLS.—The new Church of St. Mary the Virgin and All Saints, Laindon Hills, South Essex, built at the sole expense of the rector, was consecrated by the Bishop of St. Alban's on the 2nd inst. The church is Early Pointed in style, and consists of nave, chancel, north aisle, and organ chamber. The walls are of red brick, faced with Kentish rag stone, and the columns and dressings are of Bath and Box stone. The steeple has for the present been only carried to the level of the roof of the nave, but the designs show a tower and spire 130ft. high. Messrs. Michael Buckley and Co., of Wigmore-street, W., have placed a painted window in the south side of chancel; the subject is the appearance of Our Lord to Mary Magdalen in the garden at the Resurrection. The architect is Mr. W. White, of Wimpole-street, W.; and the builder Mr. Gregory, of Clapham Junction.

LONDON SCHOOL BOARD.—At Wednesday week's meeting of this board, the tender of Mr. W. Downs, of Hampton-street, Walworth, amounting to £8,167, was accepted for the erection of a school for 792 children in Lyham-road, Brixton. That of Mr. S. J. Jerrard, of Loampit Vale, Lewisham, amounting to £307, was accepted, for the erection of an additional girls' class-room at Lewisham-bridge school; as was also that of Mr. Tyerman, of Walworth-road, amounting to £516, for erecting a school-keeper's house at Hunter-street schools, Old Kent-road. For furniture and fittings for new schools the following sums were voted:—Princes-street, Bedford-row (548 school places), £453 9s. 3d.; Canonbury-road, Islington (559 do.), £443 0s. 3d.; Addington-street, Lambeth (576 do.), £447 6s. 9d.; Westcott-street, Southwark (818 do.), £595 11s. 11d.; and Woolmore-street, Poplar (467), £270 15s. 3d., the last mentioned including an enlargement.

METROPOLITAN BOARD OF WORKS.—At Friday's meeting of this board the works committee reported that they had before them an elevation, received from Mr. J. Gibson, of the building, proposed to be erected on plots 9 and 10 in Northumberland-avenue for the Society for Promoting Christian Knowledge, adding, "the elevation has been forwarded to the Royal Institute of British Architects, who, as in the cases of the other elevations forwarded to them, have declined to make any observations thereon until they have before them general designs for the blocks in which the proposed buildings will be erected." The committee recommended that the design be sanctioned, stating that they had instructed the architect to the board (Mr. Vulliamy) to prepare and submit a general design for the block of which these plots form part, which shall be in harmony with the building proposed by Mr. Gibson. Considerable discussion ensued upon the receipt of a report from the fire brigade committee, stating that large additional works had been found necessary at the head-quarter station in Southwark-bridge-road in consequence of the unexpectedly treacherous nature of the foundations the cost of which will amount to about £4,000. It was explained that on removing parts of the existing buildings on the site it was found that they were built on a Roman cemetery, and it had been considered necessary to underpin all external walls; and the committee was authorised to have the necessary works carried out by the contractors. The Parliamentary committee reported that having considered the desirability of the Board purchasing the rights of the lords of the manor over Bostal Heath, they had instructed the solicitor to agree that, on the opposition of the lords of the manor to the bill for confirming the scheme being withdrawn, and subject to the approval of the select committee of the House of Lords, a clause shall be inserted, providing that the board shall purchase all the

rights and interests of the lords in the heath, for the sum of £5,500. It was explained that the board would, if it gave this sum, acquire the right to purchase Plumstead-common for a further sum of £10,500. After some discussion, and a division, the report was adopted.

MILTON.—The Church of the Holy Cross, Milton, Northamptonshire, was re-opened on Thursday week. The chancel has already been restored, and the work just completed includes a thorough cleansing of the arcades, including the pillars, with their bases and capitals, which are now in perfect condition. Additional beauty has been secured to the church by the opening up and complete renovation of the tower arch. The wooden clerestory windows have been removed, and new stone trefoil-foamed windows have been introduced like those at Cranford St. Andrew's and at Barton Seagrave. The old roofs of the nave and both aisles have been renewed in pitch pine. The porch, which was very rude, has been entirely rebuilt in somewhat modified proportions, with small decorated windows on the east and west sides. The whole of the works, including the chancel, have been carried out according to drawings prepared by Messrs. E. F. Law and Sons, of Northampton, and under their superintendance. The works of the chancel have been executed by Mr. Asplin, of the village of Milton, and those of the church by Mr. Gee, of Daventry. The carving was executed by Mr. Phillips, of Northampton. The cost of the entire restoration, including the chancel and architects' commission, &c., will be about £2,800.

REDRUTH.—A new Baptist chapel was opened at Redruth last week. Messrs. Grey and Martin were the builders, and Mr. Hicks the architect. The style is Early English, and the chief feature of the front, 50ft. high, is a large traceried window and a porch at the side. For 5ft. from the basement the walls are of granite rockwork, the rest of local elvan, with Bath stone dressings. The "lay" of the ground allowed of a schoolroom for 300 children being built underneath the chapel. The contract price was £1,500.

STOKENCHURCH, OXON.—On Monday last the foundation stone of new Board schools was laid by Major Fane, of Wounsley House. The new buildings will comprise mixed schools for 160 children and teachers' residence. The site is an excellent one. The materials are to be of flints, with random brick dressings, and with slated roofs. The contractors are Messrs. Taylor and Grist, of Birtton, near Aylesbury, at the sum of £1,849; and the architect is Mr. Arthur Vernon, of High Wycombe.

THE INCORPORATED CHURCH BUILDING SOCIETY.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting, the last for the present session, on Monday. Grants of money amounting to £3,224 were made in aid of the following objects—viz., building new churches at Bear-park, in the parish of St. Oswald's, Durham; Harlesden, All Souls, Middlesex; Hugglescote, near Ashby-de-la-Zouch; Kensal Green, St. Jude, Middlesex; Loughborough, Holy Trinity; Mapperly, St. Jude, in the parish of St. Ann's, Nottingham; Newcastle-on-Tyne, St. Matthew; Ponder's-end, in the parish of St. James, Enfield, Middlesex; and Old Ford, St. Paul, in the parish of Bow, Middlesex. Rebuilding the churches at Cricksea, near Maldon, Essex; Newland St. Lawrence, near Maldon, Essex; Southampton, St. Mary; and (on a new site) Upton-on-Severn, near Worcester. Enlarging or otherwise improving the accommodation in the churches at Aston, near Ludlow; Bardney, near Lincoln; Constantine, near Penryn; Exeter, St. James's; Good Easter, near Chelmsford; Goxhill, near Hull; Holyhead, St. Cybi; Mariansleigh, near South Molton, Devon; Market Rasen, Lincoln; Rothley, near Loughborough; St. Ippolyte, near Hitchin, Herts; Stalbridge, near Blandford; Tilston, near Malpas, Chester; Upleadon, near Newent, Gloucester; and Whitestanton, near Chard, Somerset. Under urgent circumstances, the grant formerly made towards re-seating and restoring the church at Felstead, near Chelmsford, was increased. Grants were also made from the Special School Church and

Mission House Fund towards building school or mission churches at Claverham, in the parish of Yatton, Somerset; Nanpan, near Gram-pound-road, Cornwall; and Offerton, near Stockport.

WESLEYAN CHAPEL, TEWKESBURY.—On Wednesday, the 4th inst., the four memorial stones of a new Wesleyan chapel were laid with the usual ceremonies, in the presence of the Mayor (Captain Price, M.P.), and the Corporation of Tewkesbury. The site is one of the best in the town for a public building, and was formerly occupied by the old Market House. The chapel will be about 60ft. long by 32ft. wide, the roof of open timber, the western end being occupied by a gallery, and the east end terminating in an apse. The front elevation—the only part of the exterior visible from the street—will be of Stanway Hill stone walling, with Bath stone dressings. The design is in the style of the 14th century. The old chapel in the town was opened by the Rev. John Wesley, just a century previous to the date of the stone-laying of the new chapel. The architect is Mr. Charles Bell, of 4, Union-court, Old Broad-street, London. The contract has been undertaken by Mr. Thomas Collins, of Tewkesbury (the builder engaged on the restoration of Tewkesbury Abbey Church), and the quantities were prepared by Mr. H. Lovegrove, of 30, Budge-row, London.

PUBLIC HEALTH,

A Weekly Journal of Sanitary Science and Progress. The number published July 20 contains articles on Popular Hygiene, The Birmingham Congress on Domestic Economy, Flat Roofs as Finest of Recreation, Sewer Air, The University of Durham and its Examinations in State Medicine, Guarcol as a Decolorant and Disinfectant, The Physiology of Sugar in the Blood, The Social Science Congress, Hot Air Baths for Treating Diseases, Parliamentary Notes, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c. Price Twopence. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

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Cases for binding the half-yearly volumes, 2s. each.

B. W.—(1. To hold the elements before consecration. 2. "Registering" and "patenting" are two different things altogether. Write to any of the patent agents advertising in the *English Mechanic* for a copy of their instructions to patentees, which they will send post free.)—G. W. WARD. (The house has been executed.)—HUSKIN. (The only means to secure ink from running is to use the best Indian ink freshly mixed, and that not too thick.)—A. R. BROWN. (Apply to Batsford, High Holborn.)

Correspondence.

AN ACT OF BARBARISM.

To the Editor of the BUILDING NEWS.

SIR,—As at this season many architectural students and ecclesiologists are visiting the numerous old churches scattered over all parts of the country, I am induced to trouble you with this communication in order that through the extensive circulation which your most valuable publication enjoys, others may escape a disappointment which fell to my lot last week, when, after travelling a distance of nearly twenty miles in order to procure a rubbing of the fine brass at Brandesburton, near Beverley, Yorkshire, I found after long search the lower extremities only of the knight and lady protruding from beneath some newly-erected, but immovable seats in the chancel. Now as a large space in the nave is occupied by a cumbersome reading-desk and pulpit, and other places in the church seemed to me to be available for additional seats, it is nothing less than an act of barbarism worthy of the last century thus to hide, and very possibly to seriously injure, an invaluable work of art. On an expression of regret being courteously made to the rector, that gentleman treated the matter very lightly, and said that seats for the people were of far more consequence than the exposure of the brass, and he also stated that he had himself ordered and paid for the seats in question. After this, further remonstrance seemed to be useless. The noble brass thus hidden is fortunately engraved in Mr. Boutell's "Monumental Brasces," and also in Poulson's "History of Holderness." It is attributed by Mr. Boutell to Sir John de Saint Quintin and Lora, his wife, and in his descriptive notice he says, "the plate armour of this most interesting brass is elaborately enriched, and the belt is very splendid. The hauberk of mail is shown with unusual distinctness." The date is 1397, 21st of Richard II. The height of the effigy of the knight is 6ft. 8in., and that of the lady 5ft. 11in. The church itself presents Perpendicular features externally, but the interior has 12th and 13th century work in the nave arcades. There is also a very curious and ingenious niche in the north wall of the chancel. The building generally has a most forlorn and desolate appearance, and is seated with deal pews. The "living," which is in the gift of St. John's College, Cambridge, is a valuable one, being worth from £1,400 to £1,500 a year, with house. Trusting that your insertion of this may save some one a fruitless journey, and bring forth some effectual remonstrance, I am, &c.,
ECCLESIOLOGIST.

PEEBLES PARISH CHURCH.

SIR,—Might I be allowed to inquire, with respect to the view of the nice-looking building proposed for the reconstructed form of Peebles Parish Church published in the BUILDING NEWS of the 13th inst., whether the floor-lines of the building shown on the right are inclined upwards from the roadway, or those of the vestry downwards, or whether, for purposes of "art," the draughtsman has adopted the ingenious expedient of using some three or four points of sight at different levels? I remember to have seen an interior perspective view, some ago, by a very distinguished architectural artist, in which, for the purpose of enlarging the scope of view in a large galleried hall, two points of sight were used—one for seeing under the gallery, and the other over it, and the imposing vistas thus obtained led, probably, in part to the success of the design in the competition in which it was submitted, as it secured the author the premium, though not the building. I forget where Brooke Taylor is buried, but it may be well for the churchwardens there to look to the security of his resting place, as this distinguished mathematician and original member of the Royal Society may, it is to be feared, be disturbed in his grave by some of the extraordinary liberties taken with the exact science of linear perspective, first demonstrated as such by him in the admirable treatise which is the one authority on the subject, and the foundation of all treatises of any value which have since appeared on it. If certain draughts-

men are haunted by a ghost in a lace cravat and full crop of long curls, they will have only themselves to blame.—I am, &c., H. P. H.

BIDEFORD GRAMMAR SCHOOL.

SIR,—It may interest those who submitted designs for the new Grammar School at Bideford, in June, 1876, to know that two sets of plans have been retained by the governors until the present month, when they were returned to the respective owners, with thanks and cheques for the respective amounts of five and three guineas, the premiums awarded in the competition, the governors having engaged the services of Mr. R. S. Hookway, builder and contractor, dealer in timber and drain pipes and chimney-pots, to prepare plans and superintend the erection of the schools.

It may be very amusing to a body of country gentlemen to obtain the ideas of architects for a few guineas, but it is rather more than a joke to lend a set of drawings for a year, receiving in return a cheque to about pay for the perspective drawing submitted.—I am, &c., A VICTIM.

Intercommunication.

QUESTIONS.

[5061.]—Removing Putty from Old Sashes.—What is the best process for removing putty from old sashes so as to save the glass? Is there any acid superseding the hot iron process?—AN OLD SUBSCRIBER.

[5062.]—Varnish for Water Colours.—Could any of your obliging correspondents inform me of a thoroughly good varnish for water-colour drawings, either simple or compound?—SUBSCRIBER.

[5063.]—Ambulance.—Will any of your readers inform me what is the meaning of the word "ambulance," applied thus:—"Detached laundry, 'ambulance,' stable, &c., to be provided?"—HOSPITAL.

[5064.]—Iron Girders.—Will painting iron girders, after they have begun to rust, stop the corrosion? If not, how long before they are liable to become dangerous from the rust eating into the iron?—W. L.

[5065.]—Main Sewers.—The local authorities in a sea-side watering-place are contemplating the construction of a brick culvert to supersede the present drain—a stoneware pipe of small dimensions—and for the purpose of being satisfied on all points I beg the liberty of asking one of your experienced engineering correspondents:—1. How to calculate the number of houses or w.c.'s, a 3ft. 6in. x 2ft. 6in. sewer will carry, with the ordinary means of flushing by street gullies, &c.? 2. Is not a fall of 1 in 100 considered a good one? 3. Does a simple, open, ventilating shaft—without a charcoal filter—work efficiently, or do the noxious gases become a nuisance to passers-by, the grating being on road surface? 4. Can a 9in. invert and arch, with 4½in. sides, be constructed with safety, so as to afford sufficient resistance to the subsoil, or should the section be 9in. all round?—OUT-FALL.

[5066.]—Architectural Models.—Will one of your readers be good enough to state the best method for colouring cardboard models, so as to represent the various materials used in the building, and whether such colouring should be done before the various parts are gmmmed together? Also, what is the best material for small models—say, to a ½in. scale?—MORGANWG.

[5067.]—Measuring Plasterers' Work.—Is it not usual in measuring plasterers' work, either for labour only, or for labour and materials, to measure the actual work done, allowing a small margin for skirtings, architraves, and mantel-piece finishings, unless a stipulation in the contract or specification provides that all openings are to be measured in?—MORGANWG.

[5068.]—Where to Place the Felt in a Roof.—The Wesleyan chapel, Steyning, is building from plans by Lund and Son, architects, Worthing; the span of roof is 29ft., and the rise is 20ft.; it is boarded up to the collar-beam with square-edge ¾ boards (these felled). What is the proper lap for countess slate? Also, above the collar-beam, it is not boarded, nor have I felted it, but will felt the square-edge boarded ceiling. (Which is the proper place to put the felt—under the slates, or on the ceiling-boards?) The ceiling has six cast-iron ventilating grates in it, 2ft. 6in. by 9in. I shall be exceedingly glad if some one of your well-versed readers in building will answer these few questions for—C. B. O.

[5069.]—Cast-Iron Girder.—"Cast Iron" does not furnish sufficient particulars. He asks if 3cwt. is too much to allow as a permanent safe load on a girder 16ft. bearing, and 9ft. from centre to centre. Does he mean this load to be in the middle, or distributed? This is important. Also, does he mean that this weight is the weight to be borne by the whole floor, or that only which would be borne by the girder in question? Before an answer can be given it is necessary to give these data. The load mentioned is certainly not too much for any ordinary-sized girder of this span, which would well bear nearly two tons in the centre. What I mean by

ordinary size is one, say, 9in. deep, with a bottom flange of about 8in. Such a girder would bear that weight in the centre.—G. H.

[5070.]—Country House.—1. In building a house to cost about £2,000, what difference in the contract would it probably make if the water, instead of being on the site, had to be fetched 100 yards? 2. Can you mention any work (not purely professional) treating of the construction, &c., of a gentleman's country house? 3. About what amount would the construction of a well cost in a soil of sand and sandstone where water is anticipated at 55ft. By construction, I mean labour, digging, bricks, and laying of bricks—all except pump machinery, in short. If you would reply to these you would greatly oblige. I inclose my card.—BEAVER.

[5071.]—Proportion of Rooms.—Will any of your readers inform me what principles should be observed in proportioning rooms as regards length, breadth, and height?—STUDENT.

[5072.]—Dimensions for a Fives' Court.—Will any of your numerous correspondents give me, through the "Intercommunication" column, information as regards a small fives' court—principally the length and width of court itself, the height of back wall, the length of flank or wing walls, and the height of the latter at their lower point.—BUNCH OF FIVES.

REPLIES.

[5046.]—Cornice to Verandah.—If the verandah is formed of wood a gutter can readily be affixed to plate. Acting as a cornice, and lined with lead, the lead to turn up under slating, or one of the lighter patterns manufactured by MacFarlane and Co., of Glasgow, and shown in their catalogue for rain-water goods, would answer the same purpose, no matter what material the verandah may be constructed with.—M. HAWNEY.

[5059.]—Cast-Iron Girder.—A girder of cast iron 16ft. bearing to carry a floor of 146 square feet, reckoned at 3cwt. per square foot (load and weight of floor), should be of the following dimensions:—16in. deep; 20 square inches, sectional area of bottom flange in middle; 3½ square inches, sectional area of top flange. Your querist himself may judge best of what allowance should be made for the load, and I would recommend him to consult his client on this point, being careful not to underrate it. By diminishing the width of the bottom flange at the ends a little metal may be saved, but it is preferable, I think, for the top and bottom flanges to be parallel to each other. The surroundings, however, more often than not, determine these points.—M.

PARLIAMENTARY NOTES.

THE SCIENCE AND ART DEPARTMENT.—Mr. Chamberlain, on Monday, moved a resolution declaring that the expenditure for the promotion of science and art should not be exclusively confined to institutions in London, Edinburgh, and Dublin; but he did not press it on being assured by Lord Sandon that the subject was under consideration, and that the Government would be prepared to deal with it next session.

WATER SUPPLY AND SANITARY MATTERS.

NEWBURGH.—The first sod of the new water-works at Newburgh was cut on Friday last. Messrs. Joseph Shaw and Sons, are the contractors. The distributing reservoir of the new works measures 97ft. by 27ft. by 20ft., inside measurement, built of whinstone rubble, and coated with Portland cement. The height of the reservoir above the town will give about 250ft. of water pressure, sufficient to reach the highest buildings in case of fire. The estimated cost is about £2,100.

CHIPS.

Mr. Westcott has been re-elected surveyor and inspector to the borough of Basingstoke. His salary has been increased from £120 to £130 per annum, and a gratuity of £10 awarded to him for extra work.

Mr. Charles Barry was in Edinburgh last week, engaged, at the instance of the managers of the Royal Infirmary, in making a thorough examination of the new infirmary buildings. His investigations lasted two or three days, and his report is expected next week.

The *Gardeners' Magazine* contains "a complete audit of City trees," accompanied with notes and an essay on City trees and shrubs generally. Mr. Hibbard tells us there are 1,200 fine trees within the boundaries of the City, and, in addition, over 2,000 undershrubs. The detailed enumeration shows the numerical proportion of the several kinds of trees, the plane and the lime occurring most frequently.

The Blairgowrie Police Commissioners have appointed Mr. Young, C.E., Perth, as engineer for the drainage of the burgh, the burgh surveyor having lately been dismissed, and Mr. Mackinson, Dundee burgh surveyor, having declined to superintend the works. Mr. Young is to use the late surveyor's plans as far as they go, and make a deduction from his fees accordingly.

LEGAL INTELLIGENCE.

A LIGHT AND AIR CASE.—THE NATIONAL AND PROVINCIAL PLATE-GLASS INSURANCE COMPANY v. THE PRUDENTIAL INSURANCE COMPANY.—This case, decided on Monday, by Mr. Justice Fry, in the Chancery Division, was a light and air action which has occupied several days, and raised, if not some novel points, some new forms of a question which was much discussed in more than one case some 12 years ago, and was set at rest, as was supposed, in the House of Lords in the case of *Taplin v. Jones*—namely, the effect of alterations in ancient lights in extinguishing the rights of the owner of a dominant over a servient tenement. The plaintiffs in the action are the owners of a house in their own occupation on Ludgate-hill, which was considerably altered in the year 1874; previously to that time they had let off the first and part of the ground floor, and occupied only the back part, which consisted of a back room, ill-lighted by a sort of skylight or dormer window, and an entrance and staircase leading out of Belle Sauvage-yard. The light was there admitted to the back-room through a skew opening in the flat ceiling by means of three panes of glass, forming a nondescript window, set at different angles under a projecting part of their own building. By their alterations they converted this opening into an ordinary skylight, and put back part of their building which overlapped it, so that they got light from the sky directly over head, and made alterations in the internal arrangement of the ground-floor by putting up glass divisions instead of party walls and otherwise, so as to improve the light of the room. In clearing the space overhead of the skylight they had set back some upper windows. The defendants are the next-door neighbours of the plaintiffs, and have recently commenced alterations in their buildings, which, it was alleged, would seriously interfere with the light coming to the plaintiffs' house both through the upper windows and through the skylight; and the questions were raised whether by setting back the upper windows and by turning round the plan of the skylight and otherwise altering it, the plaintiffs had to any extent abandoned their rights. The injuries complained of were in respect of several alterations; but the evidence satisfied his Lordship that the only material damage was caused by the erection of a parapet or wall about 4ft. high close to the plaintiffs' skylight. Mr. Justice Fry, after having stated the facts, said that the evidence satisfied him that the only material damage was on account of the parapet, which he was of opinion materially affected the plaintiffs' premises in their present state, and would also have damaged them in their old state. He explained the law under the Prescriptive Act, by which the custom of the City of London was altered, and the right to light and air, after 20 years' uninterrupted enjoyment, was given, and the decision upon that Act of *Taplin v. Jones*, in which the House of Lords decided that the mere enlargement of a window did not operate as an abandonment. The principle of that case he held applicable to windows which had been put back; a contrary conclusion to this seemed to him against common sense. Referring to the Act, he considered that an owner's right was not limited by the aperture in his own wall. A right to any aperture in his own wall he had independently of the Act; but he interpreted the decision in *Taplin v. Jones* as laying down that the owner of the dominant tenement had, notwithstanding alterations, a right to the enjoyment of the space of light and air coming over the several tenements so far and in such a way as he had before such alteration. That being so, the only question to decide was whether he should grant an injunction or award damages—a question depending partly on the conduct of the parties in respect to the action and partly on the circumstance of the buildings. He held that the plaintiffs had not used such diligence as that they were entitled to an injunction, and assessed damages at £200; but as they had put their case far too high and claimed much more than they were entitled to, he gave no costs.

WAGES.—Mr. Bridge heard several summonses at the Wandsworth Police court against Mr. Levi John Rudeforth, a builder, of Bangor Wharf, Langdale-road, Peckham, for wages claimed by workmen employed on his houses on the Sisters' House estate, Lavender Hill, Battersea. The defendant said he did not employ the men, but made a contract with Herbert Freeman for the carpenters' work, and he engaged them. Freeman had overdrawn the account by £200. This was denied by Freeman, who had a claim against the defendant, and he said there was no agreement.—Mr. Bridge said he should like to have decided for the men, as it was very hard upon them to sub-contract the work, and then disavow their claim.—The summonses were dismissed, but others were granted forthwith against Herbert Freeman, who employed the men.—Mr. Bridge, in ordering the amounts to be paid, told the defendant not to take out contracts, and not pay men in public-houses.

LIGHT, OBSTRUCTION TO.—ROTHWELL v. THE COMMISSIONERS OF PUBLIC BATHS AND WASH-HOUSES, ST. PANCRAS.—This was a motion, recently, in the Chancery Division, to restrain the defendants from building on the site of the old Fitzroy-market, a building higher than 24ft., or nearer to the plaintiffs' premises than a distance of 24ft. Mr. Glasse, Q.C., and Mr. Brookshank appeared for the plaintiff; Mr. Higgins,

Q.C., and Mr. Macnaghten for the defendants, were not called upon. The Vice-Chancellor said the old Fitzroy-market was 24ft. high and 24ft. distance from the plaintiff's house. The market had been pulled down, and was now in the hands of the defendants, who intended to turn it to a most useful purpose. The building which they had erected was 26ft. high, and 1ft. nearer the plaintiff's house than the old market. The injury was so immaterial that it was not a case for an injunction, though at the hearing Mr. Rothwell might get damages. The injunction was refused.

OFFENSIVE ASPHITS ON A BUILDING SOCIETY'S ESTATE.—Thirteen persons occupying houses in the Brickyard Killamars, belonging to the Sheffield Permanent Benefit Building Society, were recently summoned to Ekington Sessions, charged with allowing the privies and asphits of which they are the occupiers to be in such a state as to be a nuisance and injurious to health. Mr. Birch proved that on the 7th inst. he visited the premises and found the asphits in a very filthy condition. He posted a notice on the premises, but the defendants failed to comply with it.—Dr. Macintosh, medical officer of health, deposed that he found the refuse standing in the yard, and it was necessary for health that it be removed.—The summonses in two cases were withdrawn, and an offer was made to do the same in the other cases if a promise was given that the nuisance be remedied, and the costs, 4s. 6d., in each case were paid. This was agreed to by all but two defendants, on whom the Bench thereupon imposed a penalty of 10s. each, in addition to the costs.

SUPREME COURT OF ADJUDICATION, COURT OF APPEAL.—*Bourke v. Alexandra Hotel Company.*—In this case, which was an appeal from Vice-Chancellor Malins, the plaintiff who was owner of 15, St. George's-place, Knightsbridge, sought to restrain the defendants, whose hotel is No. 16, and other houses in the same terrace, from blocking up five windows in the party walls, and from raising a party fence wall separating the areas of the two tenements so as to darken the windows which opened into an area or wall separating the plaintiff's and defendant's tenements. The Vice-Chancellor held that the defendant company were wrong throughout; they were wrong in giving notice to block up the five windows, and they were wrong in giving notice to raise the wall so as to obstruct the eight windows; that the litigation had been most vexatious, and he granted the injunction with costs.—On the appeal, which was as to the five windows only, Mr. Higgins, Q.C., and Mr. E. Cutler were counsel for the plaintiff; Mr. Glasse, Q.C., and Mr. Romer for the defendants.—Their Lordships dismissed the appeal.

LUDEROOK V. BARRETT.—This case, reported in the *Solicitors' Journal and Weekly Reporter* for 9th June, Vol. XXV., p. 649, is not without interest to architects, independently of its novelty, for it is the first time the point has come before the courts. A decorator undertook to decorate work to the satisfaction of the defendant, an architect. The architect, as it is alleged, in collusion with the person for whom the work was done, refused to certify, and the decorator could not get paid. Whereupon he brought an action against the architect for a collusive and fraudulent refusal to signify his satisfaction, and the Court of Common Pleas held that the action could be maintained. Mr. Justice Grove remarked that the fact that no such action had been brought before had raised a doubt in his mind, but he could see no reason why the architect should not be liable.

DAMAGE TO WORK BY WEATHER.—*Harris v. Higgins.*—Gravesend County Court.—This action was brought to recover £1 15s. 2d. The defendant, a bricklayer, repaired a roof for the plaintiff, after which wet weather set in and washed a portion of the work away. The plaintiff employed another workman to repair the damage, notwithstanding the defendant offered to make good the same. The judge said as the work had been properly done in the first instance, the defendant could not prevent the rain from destroying his work. He should order the defendant to pay 10s.

PARTNER. — MISCONDUCT. — CLAIM FOR DAMAGES.—*Hill v. Keddell.*—Chancery Division.—The action was by the executors of a deceased partner against the two surviving partners of the well-known London building firm of Hill, Keddell, and Waldram, for accounts of the partnership which had determined by the death. One of the two defendants made a counter-claim for damages, alleging misconduct against his co-partners, on the ground that they had endeavoured to starve him out of the business by refusing to carry it on. The Master of the Rolls held that a partner could not claim damages against his co-partner for misconduct.

DISCOUNT FOR CASH PAYMENT.—Westminster County Court.—*Litchwitz v. H. J. Taylor.*—This was a cause remitted from the High Court of Justice to this court for trial, and was one of some peculiarity. Mr. Oppenheim appeared for the plaintiff, and Mr. Lord for the defendant. The plaintiff is a zinc merchant, carrying on business at Westbourne-park, and the defendant a builder, of Elm Park, Haresden-green. It appeared that at the latter place the defendant is carrying on building operations of an extensive character, and that a Mr. Greaves watched the progress of the erections on the

part of the freeholder, and early in September he introduced the plaintiff to the defendant for the purpose of providing the zinc roofing to several houses. The work was measured up and an account sent in, and the defendant forwarded a cheque before a month's credit had expired, deducting 5 per cent. for prompt payment. A letter was sent by the plaintiff in answer, stating that he could not afford to allow more than 2½ per cent., and that he would charge the remaining amount to the next account. The plaintiff, during November and October did other work amounting with that due on the previous account to £28 10s., and the defendant wrote to him stating that instead of paying cash he would accept a bill at three months. The plaintiff forwarded a bill for acceptance for £29 6s., charging 15s. interest, and the real question between the parties was, whether the transaction was a cash one, or subject to the usual rule of trade—viz., three months' credit on a bill being given. The amount of debt had been, by order of the High Court, deposited in court to await the decision of his Honour, who, after hearing the evidence on both sides, came to the conclusion that the defendant had a right to credit for three months without interest, and therefore gave a verdict for defendant with costs.

THE ARTISANS' AND LABOURERS' DWELLINGS COMPANY.—Another Director Involved.—The late secretary of the Artisans' Dwellings Company, Mr. W. Swindlehurst, and Mr. E. Saffery, estate agent, were again brought up (the former in custody, the latter surrendering to his bail) at Bow-street on Wednesday, charged with conspiring to defraud the shareholders of the company. With them was now associated Dr. Baxter Langley, the chairman of the company until a few days ago, to whom it was alleged that a portion of the money corruptly paid to Swindlehurst could be traced. The evidence mainly consisted in tracing the notes that had been paid on the purchase of estates by the company, and the defendants were again remanded.

CASES UNDER METROPOLITAN BUILDING ACT.—*Bad Building.*—A Caution to Builders.—On the 26th ult. Mr. J. Stanway, the builder of Nos. 37 to 49, Shaftesbury-road, Hammersmith, appeared before Mr. Paget, at the Hammersmith Police-court, in answer to a summons taken out by Knightley, district surveyor of Hammersmith, requiring him to take down the south flank wall of No. 37, in consequence of having built it with broken bricks, not properly bonded and solidly put together, as required by the Building Act. Mr. Knightley produced a sample of the broken bricks used in building the wall, and explained how impossible it was to form bonded work with such material, and side by side showed the method of bonding with bricks of the size specified by the Act. He had continually complained of defendant's buildings, but finding remonstrance useless, now asked the magistrate to order the demolition of the wall. He called a witness, Mr. E. F. Roberts, a local architect and surveyor, who alike spoke to the bad quality of the work, and his assistant, who saw the sample taken from the building, and the magistrate having expressed his intention of making an order, unless defendant could bring evidence to alter it, he (defendant) applied for an adjournment, and paid costs, 30s. At the adjourned hearing, on the 17th inst., Mr. N. Bazalgette, instructed by the Metropolitan Board of Works, appeared for Mr. Knightley, and Mr. Claydon for defendant, and the cross-examination of defendant's witness proved nothing beyond confirming the belief in the mind of the magistrate that the walls were badly built. He summed up as follows:—"The question before me is one of bare fact: are these walls built in the manner specified by the Building Act—that is to say, do the bricks overlap each other and form bonded work, and are the bricks, as specified by the Act, not less than 3½ in. long? It has been shown that there was a large quantity of broken bricks or 'bats' used. The district surveyor complained of this, gave notice to amend, and followed it up by a letter that such notice could not be waived; but defendant deliberately built the walls higher with the same bad material, in direct opposition to the proper authority." He, therefore, made an order as prayed, with general costs, amounting to £1 15s. 6d.

The Padsey School Board has accepted tenders from Messrs. Illingworth, Ingram, and Co., amount to £475, for the entire furnishing of the two schools just erected by the board.

The Church of St. Peter, Sandwich, built in the reign of King John, and which has been partially restored, is about to be completed. Mr. W. White, F.S.A., of 30, Wimpole-street, is the architect.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,
Have REMOVED from 57, St. Paul's Churchyard, to new and extensive Premises,
123, QUEEN VICTORIA STREET, ST. PAUL'S, E.C.
Illustrated Price Lists gratis and post-free.
Makers to the QUEEN, H.R.H. the PRINCE OF WALES, and the Bank of England.

Trade News.

WAGES MOVEMENT.

DARLINGTON.—After extending over some weeks, the strike has been adjusted by the withdrawal of the claims made by the employers. The Master Builders' Association, finding that two firms in the town who have large contracts on hand, were subletting the work to the men on strike, held a meeting, and decided that rather than allow such practices to be continued, they would resume the *status quo ante bellum*, and consequently signified to their men that they would be at liberty to resume work on the old terms of payment—namely, 36s. for bricklayers, 37s. 1½d. for masons, and 39s. for plasterers, per week of 49½ hours. The dispute originated in a proposal made by the employers that the men should work by the hour, under an arrangement that would have made a difference of about 11d. per week in their wages. Minor matters were put forward for revision and change, but the men would not allow any deviation from the former wages of the trade. The building trade has not been very brisk in Darlington lately. Scarcely anything has been doing in the way of large jobs, except the new hotel at Bank Top, and the new Darlington Grammar School, both of which are now approaching completion. Hence some employers have not made a fresh start yet, and it is said to be probable that during the rest of the year the men engaged in the building trade will have to suffer a lot of broken time.

EDINBURGH.—At a meeting of the operative painters of Edinburgh on Saturday evening, a resolution was all but unanimously adopted, declaring the shops open at 7½d. per hour as the minimum rate of wage, and agreeing to send notice of this to the masters who had conceded the demand for 8d. per hour, so as to enable them to compete with the Associated Employers. It was stated at the meeting that the strike had lasted fourteen weeks, that the operatives had no prospects of success, as members of the society were daily returning to work at the masters' terms, and that the General Alliance was, therefore, not inclined to countenance the struggle any longer in the mean time. The strike, it seems, cost the Alliance upwards of £350.

MANCHESTER.—At a meeting of the master builders last week it was reported that new men are gradually coming into the town. A letter from the Hulme Lodge of the General Union of Carpenters and Joiners having been read, it was unanimously resolved—That this meeting thinks it undesirable to meet any further deputations from the operatives, inasmuch as it might lead to a belief that the employers were countenancing an attempt to compromise the dispute. The shops are open at 8½d. per hour, and the employers see nothing to induce them to depart from the position they have taken up. The number of men on the relief books of the Carpenters and Joiners' Union at the close of last week, is stated to have been 980. The total income of the United Trades Committee up to that time was £1,662, including over £1,000, the amount of seven weeks' local levies. The secretary of the strike committee announces that the authorities of the Amalgamated Carpenters and Joiners in Birmingham have decided to impose a compulsory levy of 1s. per week per member in aid of the Manchester strike. This levy will bring in £14 per week; and in accordance with a further resolution, a contribution of at least that amount will be continued until the termination of the dispute. Other contributions are also announced.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—[ADVT.]

Holloway's Pills.—A gap existed in the treatments of diseases prior to the discovery of these priceless Pills, which successfully rectify a disordered digestion before the whole frame is affected by disease. Want of appetite, furred tongue, acidity, flatulency, distension, and other stomachic annoyances are readily removed by Holloway's medicines.

TENDERS.

BOSTON.—For the erection of a new infirmary for the poor law guardians of Boston. Mr. Wheeler, architect:—
 Lucas, J. £36 0 0
 Clarke, H. 822 0 0
 Lovell and Darby 761 12 0
 Bowles 756 0 0
 Pannell, James 750 0 0
 Harrison and Leng (accepted) 734 11 0
 (Architect's estimate, £780.)

BRAY.—For a villa residence, stables, and lodge, at Grove Hill, near Bray, Co. Wicklow, for James Jameson, Esq. Messrs. Millar and Symes, Dublin, architects; quantities (for the villa only) by Mr. Haus Harford, Dublin:—
 Millard, Dublin £20,450
 Moyers, Dublin 19,700
 Kinninmont and Son, London 19,523
 Bolton, Dublin 18,850

BRISTOL.—For erecting new class-rooms, enlarging school-room, and restoring outside of chapel for the Brunswick Congregational Sunday Schools Building Committee. Mr. J. W. Frew and Sons, architects, 1, Wine-street, Bristol:—
 Stevens and Gardiner (accepted) £1,583

BRENTFORD.—For the erection of two semi-detached residences. Messrs. Smithies and Gladman, architects:—
 Barnes, Acton £1,953
 Gibson 1,592
 Taylor 1,588
 Falkner 1,547
 Nye 1,511
 Beauchamp 1,419

BRIGHTON.—For laying out two new streets, Kemp-ton, with drainage, metalling, kerbing, &c. Mr. Fred. W. Hyde, surveyor:—
 Bruton £1,680
 Barnes 1,515
 Howard (accepted) 1,491

BRIGHTON.—For alterations and additions to the Gladstone Hotel, North-street, with bowling alley, assembly-room, billiard-room, and entrances in rear of hotel, for J. S. Ashton, Esq. Mr. Fredk. W. Hyde, Brighton, architect:—
 Patching and Webber £3,046
 Lockyer 2,994
 Cheesman and Co. 2,940
 Nash and Co. 2,888
 Colwell 2,780
 Bruton 2,650
 Stenning and Co. 2,639
 Ancombe, J. 2,577
 Howard 2,575
 Barnes 2,560

BUCKS.—For new workmen's club, Tyler's Green, for Sir Philip Rose, Bart. Mr. Arthur Vernon, architect:—
 Woodbridge £850
 Silver 747
 Loosley 670
 Wheeler 573

BUCKS.—For additions to Baptist schools, Wycombe Marsh. Mr. Arthur Vernon, architect:—
 Silver £116 0 0
 Nash 368 0 0
 Hunt 359 10 0
 Taylor 353 0 0

CHESHIRE.—For construction of new sewers in 15 streets. Mr. G. H. Stayton, C.E., surveyor to the vestry:—
 Contract No. 1:

Brass £4,658
 Mears 3,822
 Pearson 3,284
 Thompson and Son 3,250
 Killingback 3,250
 Nowell and Robson 3,150
 Ford and Norris 3,073
 Braid and Co. 3,000
 Neave and Son (accepted) 2,614

Contract No. 2:
 Brass £4,200
 Mears 3,461
 Pearson 3,086
 Thompson and Son 3,000
 Prout 2,955
 Killingback 2,900
 Ford and Norris 2,805
 Braid and Co. 2,800
 Nowell and Robson 2,799
 Neave and Son (accepted) 2,420

Contract No. 3:
 Brass £3,790
 Mears 3,231
 Killingback 2,950
 Prout 2,900
 Thompson and Son 2,900
 Pearson 2,843
 Nowell and Robson 2,700
 Ford and Norris 2,629
 Braid and Co. 2,600
 Neave and Son (accepted) 2,247

ERITH.—For the erection of a board-room and offices for the Erith Local Board of Health. Edward Hyde, architect, 12, Queen Victoria-street, E.C.; quantities supplied by E. J. Paine, quantity surveyor, 11, Great James-street, W.C.:—
 Jarvis, Erith £1,193
 Green, Belvedere 1,110
 Blake, Grave-end 1,095
 Catchpole, Erith 945
 Miles, Crayford 910
 Hills, Erith 927
 Tongue, Plumstead (accepted) 924

FANHAM, NEAR BRISTOL.—For erecting the Chiddy Memorial Cottage for the committee of the Chiddy Memorial Fund. Mr. J. W. Trew and Sons, architects, 1, Wine-street, Bristol:—
 King, Charles, Bitton £273
 Stevens and Gardiner, Bristol (accepted) 267

ILFRACOMBE.—For forming roads and constructing drains, at the Stolars, for Capt. Walters. Mr. W. M. Robbins, architect, Ilfracombe:—
 Shepherd £283 16 0
 Mason 265 0 0
 Tucker 219 10 0
 Slece 192 10 0

MAIDENHEAD.—For the erection of new laundry at the Cookham Union Workhouse for the Board of Guardians. Mr. C. Cooper, architect; quantities by the architect:—
 Cox, C. W. £469
 Woodbridge 460
 Partlo Bros. 394

MARGATE.—For the erection of a villa residence on the Mill Green Estate for Wm. List, Esq. Messrs. Smithies and Gladman, architects:—
 Bushell and Sons £2,038

WENNESBURY.—For alterations and additions to offices for Messrs. Thursfield and Messiter, solicitors. Messrs. Horton and Scott, architects; quantities supplied:—
 Butler, G. P. £690
 Mullin, J. 640
 Prow and Sons (accepted) 560
 Whitehouse, J. 554

WYCHOLD, BROMSGROVE.—For farm buildings, at Holp-ridge Farm, for John Blick, Esq. Mr. John Cotton, architect:—
 Brazier and Weaver £397
 Harris and Cook 371
 Bourne 370
 Stokes (accepted) 349

LONDON.—For new warehouse buildings, St. Mary Axe. Mr. H. H. Collins, 61, Old Broad-street, E.C., architect; quantities supplied by Messrs. Batstone Bros.:—
 Bracher and Son £9,420
 Scrivener and White 9,185
 Newman and Mann 9,030
 Waldram and Co. 9,020
 Brown and Robinson 8,960
 Morter, J. 8,848
 Brass 8,815
 Byles Bros. and Allen 8,759
 Merritt and Ashby 8,737
 Mark, F. 8,700
 Nightingale, B. 8,562
 Abraham, R. 8,468
 Kirk and Randall 7,840

NEWARK.—For erecting the Mission-house, Balderton-gate, Newark. Mr. Geo. Sheppard, borough surveyor, architect:—

Baines £910 0 0
 Hancock 866 0 0
 Hunter 848 10 0
 Doncaster, W., Fiskerton 838 5 6
 Hoe, Edwin 835 0 0
 Lane, Cuthbert 815 16 0
 Duke, W. 809 0 0
 Henderson, Thomas (accepted) 795 0 0

Also alterations to girls' schools:—
 Lane 186 0 0
 Hoe 178 0 0
 Henderson 167 0 0
 Duke, W. (accepted) 141 0 0

SOUTHWICK.—For master's residence, for the Southwick School Board. Mr. Frederick W. Hyde, North-street, Brighton, architect:—
 Triggs and Willett (accepted) £324 10 0

SURREY.—For semi-detached villa residences, Caterham Valley, for A. Weller, Esq. Mr. J. Glenn, architect:—
 Byles Bros. and Allen £2,790
 Longley and South 2,702
 Staines and Son 2,668
 Cullum 2,554
 Ennor, Julian, and Co. 2,500
 Ridge, Croydon (accepted) 2,412

WOLVERHAMPTON.—For the erection of four houses at Riches for J. H. Ashton, Esq. Messrs. F. and A. Wheeldon, architects:—
 Lovatt £2,100 0 0
 Higham, G. and F. 2,007 0 0
 Barratt and Skinner 1,991 14 0
 Gough 1,870 0 0
 Wiley and Pitkin (accepted) 1,840 0 0

WOLVERHAMPTON.—For alterations and additions to the Darlington Arms Inn, for Mr. Thomas Davis. Messrs. Horton and Scott, architects; quantities supplied:—
 Mallin £667 0 0
 Horsman 540 0 0
 Lovatt 530 0 0
 Groves 479 0 0
 Gough (accepted) 463 4 0

YORK.—For the erection of 12 new villa, Fulford Grange Estate. Mr. William Lewis, architect; quantities supplied:—
 Weatherley (bricklayer & carpenter) £3,752 7 0
 Hobden (stone mason) 617 6 0
 Rawlings (plasterer and slater) 1,066 8 0
 Lyons (plumber and painter) 670 0 0
 Hill (smith and ironmonger) 256 6 0

(Accepted) 6,365 0 7

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THE BUILDING NEWS.

LONDON, FRIDAY, JULY 27, 1877.

A PLEA FOR ECLECTICISM.

A SURVEY of recent architectural works cannot fail to force the conviction upon us that, despite the overruling influence of fashion, and the abject return to antiquated ideas, there is a growing tendency to types that are more favourable to modern usage. Wherever a revived style has taken root we may be sure of finding indications of features that are not far removed from our actual wants—a “survival of the fittest” has been going on in that constant struggle between the architect’s ideas and the demands of the builder. It may nevertheless be true that the sentiment in which these features are expressed may be quite in discord with the age; it may be thoroughly retrogressive in some instances, as we find it in the ultra-Gothic, in the Jacobean and Queen Anne buildings, which emanate from a school of artists ever prone to admire the past more than the present. Even here, however, we may discern traces of the operation of the law of what we may call progressive modification. In spite of the artist’s individuality, in the face of all the care and effort to give his building the air of quaintness and *négligé*, we cannot be mistaken as to the authorship. If we examine the executed works of masters of this school of art—thought—a school we may call fairly the re-representative—we find they seldom fulfil our expectations of success, even in the sense of being fair realisations of the drawings on paper. Exquisitely quaint and picturesque as are the conceptions of Mr. Norman Shaw, we are bound to confess they not unfrequently lose by realisation; with the exception of some feature or moulding that captivates our fancy *per se*, but which would be charming wherever we saw it, we may pass from the work as a whole with more of the impression that it was an excellent embodiment of the antiquated than a truly architectural product of the age. Possibly the artist would deprecate the idea conveyed in this last phrase, and thus, indeed, he would be joining issue with us on the only intelligent ground possible. The question between the modern artist of the representative and re-representative school would be this, that the former maintains for art a *modern* expression, and the latter an antiquated one. In justice to Mr. Shaw, as an exponent of the latter, we admit that few have shown themselves greater masters of easy and picturesque reproduction; and this, in our opinion, constitutes the very success of that gentleman’s work. We see no straining after piquant effects; his walls are broad surfaces dictated by the plan, the chimneys rise without a twist, or a distorted effort to make them appear somewhere else than where they actually occur; the gables are the unstudied result of simple roofing, and any piquancy of grouping seems to be the result of conditions rather than the endeavour to look clever. Though there is a rural simplicity, that almost seems a little too primitive and nonchalant, it is constantly an effortless working out of the plan. In these respects the art, though antiquated, is consistent and thoroughly artistic. We cannot assert the same of the works of many others of the school to which we are referring. There is often a forced kind of expression that, while it destroys the energy of the design, renders it simply absurd. For instance, how commonly the study of the designer is apparent in making a group of chimneys or gables picturesque by a variation in their

forms, without the consideration that by so obtaining effect the very idea of piquancy is destroyed. He is like those rhetoricians who constantly employ antiquated or foreign words, and who thereby destroy or modify the very effect they wish to produce. An idea of artifice is, we contend, the modern vice of the school we speak of. Picturesqueness is made the study of the artist, instead of being the natural outcome of skilful planning, pleasing grouping of features and light and shadow. Neglecting this only truthful method of design, he superadds afterwards what should have been first in view: we need hardly add, the effect is incoherency, caricature, or jumble. Bits of gables, useless breaks in the walls, little fancies obtruding here and there, windows varied in outline, show the artist has been endeavouring to produce a piece of accidental quaintness, instead of designing the truthful. But all this capriciousness, in proportion to its absurdity, defeats the end in view. If the essence of architecture is picture, then we have nothing to say; if it is artistic building, it comes under another category.

Now, if we take the broader school of architecture, or the “representative,” in which we must include the works of our leading Gothicists, we note those of Mr. Waterhouse, Mr. Pearson, Sir Gilbert Scott, Mr. Street, and a few others; we are obliged to admit that the sentiment—or what is sometimes called “feeling”—displayed, is far more generic; the features are strung together with more consistency and sometimes rhythm—in one word, there is less singularity and individuality. We by no means undervalue the quality; but we consider that the tendency of all good art is to conform to a central type. All great periods of art have centred round types, in styles as marked off on one hand from eccentricity as they have been from mannerism. Just as in the phenomena of crystallisation, the nature of the molecules determine the mode of crystallising; so in architecture, the units—or what we may term the fundamental elements of architectural composition—will ultimately form an aggregate or a central type. Though modern architecture is not, as formerly, the expression of a dominant oligarchy, though the interests that now sway the designer are a thousandfold more numerous, and though the materials he has to utilise are more varied and multiform, yet these are influences that, under masterly hands, will assume orderly arrangements—well-defined features out of chaos. Our most satisfactory buildings assure us of this—that, in proportion to the restrictions and conditions under which the architect works, in that degree they fall into definite styles—that is to say, their features, as the windows, doorways, and wall decorations, assume defined types and combinations. Our public buildings and City warehouses have, we contend, been gradually leading towards the horizontal-featured Renaissance, if we may so qualify the type, in spite of here and there a solitary resistance to the law of evolution we have prevised. Our business architecture will be found invariably to assume this type, and it is not difficult to account for it. Let us look at the conditions of the problem. There is generally restricted area or site. What does this entail but reduction of wall, till it begins to partake more of the pier? It must be remembered that lighting has always exercised a considerable influence on architecture; hence, in crowded cities, like London, the architect has had a constant struggle between his wall and his openings. It is not hard to discern that the compromise would lead to the pier as the modified type of the wall. If we traverse such thoroughfares as Gracechurch-street we find the buildings composed of piers and

well-marked horizontal divisions. The masonry is reduced to a mere framework in some cases, to secure the requisite light. It is impossible not to see to what type of architectural style this leads. An arched style always needs wall and lateral support, and whenever we see a narrow street-front, crowded with pointed or round arches, we are always disappointed with the result; it looks as if the architect had endeavoured to get effect with a feature that, however well suited to a large building, with plenty of wall, was positively starved in such a position. No wonder that such circumstances have favoured the employment of forms like those of the Renaissance and Queen Anne, in which the pier and the square-headed aperture are the main features. Hence also the same law of modification has transferred the interest from the windows to the supports. The necessity for large and unobstructed openings has been the death-blow to the tracery window, which was so overdone during the Venetian-Gothic mania which raged a few years ago. Sir Edmund Beckett calls the Italian Gothic the “shadowless style;” it certainly possesses a little of that character in its wall surfaces, which are unusually flat, and sometimes destitute of all relief. No sane architect would ever have dreamt of substituting it for our own vigorous Gothic; its interest centres in the wall, and the openings are far too small and inadequate for our dark and gloomy atmosphere. The result has proved the *à priori* conclusion some architects held: its small traceried windows were quickly found to be ill-adapted for our commercial structures; its surface decoration soon became blackened with soot and rain, and it quickly died a natural death in this country. But the main reason of its not surviving in this country was, that it was a style that had grown in and adapted itself to a sunny climate, in which all the labour of the polychromist and mosaicist had been spent to cover large wall surfaces with absorbing masses of colour. Our business architecture, on the contrary, seeks to get as much light as possible, and to reduce the wall surface. Another feature which has shown the modifiable tendency of use to a still greater extent is the roof. The Greek purist sought to reproduce the flat invisible roof, but it quickly gave way from its unsuitability to our climate. Here was another mistaken importation from the East. Our representative architects now have tacitly agreed to the moderately high-pitched roof of the Renaissance; in the Queen Anne the roof is made a feature of considerable effect, and generally it may be regarded as the type best adapted to our wants. Internally, too, it may be considered that the inner ceiling or waggon-headed roofs of our churches have supplanted, both from economical and sanitary considerations, the heavily-timbered open roofs of the Gothic revival. In the matter of chimneys also the tendency of our architecture has been to adopt the high stack and make it a visible feature. This has been dictated partly by necessity and partly by the requirements of high roofs. Again, the use of gutters has lately introduced the parapet, and we might extend the same law to all decorative features of building. Generally, we may affirm that modification has been influenced by the requirements of the day, the necessities of materials, area, light, and a division into stories having been mainly instrumental. The modifiable actions of long bearings, iron construction, hygienic conditions, and mechanical improvements have also tended towards the establishment of types which the practical architect cannot have failed to observe. These influences render it daily more im-

possible for the architect to assert his own preconceived fancies. Even the 17th century revivalists have intuitively adopted their favourite style in obedience to the requirements of the day for plain square-headed sash windows, high roofs, and brick ornamentation, and as long as they keep within bounds their work will be appreciated. Eclecticism, then, so long as it proceeds on the principle we have indicated, becomes a just and equitable means of design. By borrowing those features that conform to the most rigid test of common sense and fitness, we are fairly aiding the march of improvement. Let us mark another sign of architectural progress overlooked. Everywhere we find the law of adaptation resisting the individual, the whimsical, and the grotesque; the cultured artist invariably uses the most abstract and refined modes of expression; the uncultivated and the vulgar, the naturalesque and the isomorphic. The point at which sculptural art should begin is, perhaps, the nicest in the whole range of aesthetics.

THE ARCHITECT AND EMPLOYER.

II.

IN all agreements with employers the question of travelling expenses should not be overlooked by the architect. We have constant experience of the unpleasantness and disagreements arising from this neglect. Clients who employ architects from a distance are apt to disregard this item entirely; and there are many who, when the works are completed, believe that the 5 per cent. should cover all expenses. In all cases where a considerable distance separates the architect from his work, we should advise that an agreed sum be arranged for travelling, or that the journeys be paid for according to their number and the actual expense incurred. Unfortunately, this rule has been set aside by a large portion of the profession, who think they are justified in charging for time as well as travelling; and from actual experience we know that in many instances excessive sums are charged. In the professional scale, as sanctioned by the R.I.B.A., nothing definite is laid down; and this is to be regretted, inasmuch as there is now no rule to limit the unscrupulous practitioner in his charges. In the schedule of rules, issued under the sanction of the R.I.B.A., and confirmed at a general conference of architects in 1872, it is distinctly said:—"The usual remuneration for an architect's services, except as hereinafter mentioned, is a commission of 5 per cent. on the total cost of the works executed from his designs; besides which all travelling and other incidental expenses incurred by the architect are paid by the employer, who may be also charged for *time* occupied in travelling if the work be executed at a considerable or inconvenient distance, or if more than ordinary personal attendance is required." The italics are ours, and it will be seen that no limit of distance is stated so that practically an architect can charge what he likes for time. Who is to define an "inconvenient distance?" The words italicised also leave it to the architect entirely; this is unsatisfactory, and architects would do well to amend this rule. In his common-sense remarks on building arrangements Sir Edmund Beckett observes:—"I have the highest authority among architects for saying that no more than the actual expenses should be charged—first, because it is unwise for the architects themselves to weight the difference of distance with more than is absolutely necessary; and, secondly, because they are not paid by time, but by percentage, or by a fixed sum, in which they can take the distance into account if they like." Architects can fairly charge by

a higher scale for those works in which skilled labour is mainly involved and the proportion of materials small, as in cases of designs for furniture and decoration, though the Institute code does not define the scale beyond that the charge should be regulated by "special circumstances and conditions." This, certainly, is vague. Would it not be better for the architect, in the absence of a regulated scale, to agree upon a charge beforehand? Rule 4, that in works under the value of, say, £500, an ascending scale of charges should be adopted, reaching 10 per cent. for works under £100, is a judicious one, and, as we have hinted, a scale of this kind should exist also for works of a complex kind. Indeed, rules 2 and 4 of the code seem to require remodelling. As the question is often asked us, it may be necessary to inform the young architect that commission is calculated upon the total cost, valued as if the materials were all new, so that for alterations in which old materials are re-used, the percentage should be reckoned not on the contract sum, but upon a fair valuation of the work done, as if the materials were all new. The justice of this is obvious, for the architect spends as much time and skill in converting *old* as as he does new materials, often more. What special charge can be made for alterations is not stated, and it is advisable that an agreement be made. As regards drawings, it is the theory of the profession that the architect is paid for their *use* only, and that they should be returned to him; in the decision given in the case of the Government and the architect of the Houses of Parliament, it was ruled otherwise, and perhaps the architect had better come to terms about this question, though it is one rarely in dispute, and we have very seldom known old designs re-used.

As regards the question of alterations or additions, it should be always laid down in the contract that no alterations or additions should be made without the express sanction of the architect in writing, or that, if the employer desires to make any alteration, he should make the order in writing, which should be countersigned by the architect. We have known more squabbles to arise from a breach of this rule than any other in building operations, and it is very necessary that the contract should clearly state in what manner these almost invariable contingencies should be regulated. By and bye we shall refer to this in speaking of contracts; but the question has a special bearing upon the relations between the architect and employer, and it is this point we desire to dwell upon here. It is of little use mincing the matter, but few buildings are ever completed without some deviation from the plans; in some cases the alterations are considerable. Now, it would add to the protection of both architect and employer if a distinct understanding were come to—to the effect that any additions or alterations should be paid for at an agreed percentage—say, 5 per cent. Clients frequently wish alterations made as the work proceeds; but they are not always ready or willing to pay for them; at any rate, they wonder how it is that the architect has exceeded his commission, and when the explanation is given they often are more inclined to hesitate than pay. Every architect knows how frequently disputes arise in his practice from this source, and yet it is strange few adopt a plan that will at least protect them from the forgetfulness or waywardness of their clients. It is often the case that the employer gives his own instructions to the builder without informing his professional adviser; but if it was understood that every order had to be countersigned by the architect, and that he was entitled to a percentage for the same, a much stricter regard to the contract would be maintained. We desire to

impress one thing. Architects are apt to overlook the fact that there is a contract between themselves and their clients just as binding as between employer and the builder, and in spite of the protection afforded them by the code of rules, behind which they too frequently repose, and which they imagine all-sufficient to protect them, the law expects from them the fulfilment of certain duties. The fact cannot be too strongly enforced that there must always be two parties to a contract, and when a code of rules is framed the demands of the employer should be considered as much as the employed. Have the Institute always acted on this principle in drawing up their code? Though nothing, as a rule, in the shape of a written contract exists between the architect and employer, they are, nevertheless, contracting parties, and it is the safest course to agree to terms.

Our pages have lately been occupied with the important question of "quantities;" we shall therefore briefly remark here the points to which attention is necessary. By almost universal consent of the profession "quantities" are considered necessary; it therefore seems to us only fair to make them the basis of the contract, and to acknowledge them openly, instead of trying to conceal them from the employer, who, after all, has to pay for them. As the architect should have nothing to do with the financial transactions further than to certify the payments due to the builder, we contend that it is better he should employ, and that he and his clients should *agree* to employ, a surveyor to take out the quantities. By so doing all suspicion of unfairness is avoided, and the employer becomes a party to the employment of the surveyor. The R.I.B.A., as our readers know, first prohibited their own members from taking out quantities, justly seeing the evils which arose from it, and which have only recently been made the subject of public comment; subsequently, however, in 1872, the rule was modified. The practice was so general, indeed, that the Institute found it impossible to sustain a rule they could not enforce, and they proposed that the employer should pay the architect for the quantities instead of paying the contractor. But this was objectionable for many obvious reasons. A recent and further modification of the rule has been proposed, by which the quantities are to be prepared an independent surveyor, appointed with the concurrence of the employer, and we believe this to be the only just course, notwithstanding the advice of some who advise employers not to recognise the quantity surveyor. The quantities should undeniably form part of the contract. There should not be a suggestion of suspicion cast upon the architect on their preparation, nor should he be made chargeable for omissions. Many in the profession make a considerable emolument from quantities, and for this reason we must account for the opposition entertained against any proposition for limiting the architect's connection with them. The recent controversy has been waged between those who believe the architect should primarily protect his client, and be thoroughly independent, and those who see no harm in making an additional 2½ per cent. on quantities supplied to the builder. Further, we contend that any one who supplies the quantities should guarantee their accuracy to the contractor. Architects, as a rule, endeavour to protect themselves from this risk by a clause in the contract—hence the exorbitant percentages added by builders in many cases, which the employer has to pay.

In relation to this question it may be desirable to mention that the employer is liable for the quantities, if, after he receives tenders founded upon them, he abandons the intention of proceeding with

the work. In all cases we should suggest the desirability of making an agreement with the quantity-taker to charge a fixed sum in case the work does not go on. This is only fair, because in such a case he takes no further risk.

In advertising for, or inviting, tenders, the usual clause, "the lowest or any tender is not necessarily accepted," is a safe one; for if there is no such clause the lowest tenderer has a fair claim to recover for his time and labour. Besides which, the young architect cannot be too much on his guard sometimes. Many men tender for a work which they are quite incompetent to undertake, and it is the duty of the architect to see that he is not making a contract with a man of straw, but with a responsible individual. He should invariably require, before the acceptance of the tender, that the builder be able to find the necessary sureties—one, two, or more, as the work demands, for the due fulfilment of the contract. One-third of the amount of tender is not too large a guarantee in ordinary contracts, when the contractor is not known as a safe man. It is usual for a contractor to allow 25 per cent. to be withheld from the amounts due to him at each instalment; and, of course, such a condition should form a part of the contract, and a contractor of any standing or reputation would never object to this reservation. We caution the architect in all cases against accepting a tender too hastily, but to do so only with a proviso, remembering a tender and the acceptance constitute an agreement in law. With all tenders a schedule of prices should be given in—at least a list of the principal kinds of labour and materials like excavation, concrete foundations, brickwork, timber per cube, &c., by which any additional works may be fairly estimated, or any deductions made. This is a requirement, however, seldom insisted on, and unless the architect sees to it he never gets one. Sometimes the priced bill of quantities is enclosed and sealed and given into the architect's keeping for this purpose. A schedule, however, is the best. We may mention a rather important case here in reference to the acceptance of lowest tenders—a question that is constantly being put by correspondents. The plaintiff was a builder, and, amongst others, had plans sent to him for tendering. His tender being the lowest was thought, according to custom, the accepted one; and, as usual in some cases, the hospitality of the plaintiff was indulged in by the other builders and the architect. Afterwards the defendants denied the authority of the architect to accept the tender, and refused to employ the plaintiff. The judge ruled that there was an acceptance and perfect contract, and this decision was upheld on appeal.

AUTOGRAPHIC ART IN THE BRITISH MUSEUM AND THE ARTIST-WORKMAN.

IN the effort and in the hope of being able to aid the artist-workman in his, if at all successful, arduous work, it is somewhat difficult to find out what best to select as most instructive. It is to be recollected, in the very first place, that the position of the art-workman in these our modern days is a very different thing indeed from that of his position and mode of work in the antique Greek or Roman times, or in that of the Gothic times and middle ages, or in the Byzantine days, or even, for that matter, in the days of Christopher Wren and Inigo Jones. We might here go further and call to mind the doings of the artist-workman all the wide world over, from the very earliest and rudest efforts to those of the most refined and finished work to be found of any date. They will all of them

go to prove the one great and material fact in art-history—viz., that they are not in any sense copies of older and previous work, but are original thoughts, and the practical embodiment of such original thoughts, and that they are, too—and this is quite as important and momentous—the result of individual art-power in the executive artist and workman. It would be very difficult, indeed, to find within the compass of art a subject more important and influential in all its bearings than this, certainly to the executive artist and workman. No matter what the style and manner of the art produced may happen to be, or what the subject of it, the very first requirement is that it be autographic.

It may, therefore, be of interest to many of our art-workmen to point out to them some of the peculiarities and beauties of the work of past ages, and to indicate the probable way in which such work was accomplished, and to note the probable position of the artist-workman in days of yore, and before the triumphant power of machinery had been brought to bear on art-work; and then, and which is more important than all else, to that division of labour, minute and detailed as it now so often is, which enables the workman of today to accomplish so much in a given time. No two modes of work and action can be more diverse than are those of the past and present, and while looking at and attentively and closely studying the art-workmanship of the past, it seems not a little strange that this difference has not attracted more attention than it has hitherto done from those who have written and thought so much on the history and workings of fine art. Indeed, it might be a little difficult to point out any source wherein it has been systematically treated of, or even alluded to, as it so well deserves to be. This is a very curious fact, and well illustrates and exemplifies what Sir John Herschel has said in one of his essays:—"That so very much is lost by our ignorance of what is and what is not of primary importance, though not at first sight quite obvious, of what ought to be diligently noted, and of what may be allowed to pass without notice." And that it is this which makes, in the first place, a "theory" of so much moment. It gives, he continues, to a collection of mere feelings, impressions, and scattered thoughts in the mind the power of presenting these to it as a coherent whole.

No one will dispute this dictum of Herschel's who will look into this special subject with sufficient attention, and give sufficient thought to it, and will at the same time refer to that past state of things wherein other methods of work prevailed, all so different from the present. In the British Museum this may be well studied, and, if there be a difficulty about it, it will be found, not in the fewness of the proofs of it, but the many, and in the choice of what is most instructive and to the purpose. One great difficulty there is, and it is a most unfortunate one, the British Museum collection contains but very few, if indeed any to our present purpose, examples of the Rouanesque or the Gothic, either of architecture or sculpture, or of the details of either. Why is this? There is not either a good specimen of the art or the architecture of the Renaissance, to use that somewhat indefinite term, or Italian, either Continental or English. We say nothing of other and more out-of-the-way styles of art. It must, truth to say, be taken as it is, and the best be made of it. We might refer here, as filling up partially this gap, to the collection of the Architectural Museum, Westminster, almost exclusively devoted to Gothic art in its several phases. The time will doubtless come, though it may be a distant one, when such collections will come

together, and thus form a connected whole, thus to exemplify the long history of past art and architecture. But in these days unhappily the hindrances are not a few to concerted action, however desirable.

We might thus go on with our lament, and can hardly forbear, there being so much that is needed even for the small purpose which we have here in mind. There is practically—strange as it may seem in such a well-endowed establishment—no catalogue of antiquities, for the few leaves of printed matter sold as a catalogue makes no allusion in detail to the separate objects. These objects, as in the Egyptian galleries, have many of them two or more numbers on each one of them, and sometimes none. This catalogue, by the way, is quite a curiosity of its special kind, and the student should certainly provide himself with one, not to refer to maybe, but to note in the margin what it is he wants to know. We hope to help him here, and to refer to some of the fine examples of art-workmanship in detail, affording names when possible. A capable workman, not simply looking at these fine works, but earnestly studying them, will be right well rewarded, and will, we cannot but think and hope, be in no long time able to distinguish between the true and the meretricious in art, and between that art which has been the result of manufacture and that art which has, as here, been the result of the thought and personal handwork of the artist-workman. This is worth almost any amount of painstaking, and will amply reward it. We would mention here in passing that, if possible the student should provide himself with one of the old "Synopsis" of the Museum Collection, the first edition of which appeared so long back as 1808. It has unfortunately been superseded by the present so-called Guide to the collection.

But we must needs take things as they now are, and make the most and the best of them, and get help from what is about us, however much we may regret its deficiencies. And, in the first place, missing much, we would call special attention to a really remarkable series of impressions or casts from Egypt, but within a few days open to public view, in the Egyptian galleries of the British Museum. They are contained in a series of wooden panels, fixed into the east wall of the central Egyptian saloon, unfortunately under a window light, so that they are but very imperfectly seen, there being, consequently, no direct light on them, and no shadows thrown. These fine examples by the artist-workmen of old Egypt deserve a better fate and place—a good side light and an eye-level point of sight. They are large, life-sized hieroglyphics, incised into the stone, and are alike admirable for the drawing and expression of life and individual character displayed in them. Fragments, most of them of human heads, of divers nationalities, by the way, and animal forms, the birds peculiar to the country being especially striking in accuracy of drawing and outline. The human heads, too, are admirably cut out of the hard stone—some of them in relief, and the peculiar still and soft expression of the Egyptian faces admirably caught. We can hardly point to special instances, the panels containing them not being as yet numbered; all are worth attentive study. The profile of the Pharaoh, close to the floor, and another over a doorway, are, it struck us, especially fine, and admirable specimens of artistic skill of hand and eye and memory. We could well dwell on these fine works of the Egyptian sculptor in detail, and even compare them with some of the Greek work not far from them, but must forbear; for the time, it is to be feared, is hardly yet come wherein individualised art-work is duly cared for, except in painting. But the time

will certainly come when this will be so; and then such work as this will attract students, not for the sake of its antiquity and historical import simply, but for its display of artistic power and import. We may note, too, that these plaster casts have not as yet been tampered with in any way, or, what is as bad, coloured or "painted;" so they fairly bring the actual work and workmanship before you. They deserve indeed, as we say, a better place than where they now are, and a better light.

It is to be observed that these stone carvings are not—any more than another example we propose to cite—the result in any sense of copyism from previous art-work or from the work of a, at the time, past age, but are evidently transcripts from living forms and then present impressions. The old Egyptian copied the life and occurrences then about him, and in his own individualised way, *i.e.*, in his nationalised and own way. We see here his veritable "handwriting" on the wall. We can hardly, therefore, point out to the stone carver and artist-workman, even in the Museum, finer or simpler examples of drawing and stone-cutting; and they are as living to us as they must have been to the Egyptians. It would be, indeed, a great point gained if our art-workmen could be induced to feel intelligent interest in the British Museum collection of art, for there is nothing within the ken of the British workman comparable to it. There is so much, too, that is as yet really genuine and untampered with.

We will now, without going further, but just point to another remarkable fragment of Egyptian work, unfortunately within a glass case, so that it is a little difficult to look at and study. It is the well-known "Rosetta stone," as it is called. It is of the hardest of black marble-cutting, and might well be left to itself minus the distracting plate glass case. It has puzzled not a few of the learned, and is simply a stone page of a book, and contains a trilingual inscription, and is noteworthy here as an example of marble-cutting, and as evidencing how the ordinary and common "lettering" of the age can be made artistic, and possess interest as art-work. It is, indeed, writing with an iron pen on stone, and the artist-workman or marble-engraver who did the work must needs have been a skilful workman, and well up to his work. It is a pity that his teaching cannot be followed now-a-days, for there are surely many opportunities where this "writing" on a building might well be followed. In the place of utter meaningless now-a-days-copied "ornament," to be seen all about us everywhere on the wall surfaces of new buildings, might not the skill of the art-workman be more advantageously employed in writing "inscriptions" on modern buildings in readable "lettering," and might he not, here at least, exercise his own artistic power and invention in such work? That the artist-workmen of Egypt did this is quite certain.

RULES AND DATA UPON CONSTRUCTION*.

BOOKS on the strength of materials and the rules and tables founded upon experiments, are getting so numerous that our shelves are beginning to be overwhelmed by them. In fact, when we want to make a reference it is difficult to know which book will give us the best or the most concise information, and we may look through half a dozen without finding what we want. From Tredgold and Barlow to Rankine and Downing, we have a profusion of rules and formulæ that are perplexing, if not distract-

ing, and if we compare them we find the results so different that for practical purposes the architect or engineer must rely upon his own experience or calculations. Mr. Daniel Kinnear Clark, M.I.C.E., has published another voluminous work upon the subject, in which the author has concentrated the labours and experimental results of recent authorities. This bulky volume professes to give the best information with conciseness and scientific accuracy. From a general glance at its pages we are inclined to think its author has been pretty successful; at any rate, we find the information tolerably well compressed and arranged, and the rules and formulæ divested of unnecessary symbols. Passing a very comprehensive epitome of geometrical problems, mathematical tables, weights, and measures, we come to a useful division of the book on the weight of metals. We there find it stated that wrought iron varies in weight for different qualities from 466lb. to 487lb. per cubic foot, the average usually taken being 480lb. For a square foot lin. thick this weight gives us a very convenient and easily-remembered number, or 40lb. Dividing 480 by 1.28 we get 377lb., usually taken as 380lb. per cubic inch. Of cast iron we find the cubic foot is stated to vary from 378 $\frac{1}{2}$ lb. to 467 $\frac{3}{4}$ lb., the average being 450lb., and the weight of a square foot lin. thick 375lb. The tables furnished by Mr. Clark are ample, and amongst them is given a very useful table containing the weight of prisms or bars of iron and other metal of any uniform section from 1 square inch to 10 square inches of section, advancing by one-tenth of an inch for 1ft. and 1 yard lineal. This will be found of great value to architects, surveyors, and others in building, as bars of any section or form can be estimated by its use. To find the weight of wrought and cast iron, and steel from the volume is also of considerable advantage, and numerous multipliers for this purpose are given. Thus, if we want to find the weight of wrought iron, when we know its volume in cubic feet, we can do so by using 4.29 as the multiplier, and the product will give the weight in cwt. For cast iron 4.02 is the number to be used. When the quantity is superficial one inch in thickness, the following numbers are useful to remember:—Multiply area by 40 for wrought iron; 37 $\frac{1}{2}$ for cast iron; and 41 for steel; the product is the weight in lbs. The following rules, too, will always be found handy to carry in the head or waistcoat pocket, and we quote them:—When the sectional area in square inches, and the length in feet, of a bar are given, multiply the sectional area by length, and by 34 for wrought iron, 34 $\frac{1}{2}$ for cast iron, and 3.4 for steel, and the product will give lb. weight. For large masses the sectional area, multiplied by the length, and divided by 672, will give the weight in tons of wrought iron; or by 717 will give the weight for cast iron. These instances will be enough to show the practical value of Mr. Clark's book to those engaged in calculating the ironwork of structures; they will, at least, indicate that every day rules have not been forgotten. Again, rules are given by which, from the length and total weight, the sectional area may be obtained, or vice versa; but we pass on to notice another division of the author's work of special interest to those engaged in construction—namely, the strength of materials. By the way, we notice a preliminary chapter on "Mechanical Principles," which appears to be a pretty succinct statement of the leading propositions, in which the author has borrowed freely from the excellent treatise of Professor Moseley, a work we remember as one of the first, and whose illustrations we see have been reproduced, but the author does not appear to have elucidated

one important method of mechanical analysis, that known as the graphical process. It is rather an unphilosophical arrangement to insert the subjects of "Heat" and "Steam," "Fuels and Coal," before the "Strength of Materials," which should certainly have followed "Mechanical Principles."

In speaking of the transverse strength of homogeneous beams, the theory of transverse stress is amply illustrated, and the question of "diagonal resistance" is entered into, though we confess it is not very clearly stated. It is said the normal resistances, or those usually considered above and below the neutral axis of a beam, are supplemented by diagonal resistances, by which each of them is augmented 75 per cent. This is a doctrine quite new to us, and to many. What we have always considered to be the "diagonal resistance," in the sense here explained, has been met by assigning a sufficient resistance per unit to the generally conceived stresses of compression and tension. The author graphically investigates these diagonal forces, and shows diagrammatically the diagonal stress in the section of a beam, by which the combined areas of stress are shown to be equal to that of the semi-rectangle; and it is therefrom deduced that the tensile and compressive resistances act at a resultant radius measured from the neutral line of beam 1. Again, "as 5775 is the geometrical radius of gyration of the semi-rectangle on the neutral axis when the half depth = 1, the moment of resistance will, for simplicity, be taken as 5775;" or, in other words, the total moment of either tensile or compressive resistance with reference to the neutral axis, is expressed by the product of half the sectional area of beam by half its depth and by 5775, and by the extreme stresses per unit of area, or, if we call s the extreme tensile and compressive stress per sq. inch, we have

$$\frac{bd}{2} \times \frac{d}{2} \times 5775 \times s = 1444 bd^2s.$$

and the sum of the moments of resistances (tensile and compressive) is practically twice the moment round the neutral axis. We are disposed to think, though the theory is rational, that the diagonal stress is more a refinement of the theory of flexure as generally explained in works on construction, and may with advantage be disregarded in our practical treatises. If we consider the resistance of the fibres to be in proportion to their distance from the neutral axis, or to their areas multiplied by the squares of their distances from the axis, we obtain all that is necessary. We pass over the usual formulæ for beams with the remark that we see scarcely enough reason to change the term moment of inertia for "radius of gyration," though perhaps the latter term may be quite as intelligible to the mechanic. Flanged or hollow beams are investigated, and we have the following rule for a I-shaped girder, when the depth is considerable compared with the thickness of the flanges: Multiply the sectional area of one flange by 4, and multiply sectional area of web by 1.155, add the products together and multiply the sum by the depth of beam and by tensile strength per square inch, and divide product by the span; the quotient is the breaking weight." Beams of unsymmetrical section are discussed—a subject of some importance when we have I and L shaped beams in every-day use, the difficulty being to determine the neutral axis of the section. A good rule is laid down to enable the computant to find this. Beams of uniform strength are considered, and the variables pointed out. We notice a clear statement of shearing stress, and the diagrammatic means of measuring it—a subject that has been thoroughly worked out by

* A Manual of Rules, Tables, and Data for Mechanical Engineers, &c. By DANIEL KINNEAR CLARK, M.I.C.E. London: Blackie and Son, Paternoster-buildings.

Mr. Stoncy, Mr. Humber, and others. In a subsequent part of the book rivet-joints, cast and wrought-iron flanged beams are discussed, the conclusions of Hodgkinson, Laslett, Kirkaldy, and others being abstracted in a useful form for reference. In "framed work" we have girders, roofs, and trussed forms dealt with—a subject of great value to architects. We have simply glanced at those parts of Mr. Clark's work which are of general interest to our readers, though it embraces every branch of the mechanical engineer's work. In conclusion we commend the book to all interested in construction, as the most comprehensive work on rules and data we have seen.

NATIONAL COMPETITION DRAWINGS AT SOUTH KENSINGTON.

THE art-talent of this country is nowhere better displayed than in the annual competition of drawings contributed by the various schools of art. The present exhibition at South Kensington appears in every department equal to the last year's display, when there were exhibited 1,100 works, selected from 257,926 productions. Imitative art holds the highest place, as usual, for we find by far the most striking works in this division; design being mainly represented in lace, embroidery, and other decorative branches. As for architecture, it is quite at a discount, and one small screen contains all the architectural skill the examiners have thought fit to represent. We are inclined to think that even here they experienced a difficulty in making a choice, for we find scarcely a design that indicates a just conception of architectural composition.

Beginning with the 3rd grade prizes, we find the water colours certainly up to the average for minuteness of delineation, careful manipulation, and colouring, though in composition and generalised effects of colour, the collection fails as a rule. It is too evident, in looking over these groups in water colours, that mechanical merits have been reckoned rather high compared with the perceptive power of the artist. Execution has been taught before outline in some instances. If the acme of art-skill is the art of conveying an impression of form with the least visible effort, then we consider the bulk of the works at South Kensington, as representative of our art-schools, to be a failure; but if the perfection of imitative art consists in the power of placing lines and tints in exact imitation of the texture of the object to be represented, they may be said to achieve this object.

The National Gold Medal (3rd grade) is awarded to the Lincoln School, for a group consisting of a jug, plate, oranges (some peeled and divided), and a melon, against a deep-toned background. We cannot find fault with the composition of this piece; the oranges and the ewer and glass are excellently truthful. The initials, "S. M.," are marked upon the drawing. Under the motto, "Honori," the West London School has certainly not come up to the Lincoln work, though a gold medal is awarded. The composition is a group of apples and holly, defective in outline and mass. The spray of holly is carefully drawn, but wanting in the qualities of pleasing grouping; the leaves are too open, and there is a want of shadow and solidity in the piece, that makes it fall far short of "Ars Longa," Leicester—a subject that has greater claims to distinction. The National Silver Medal is given to a grouping in which a jar turned on its side is shown with some dates—a work of merit, and free from the defects we have pointed out. It is a Bloomsbury contribution. The bronze medal is also awarded to Bloomsbury female school, for a clever though rather weakly executed study of white and pink May blossom in foliage; the motto is

"Conquiesco." Of other works we note "Onward," Nottingham—a well-conceived group of blue vase, pine-apple, with a background of drapery and open woodwork. The piece which has gained the National Book Prize is certainly not, in our opinion, so successful, though the same subjects are chosen. "Lux," Exeter, takes a National Bronze Medal. Lincoln stands very high this year, and, if we remember rightly, the same school carried some good prizes last year. In oils Lincoln wins a gold medal for a cleverly-executed group; and Portsmouth also, in the person of Mr. John Parkinson, takes a gold medal for a similar composition in still life, in which richly-feathered fowl are lying upon a deal table, a cauliflower and a plate of the willow pattern being very naturally placed in the background. The brown jug, and the plumage of the birds, with the knife lying partly under them, are exquisitely true as copies. The Exeter school, motto, "Tempus," sends another very faithfully-rendered grouping, in which are chiefly to be noted a richly-carved ivory cup, with gilt cover, of the Cellini type, a bowl of fruit, and other accessories, on a rich Oriental mat, the execution of the latter being remarkably realistic. The silver medal in this class is taken by Portsmouth, in which game and vegetables are blended, the contrast between the leveret, the cabbage, and basket being happily managed. Still life seems to be the favourite kind of composition in our art-schools; it may be just worth the remark, however, that in such subjects discrimination in the selection of objects is not to be despised. To bring together a promiscuous assemblage of dinner service, old boots, broken crockery, vegetables, &c., does not help to form the student's taste in composition, even if it gives variety, and exercises his power of delineation. The Bloomsbury female school, which is well represented, receives, among other prizes, a bronze medal for a nicely-drawn and coloured study of primroses, but the composition lacks coherency—a fault frequently noticeable in ladies' works. A clever and effective piece of chiaroscuro takes a National Book Prize, the leading object being some herrings, surrounded by a mélange of worn-out articles worthy of a marine-store dealer's collection. We cannot understand the principle of award in some instances. Thus, "Labor," North London, and "Omega," Preston, go without reward; two excellently coloured subjects. The latter is especially a clever study of a carved cabinet, against which at one side rests a bronze platter, very admirably rendered in the reflected light, a blue jar making up a very pleasant study of colour harmony. This piece, placed on the ground, contrasts rather remarkably with the picture above it—a flower composition as remarkable for a confused treatment as the subject just noticed is for breadth. We may notice a group of pansies to which a book prize has been given; a group of eggs and onions, by "Strive," a well-composed contribution from the Edinburgh female school, &c. In another branch of study, the oil portraits, we note Lincoln stands well. "Tempus" is the motto of an excellently-painted girl with dog, and there are some capital studies of portraiture. The Silver Medal is awarded to "Tempus," Lincoln, for the head of an old friar, with hood, reading a book. The aged countenance, full of wrinkles, and the light are cleverly handled. The Training Female School, Kensington, exhibits in this class a well-drawn side face of a woman; the Bronze Medal is awarded to "Ars non Vis" (St. Martin). The chiaroscuro of some of these is admirably studied, and the portraits are truthful, particularly two women's faces we have noticed, where the effort has been to depict the lineaments of common life, not the

ideal beauty. Altogether there are about a dozen and a half well-studied portraits.

We pass on to notice the few architectural drawings. We see a bronze medal has been bestowed upon a design for a church bearing the motto "Onward," an over-florid Gothic attempt, characterised by a large central tower and spire at the crossing, and an apse surrounded with gables in a very unmeaning fashion. Though the detail is not bad in some parts, there is a misdirected effort throughout. Another bronze medal is awarded to a metal screen for a cathedral (Leicester school), the student being Samuel P. Pick. Here we have one of Sir Gilbert Scott's designs, heavily treated in parts, as in the lines of the gables, though the drawing appears carefully done. A third bronze medal is given to a design for a country mansion—a Renaissance treatment, and decidedly the most deserving work on the screen, with all its faults. It is contributed from South Kensington. "Tempus" is the motto of a study in colour, showing the interior of a cathedral, with some well-rendered details. The Bedford Church Institute contributes an extravagant town hall in a florid Gothic. The cause of failure in this class is undoubtedly the persistent, though absurd, notion of giving such extravagant themes as town halls and cathedrals to the young student. Such a mode of studying architectural design must invariably lead to the same results as learning drawing by placing before the student finished antique sculpture and the *chefs d'œuvre* of the great masters. Some of the other designs we shall describe next week.

WROUGHT-IRON GIRDER-WORK.

IN a paper read before the Liverpool Engineering Society last month, Mr. C. Graham Smith, the President A.I.C.E., referred to some important questions touching upon wrought ironwork. It is well known theoretical strains are considerably modified by the practical details and modes of manufacture. Something more, the author observed, is required than a knowledge of the principle of the lever and triangle, or polygon of forces, in order to design wrought-iron girder-work. The aim in all designs ought to be to so arrange the parts that there may be as little departure from theory as possible, the main points of which we may briefly refer to. The author cautioned his hearers against the fascinating theory of uniform stress, or that in any arrangement it was possible to obtain uniform strain throughout an iron structure. It was shown that the usual hypothesis on which strains are calculated supposes a normal length, whatever the load put upon the member, and that the strains are the same as they would be were it free to turn in a plane about its extremities. This assumption amounts to considering every joint to be a frictionless pin-joint, and the material of uniform texture and rigidity. Taking a roof principal as continuous, instead of having frictionless joints over every strut, we find this assumption to be quite wrong. Such a principal is often strong enough to stand with half the trussing, as the strains in the ties and struts are reduced by the resistance to deflection of the principal. In English girder-work the connections instead of frictionless are rigid and rivetted. American engineers use the pin-connection to a large extent, and if the pins and eyes are properly proportioned, theory may be more closely approached than with our complicated lattice girders with rivetted joints. American engineers pride themselves on their scientific skill in economically distributing their material, believing that a certain amount of material put into one member will do much more work than the same quantity distributed over two or more members. The sun is said to be the worst of the many things that invalidate theory. The author refers to Mr. Clark's description of the Britannia Bridge, showing how sensitive the tubes are to changes of temperature. Half an hour's sunshine upon them "has a greater effect than is produced by the heaviest trains or the

most violent storm." They are said to be in a state of perpetual motion. The expansion of the top flange by the sun, and the contraction of the bottom flange by the effects of the cool wind, cause the bridge to rise to an extent exceeding the deflection caused by the heaviest load. In the Mersey Dock the top flanges of the bridges are painted white to obviate this effect as much as possible. It is shown that, assuming the difference between the ordinary extremes of temperature is 82° Fahr., and a change of 150° induces a strain of 1 ton per square inch of wrought iron, a variation of the above extent will produce a strain of $5\frac{1}{2}$ tons per square inch. The protection of paint, and the fact that the extreme of temperature only acts during a short time of the day, reduces this strain, and an allowance of $\frac{1}{10}$ in. for each 100ft. in length is found sufficient in England. As iron within working limits stretches about $\frac{1}{100000}$ of its length for each ton strain per square inch, it is found that the strain per square inch, without proper provision being made, will be to 1 ton as $\frac{1}{27143}$ (the allowance given) is to $\frac{1}{100000}$, or equal to a little over $3\frac{1}{2}$ tons per square inch. The author thus points to the fallacy of those engineers who cite cases where bridges have not moved at their abutments for years, through rusting of the bed-plates, overlooking the loads that have been borne. Again, the screwing up of small rods by one man may often double the strain, and exceed the limit of elasticity of the iron. In such cases, destruction is only a question of time. Mr. Smith defined the "limit of elasticity" practically as that point up to which the same strain will not produce an increasing permanent set, however often repeated, and for good iron this limit may be taken at 8 or $8\frac{1}{2}$ tons per square inch. If, on repeated applications of a strain, a bar continues to elongate, the limit is exceeded, and the safety of the structure is only a matter of time; hence the giving way of some railway bridge, though it may have stood a long time, is not an improbable accident.

Some very practical advice is given in apportioning the proper amount of material to meet the strain. One point is, to employ iron chiefly of the economical sections, weights, and lengths obtainable in the iron market. Though generally specified, Staffordshire iron is seldom employed in girders, it being small in size at the prices. Thus, South Staffordshire plates to cost the ordinary prices ought not to be over 4cwt. in weight, 15ft. in length, 4ft. in width, but at an additional cost of £5 per ton the plates may be had up to 20ft. long, and 7cwt. weight. Angles, tees, and other rolled sections can be had in lengths up to 30 to 35ft. without extra cost if they do not weigh more than 4cwt., and the sum of the sides do not exceed 8 or 9in.; larger sections, such as H-iron, will be about 20 per cent. more. Bars without extras must not be more than 6in. wide, though they are rolled to 8 or 9in. at a small extra cost. These market limitations, it is shown, considerably influence designs for ironwork. Thus a girder for a span of 68ft., to carry a load of 12 cwt. per foot-run, requires to be about 5ft. 6in. deep; but as plates cannot be rolled above 4ft. 6in. at a reasonable price, this lesser depth is selected, and other considerations are set aside. For complicated forgings, the best Yorkshire iron, such as Low Moor, Bowling, and Farnley, is recommended; but for ordinary girder work Lancashire, Welsh, and Scotch, and north country manufacturers supply a material of sufficient quality. It is said the Cleveland district is fast becoming the principal iron centre of manufacture. As the plates are sometimes very brittle, extra care should be taken to test the quality of the iron. Ship plates are looked on with suspicion by engineers, as shipbuilders are not very particular as regards quality, and they are the cheapest iron in the market, notwithstanding their size. To guard against bare or thin plates it is best to specify that $\frac{1}{2}$ in. plates shall weigh 20lb. per superficial foot, and other thicknesses in proportion; an allowance of 5 per cent. for iron above $\frac{1}{2}$ in. thick, and $7\frac{1}{2}$ to 10 per cent. for iron below that thickness, is usual; but payment should not be made for any increase in weight above that specified. The author says it is next to useless to specify for certain brands of iron with the object of getting a definite

quality as in ordinary iron, the "best" of one maker being often equal to the "best best" of another; and testing is the only means to resort to. Mr. Smith alluded to the rashness of the so-called "practical man" in these matters, and said that no engineer need hesitate to own that he is unable to determine the quality of iron by its appearance. As to strains, 20 tons per square inch and 6 per cent. elongation with the fibre, for plates; 22 tons per square inch, and 9 per cent. for elongation, for angles and tees; and 24 tons per square inch, and 15 per cent. elongation, for rod iron, are not too high for ordinary iron. The plan of comparing the original and fractured area after testing, specifying that the latter shall be less than the former by a certain percentage—say 10 per cent., specified by some engineers—requires more care than usually bestowed. It is shown that in small sections, as bars $\frac{1}{2}$ in. square, a very slight error of measurement, say of $\frac{1}{100}$ in each dimension, would show a contraction of area of 6 or 14 per cent., instead of 10 per cent., according as the error was deficient or in excess. Another reason for preferring the "elongation" test is that iron plates are not always uniform in quality throughout. Some useful hints on testing were given. Thus, in preparing test samples, all tool marks should be filed out. A nick in the iron causes fracture to take place at that point, and the tensile strength is not obtained fairly. A good rivet should be capable of being bent double whilst cold without signs of fracture, and the heads hammered down to less than $\frac{1}{4}$ in. in thickness without cracking at edge. Lord Ward's and Galloway's rivets stand these tests. A rivet if bent should be fine, fibrous, and silky. Good iron may to some extent be determined by its texture. It should be fine, close-grained, of a silvery-grey colour. Iron of inferior quality has a coarse granular fracture like cast iron. Mr. Smith recommends that tests for tensile strength and toughness should be carried out by independent authorities, such as Mr. Kirkaldy, and not at the contractors' works. Work, too, is done by the "piece," and this is a great evil among contractors, as periodical inspection does little to check scamping. Rivets are sometimes only heated at the point, and consequently they do not fill the holes, though the rivetter can make them tight to all appearance. In structures subject to much vibration these rivets will soon get loose. Contractors can estimate the quality of work that will suffice by the style of the specification and drawings. If these are arbitrary and unreasonable, they are apt to cover contingencies by a percentage on their prices. Specifications should be clear and concise, and explain those things which the drawings cannot fully show. It should not be crammed with dimensions and descriptions which can be shown by the drawings. A clause to the effect that "the work is to be carried out in strict accordance with the drawings Nos. 1 to —" will save time of both engineer and contractor. The drawings should be as complete as it is possible to make them; dotted lines should be largely employed to explain, and cannot confuse if they are put in their proper places; such drawings are for men accustomed to complicated, not pretty, delineations. A working drawing should be so accurate and complete as not to require explanation. The pitch and diameter of rivets should be shown; also their relative position in the structure. In the construction of a bridge it is generally necessary to draw the whole or parts, full size with its required camber. This is done to give the lengths of separate parts, and the relative position of the rivets. These positions are then marked on a template, from which any number of like plates or bars can be made. Great care is necessary to ensure the accuracy of the rivets and holes, and sometimes a template is specified, the studs fixed to which in the position of the rivets are required to enter all the holes at the same time. If the holes are not true, the shearing area of the rivet is reduced. It is desirable in calculating the number of rivets to consider their diameter $\frac{1}{16}$ th less than that shown in the drawings. All rivets should have a good and sufficient head and snap. Mr. Smith warned his hearers against too implicitly believing in the economy of using rolled

sections as beams of great sizes and lengths; and inculcated the maxim that the same amount of material put into one girder will generally do more work than if distributed over two or three—first, because there are certain practical limits to the thickness of webs and position of stiffeners; and, second, because the more numerous the plates in the flanges the nearer the actual weight will approach that required by theory, and the greater the percentage of effective section to gross section. It was remarked that if the stiffeners to a plate girder are splayed out clear of the angle irons, they will cost 50 per cent. less than when made to fit close round, and answer equally well; and it was hinted that stiffeners are best put in at those points where the flanges possess an excess of strength owing to unvarying thickness. Great care is necessary in the joints and position of rivets, and the amateur designer is apt to be led away by the facility of placing them to afford ornament. The author also thinks that punched holes are not so damaging in faced iron as thought by some who specify that rivet-holes are to be drilled; and in simple joints the extra cost of drilling overbalances its advantages. Referring to the "life of ironwork," it was stated that iron embedded in concrete has been found as free from decay as on the day of its manufacture. Provided air is excluded, and at the ordinary temperature, water has no effect on iron. Ironwork should allow of inspection in every part, and modern practice has shown that box girders and cellular flanges are bygone types, to slavishly imitate which implies ignorance of modern girder work.

Referring to paints, the author said the experience of Liverpool foreman painters is decidedly in favour of lead paints, when of good quality and used with good oil without spirits. Iron oxide paints are preferred by some, on the score of cheapness and non-adulteration. Tar paints are well adapted for ironwork which is not seen, such as the floor-plates of bridges, water-pipes, &c., and for sea-work it is better than other paints in not fouling so readily. A good rough paint is made by heating coal tar, mixing it with finely-sifted slaked lime in the proportion of 1lb. of lime to a gallon of tar, adding sufficient naphtha to make it of convenient consistency for laying on. It should be applied while hot, though it should not be so much heated as to lose its essential oils. Sanding paint adds to its durability. The value of a coat of boiled linseed oil applied hot, as a preparation for after coats of paint, is mentioned. The author advises that the blue shales inseparable from the manufacture of the iron should be removed before the oil or after coats are put on. This is better done after the ironwork has been put together in the yard and tested. The author, in conclusion, referred to Professor Barff's recently-discovered method of coating iron with magnetic or black oxide. This he effects by subjecting it to steam at a temperature of $1,200^{\circ}$ Fahr. for six or seven hours. The iron so treated is said to resist a rasp, and bear any amount of exposure without any signs of corrosion. The Professor and Messrs. Penn are said to be making experiments on a large scale, with a view of testing its application to constructive purposes.

In the discussion that followed the reading of Mr. Smith's paper various speakers took part. Mr. Clanchy spoke in favour of pin joints in new countries and remote districts, where the transport of cumbersome machinery was a matter of serious expense. In up-country work skilled rivetters are not to be had. In the San Paulo and Rio de Janeiro Railway pins were much preferred for facility of construction. The general type of the bridges was that known in the United States as the Wynville truss, of trapezoidal form, with compressive members of circular section, and steel fastenings. The time occupied in erecting a 20 metre (65ft.) span bridge, with a gang of fifty men, was generally about six days, and that without the aid of steam or hoisting machinery. Mr. Maginnis thought "piece-work" in rivetted work should be abolished as expensive, and he instanced a case of an iron vessel which was found to be seriously defective after the first coasting voyage; the rivets were badly put in, and their heads not up to the plate.

Mr. Henry Turner contended there was little difference in the quality of rivetting done by piece-work as compared with that done by the day, as in the former the workman cuts out and makes good at his own expense, while in day-work it is done at his master's cost. He believed supervision was the great secret in producing good work, and that the fault in the case of the vessel alluded to by the last speaker was due more to bad design than workmanship. Mr. Alexander Ross spoke in confirmation of the cambering of bridges under a hot sun, and instanced one of the tubular bridges on the Chester and Holyhead Railway, where the rising of the bridge took place while the load increased. Mr. Birch said cross-piled plates did not produce cross tensile strength equal to that in the direction of rolling. Quoting a Cleveland manufacturer, he showed that in rectangular plates of ordinary sizes the strength in the direction of the rolling is to that crossways as 22 to 18. It was best not to specify piling, but only to require the necessary tests. Mr. Graham Smith, replying to the strictures, said the few failures in America are not a ground to condemn the whole system; factors of safety in America were greater rather than less than in England, being 10,000 per inch in tension and 8,000 in compression, and he fully appreciated the value of machine rivetting referred to by Mr. Petherick, and spoke in terms of praise of Tweddell's portable hydraulic rivetter.

STREET PAVEMENTS.*

SINCE the days of MacNeill, Telford, McAdam, Parnell, and others, volumes have been written upon this subject, yet we have in many localities pavements which are a disgrace to a community making any pretensions to scientific knowledge. This results either from a misunderstanding of all the conditions of the problem or an inability to fulfil them. The conditions, it is true, are intricate and variable, depending upon location, grades, nature of merchandise, vehicles, power, sub-soil, finances, &c., but in this monograph we propose to discuss briefly only the requirements of the surface covering, and to determine in the light of a long and varied experience what material will best fulfil all the conditions of a crowded thoroughfare. The requirements of the surface are that it shall be: (1) firm and elastic; (2) noiseless, clean, and dry; (3) smooth, yet rough; (4) permanent, yet easily removable; (5) light, yet heavy; (6) it should be durable, producing a minimum amount of wear and tear; (7) it must also be cheap and readily obtainable, and (8) non-combustible. The impossibility of selecting any one of the available materials, wood, stone, brick, cement, iron, or asphalt, which will fulfil all the above conditions, is apparent. A compromise must therefore be made, and one or more selected which will approximate most nearly to the requirements of the case.

It is interesting to observe the ingenuity displayed by advocates of a particular material in making it conform to every want, and in theory all the above materials have been found to answer equally well; but from a practical, rational, and disinterested point of view it is impossible that such should be the case; e.g.: *Vegetable Substances*, containing within themselves nitrogenous principles, elements of decay and putrefaction, should be rejected from sanitary considerations alone, but in addition to this, their combustibility, softness of fibre, permeability, and cost are serious obstacles, and the experience of numerous trials on both continents, under varied conditions, has proved them failures as to durability. We feel entirely justified, therefore, in omitting this material from the list of available substances until some more efficient means be successfully introduced of preserving the blocks, draining the foundation, and preventing dry rot. Iron has been used in various forms, but, being a manufactured article, it is more expensive than stone or wood, which are natural products. Hexagonal and other forms of blocks, covered with studs, and standing on legs which were driven into the foundation, have been discarded because of

the noise, expense, and insufficient foothold. Whenever tried in the form of blocks, iron has been found very objectionable, and its use is now restricted to tram and railroads.

Bitumen is a natural mineral product, belonging to the class of hydrocarbons, and may be found either solid, as in *asphaltum*, or liquid as in mineral tar. It is used chiefly as a matrix for harder materials. The best asphaltum is imported from Scyssel, in France, and Neufchâtel, Switzerland, but a tolerably good article is also obtained from the island of Trinidad. This substance melts at a comparatively low temperature, and is quite brittle when cold, so that it possesses properties which render it inappropriate for roads when subjected to great ranges of temperature and heavy traffic. When used, however, with sand and cement, it forms an excellent surface, so far as smoothness and durability are concerned.

The wooden pavement on Pennsylvania Avenue, Washington, has recently been replaced by another, part of which is composed of Neufchâtel bituminous limestone, one and three-quarter inches thick, laid on a foundation of eight inches of cement, and the remainder of "Grahamite" (pure asphalt from Ritchie County, Va.), two and a half inches thick on a similar foundation.

Brick, being merely clay indurated by burning, is too brittle for ordinary travel. We find ourselves, therefore, restricted to the use of stone or cement as fulfilling most nearly the requirements of a good road covering.

But *stone* occurs in a variety of forms, as in "cobbles," boulders, "spalls," or blocks, and in sizes which vary as the ratios of their three dimensions. Of the three first-mentioned forms, it is difficult to decide which is most injurious, yet these are the favourites with the community, because of their cheapness (?), and with the contractors because of the proportionately large margin of profit and necessity of frequent repairs. By this general and brief analysis, we are induced to believe that stone of a regular geometrical form is that which is most suitable for the purpose; cement being an artificial monolith, whose dimensions may be extended at pleasure, is included in this class. It is not intended to review in detail the whole question of the adaptability of the various materials to the object in view, as this has already been done in an exhaustive and able report of forty-one pages, made by eight eminent engineers, and published in 1843, but to review and emphasize the conclusions therein deduced. It was recommended to use a pavement of "dressed stone," laid diagonally upon a foundation of concrete, in those squares where the sewers and various supply pipes were completed, and to lay stone tramways on the steep gradients from Front-street down to Delaware Avenue. These are substantially the conclusions we are forced to adopt, even after the lapse of these thirty-four years, yet in all this time they seemed to have gained but little ground.

A tramway in connection with a "Belgian" block system would fulfil all the requirements in the best and most economical manner. Trams, 8 in. deep and 2 ft. wide, if well laid, would oppose the least possible resistance to the wheels of vehicles, and would be noiseless, whilst the blocks between would furnish the desired foothold, and the clicking of the horse's feet give sufficient warning of the approaching vehicle. This arrangement supposes the conditions of the horse and carriage to remain constant, and until lately it has been assumed that these elements of the problem were fixed, but rubber tires have been introduced and give great satisfaction. Still the roughness of the pavement required to furnish the necessary foothold has been found to cut and destroy them so rapidly as to render their general introduction improbable. If now we can substitute for the present shoe a material that will prove as durable and as secure, at the same cost, it will open the way to great reforms in all the elements of locomotion—viz., the pavement, the vehicle, and the power. Such an improvement has indeed been made and tested satisfactorily. It consists of a hollow shoe of the ordinary shape, open at the bottom, and having iron studs projecting vertically downwards through a $\frac{3}{4}$ in. tarred rope, which they hold in place, and

which serves as a packing. The shoe is put on without heating, and held in place by six nails. It has been used until worn down to a knife edge, and its life is quite as long as that of the ordinary iron shoe. The rope is not kicked out by use, but is, in fact, riveted firmer by the pounding down of the studs. The general introduction of such an improvement would undoubtedly lead to the substitution of concrete for the rumbling rubber pavements now in use. The chief objection, lack of sufficient foothold, having been overcome, minor difficulties need have but little weight, as that portion of the surface overlying sewers, &c., might be divided into blocks, which could be readily removed and replaced. The necessity of breaking the surface for pipes could easily be avoided by laying them hereafter under the sidewalks or in rear of the dwellings, in streets of the second class.

There is a street in Philadelphia (a short one, to be sure), upon which there is no railway, and whenever a waggon or cart passes at a trot it shakes all of the buildings, which are said to be substantial. What must be the waste of energy that will set in vibration the houses on both sides of a street whenever a vehicle passes? Yet the injury is not limited to the vehicle, the edifice, nor the road covering, all of which are badly shaken up, but extends in a greater degree to the animal life affected by it: the horse, and the individuals in the house or conveyance. It is a constant strain upon the nervous system of women, invalids, and children, whose sleep is disturbed and restless. The racket is especially noticeable by visitors from rural districts, who are unaccustomed to such a continual jarring. This enormous waste of energy can, and should, be avoided by recourse to proper engineering expedients, and no one will deny that a uniformly smooth, even, and continuous surface, such as that furnished by a good cement pavement, with only joints enough to permit of expansion, would fulfil in the most perfect manner all the requirements for the horse, carriage, passenger, and resident, could be kept perfectly clean, and when once laid, would require the minimum amount of expense for repairs and police.

Before closing, there is another point which is worthy the consideration of the enterprising and progressive citizen, and that is the large amount of space wasted by front steps. In many streets at least half the footwalks are interrupted by such projections, forming useless dead spaces between them, which serve to collect the snows of winter, to be piled up in the street, forming impassable obstructions for a considerable length of time. The steps themselves, exposed as they are, become dangerous from ice, and are not an architectural necessity nor ornament. Every consideration of humanity would suggest their being withdrawn, and, when necessary, occupying the place of the vestibule, leaving an open recess or niche in the place of the outer door. Thus the visitor or resident would be sheltered from sun, wind, rain, or snow, whilst waiting the answer to his summons; the steps would not be dangerous by being coated with sleet; the suggestion of hospitality would be extended by the apparently open door, which effect would be heightened by an outside lamp at night, and the full breadth of the sidewalk left available for a promenade, with rows of trees, if desired. The plan is not a new one, but is in use in many cities of this country and the Continent.

At Derby Borough Police-court, on Saturday, Mr. Henry Sheffield, architect, was fined £3 and costs for assaulting a police constable in the execution of his duty.

In an official report as county surveyor for Cork, Mr. S. A. Kirby, M.A., after reminding the grand jury in quarter sessions of the dangerous state of the timber bridges over the river Bandon, draws attention to the practice which, he states, is becoming every year more common with contractors for county bridges in Ireland, of not applying for a renewal of their contracts—a device which tends to defeat competition.

Monachlogdu parish church, at the base of Treccelly Top, Pembrokeshire, which till recently was so dilapidated that service could not be held between its walls, has just been reopened after partial restoration. Messrs. Waters and Thomas, of Saundersfoot, were the contractors.

* By Prof. LEWIS M. HAUPT, in the *Journal of the Franklin Institute*.

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ILLUSTRATIONS.

HUDDERSFIELD MARKET HALL—"BUILDING NEWS" CLUB DESIGNS FOR A SMALL STABLE—SLOUGH PARISH CHURCH—ST. SAVIOUR'S CHURCH, WALTHAMSTOW—CHILDREN'S HOSPITAL, CARDIFF—TOWER AND SPIRE FOR EAST TEIGNMOUTH CHURCH.	
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OUR LITHOGRAPHIC ILLUSTRATIONS.

HUDDERSFIELD MARKET HALL—FIRST PREMIATED DESIGN.

THE design illustrated herewith to-day is by Mr. Charles Fowler, of London, and was selected for the first premium by Mr. Street, who was called in by the Market Committee to advise as to the respective merits of the designs submitted in the recent competition for a new Market Hall at Huddersfield. There were 32 sets, comprising 272 separate drawings; the instructions required that each design should be illustrated by at least two exterior and one interior perspective. The site of the proposed building is a parallelogram, 270ft. by 101ft., bounded by streets on all sides; and it was provided by the instructions that the principal entrances should be at the ends. The side streets are narrow, so the elevations were to be kept of moderate height. There is a difference of level of about 7ft. between the highest and lowest point of the site, so that the keynote of the design was the question of the level of the Market Hall; steps, however objectionable, were unavoidable. The instructions provided that the shops along the sides should, as far as possible, be entered from the streets. The street on the lower side is level throughout, and a height of 10ft. for the shops there fixed the level of the Market Hall, so that a row of shops above should be entered direct from the hall—a gallery being considered objectionable by the author. The street on the upper side is from 3ft. to 7ft. higher; here, therefore, only one row of shops is placed—as shown in the view. In the centre of each of the long sides of the hall there is an entrance for goods, which would be unloaded from the carts direct into the hall, avoiding the difficulty of the steps. At the same points there are minor entrances for passengers. By this arrangement of the floor levels the basement, extending under the whole of the hall, would be entered on a level from the lower street. At each end of the hall there is a block of buildings—the upper stories being arranged for offices, with shops below. Owing to the great difference of level at the end, shown in the view, there is a mezzanine over the shops in the lower level. The recessed terraces were arranged to avoid the unsightliness of stepping up the shops to follow the level of the ground. This also afforded the opportunity of a more effective arrangement of the elevation. The amount of the outlay being very limited, the character of the elevation was necessarily simple. The instructions provided that the design was to include a tower, which, however, might not be carried out. This circumstance suggested the form of the tower adopted in this design, which could more easily be omitted without seriously affecting the design than if carried up from the ground and the top cut off. We are informed that the committee are not satisfied with the result of the competition,

and do not intend to carry out any of the designs; but they very properly acted on Mr. Street's advice by awarding the premium according to his report.

TOWER AND SPIRE—EAST TEIGNMOUTH CHURCH.

THE drawing reproduced among our illustrations to-day is from the only exhibit this year at the Royal Academy, by the late Fred. C. Deshon, whose death we have only so recently recorded.* Three years since Mr. Deshon exhibited on the same walls an interior and exterior view of his designs for East Teignmouth Church, which is dedicated to St. Michael. These drawings illustrated a simple but clever and boldly-treated double-aisled church, with nave 80ft. long and 28ft. wide, having a chancel 33ft. long and 18ft. wide. The passage ways crossed in the centre bay of the nave arcade, and a south porch in a similarly central position was provided, of a characteristic design, in timber. An unusually conspicuous bell turret was shown at the west gable, having a projecting gallery of wood covered with a pent roof, and supported on massive stone corbels. This gallery was approached by a stepped coping to the west gable on the south side, though no means of reaching these steps, excepting from an ordinary ladder, was shown. This curious feature was, however, subsequently set on one side in favour of a western tower and spire. Mr. Deshon prepared two designs for this—that which we illustrate is, we believe, the one selected, the other being perhaps more singular than its author would have cared to acknowledge as his own if executed. The published design, however, is no doubt one of the best, at any rate, shown on the Royal Academy walls this year, and as it is the last of the author's designs which probably we shall ever illustrate, it is certainly the best. The chancel of the church has been already built, and the works will proceed as funds permit. The church is taking the place of an unsightly and inconvenient building erected as a church in 1823. Accommodation is provided for 645 persons, and the estimated cost, exclusive of tower, was £5,600.

CHILDREN'S HOSPITAL, CARDIFF.

ANOTHER Royal Academy drawing, which we reproduce to-day, is that by Mr. J. D. Sedding, for a new sick children's hospital at Cardiff, of which we also give a copy of the ground plan. The materials are red brick with stone very sparingly used; the domes and gables are enriched with carved brickwork, and a striking design in rather Queen Anne style is obtained, though the drawing hardly does it simple justice.

SLOUGH PARISH CHURCH.

OUR view, which we publish to-day, of the new Parish Church at Slough, now building, shows the Memorial Steeple which is proposed in memory of the two Herschels, who were natives of Slough. The present church was built in the Norman style, modified to suit stock brickwork, some forty years since. Mr. J. O. Scott says:—"It has nothing to recommend it outside, and everything to censure it within. Whether it is a building which could enlist the sympathies of the Anti-Restoration Society or not it is impossible to say; but it is certainly historical, as marking one of the dearest periods of Church life in England." It is gradually to be replaced by a new building. Transepts and a spacious chancel, with organ-chamber and vestries, are now being added, and it is hoped that before long it may be possible to rebuild the nave. That portion of the church which is illustrated herewith from the architect's Royal Academy drawing (this year) will probably be undertaken last. The church, when completed, will consist of nave, about 105ft. long and 25ft. wide, having aisles on either side, 14ft. wide, and an arcade of four arches, exclusive of those which connect the transepts, which are about 27ft. deep, with the nave. The choir has an aisle on both sides, the organ-chamber being to the north, and the vestries to the south of these. The sacristy extends eastward some 20ft., making the chancel in total length nearly

40ft., its width being 22ft. The transepts both have an entrance porch in their west sides; that to the south transept being shown in our view. A south porch is as usual provided; while an entrance is effected to the north through the tower. The font is placed immediately under the west window. The east ends of the nave aisles are divided from the transepts by an interesting and rather unusual arrangement, which may be described as a short arcade, in each case of two arches. The pulpit is placed on the south respond of the chancel arch. The portion of the church now in progress will cost between £7,000 and £8,000. Mr. Lassidge, of Uxbridge, is the contractor, and Mr. Webster is the clerk of the works. The materials are red brick of two qualities, with an admixture of stone and flint. Mr. John Oldrid Scott, of Spring-gardens, is the architect.

ST. SAVIOUR'S CHURCH, WALTHAMSTOW.

WE publish an interior view from the architect's drawing, now at the Royal Academy, of the church of St. Saviour's, recently erected at Walthamstow, from designs by Mr. Francis T. Dollman, architect, of the Adelphi.

"BUILDING NEWS" DESIGNING CLUB—TWO-STALL STABLE DESIGNS.

TO-DAY we publish the four designs which we have selected as being first in merit from those sent in for a small two-stall stable with loose-box and hayloft over. Each design possesses commendable points, though neither is to be accounted a model, and we refer our readers to our remarks when we made the selection, page 20, BUILDING NEWS, July 6th. "B." in a circle we place first, "Another for Hector," second, "B.N.," third, and "Sperabo," fourth.

CAMBRIDGE-GATE, REGENT'S PARK.

A TERRACE of houses now occupies the site of the old Colosseum in the Regent's Park; decaying picturesque architecture has given place to substantial mansions worthy of the beautiful site, erected in no niggard spirit by Mr. Stanley G. Bird, from the skilful designs of Messrs. Archer and Green. The houses are set back from the main road, and fronted by an ornamental enclosure or garden. There are two entrances to the terrace, and at either two pedestals of stone, and upon each have recently been set up groups of figures which are worthy of more than a passing glance. Each group consists of three female figures, triangular on the plan, if it may be so termed, and placed back to back, forming a support for the lamps to be hereafter fixed. The groups are each 6ft. in height, in one block of terra-cotta, the largest, it is stated, which has yet been executed. The colour is a rich buff, and the groups, with their respective attributes, represent the four seasons of the year.

As works of art of a very high order, these figures are remarkable, and their presence denotes a liberality not often met with in a speculative undertaking. The arrangement of the figures gives a variety of profile as pleasing as it is novel, and the voluptuousness of the modelling and the graceful ease of the pose leave little to wish for. There is life in the winning pleasantness of each fair feature; there is movement in the attractiveness of each lithe limb; and there is just enough, and not too much, mechanical finish in the whole. They are masterly sketches, exhibiting all the power which only real aptitude and genius can strike off and leave without that laboured expenditure of time characteristic of the mediocrity of most of our modern sculpture. The author of these fine productions is a Frenchman, M. Kremer, of No. 3, Augustus-square, Regent's Park, an artist already known to many of our eminent architects, and his work has been exceedingly well carried out at the Lightmoor Terra-cotta Works of the Coalbrook-dale Ironworks Company, Shropshire.

WILLIAM WOODWARD.

MESSRS. S. Taylor and Co., zinc and galvanised ironworkers, of Snow-hill, Birmingham, have recently erected new and extensive premises at 145, 146, and 147, Lionel-street, where all communications should in future be addressed.

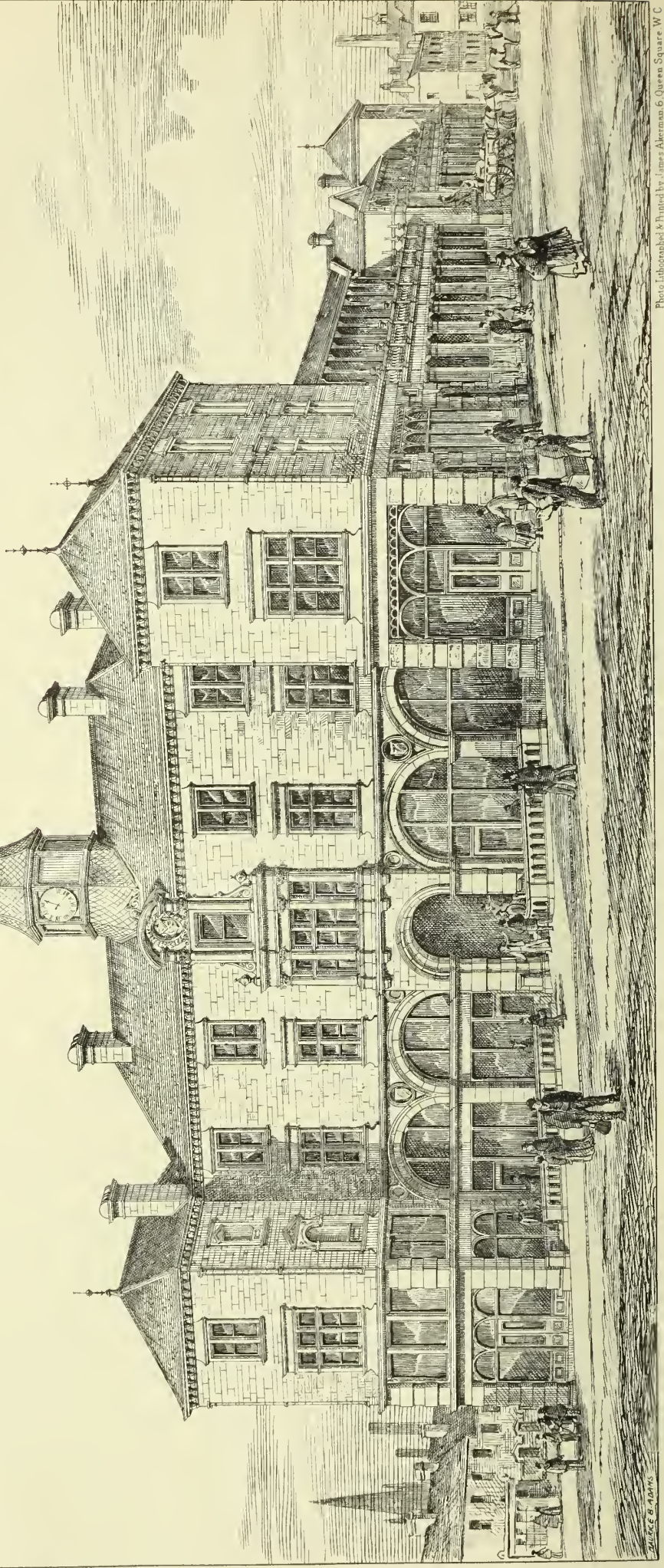
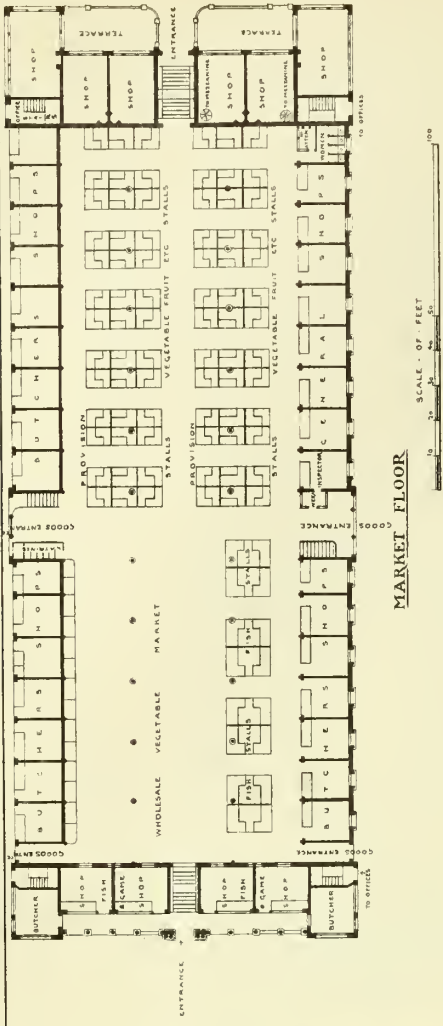
* See BUILDING NEWS, June 8th and 15th, 1877.

THE BUILDING BEGINS, JULY 27, 1877.

HUDDERSFIELD · MARKET · HALL ·

FIRST · PREMIAED · DESIGN ·

CHARLES · FOWLER ·
ARCHITECT



SHUTE & ADAMS

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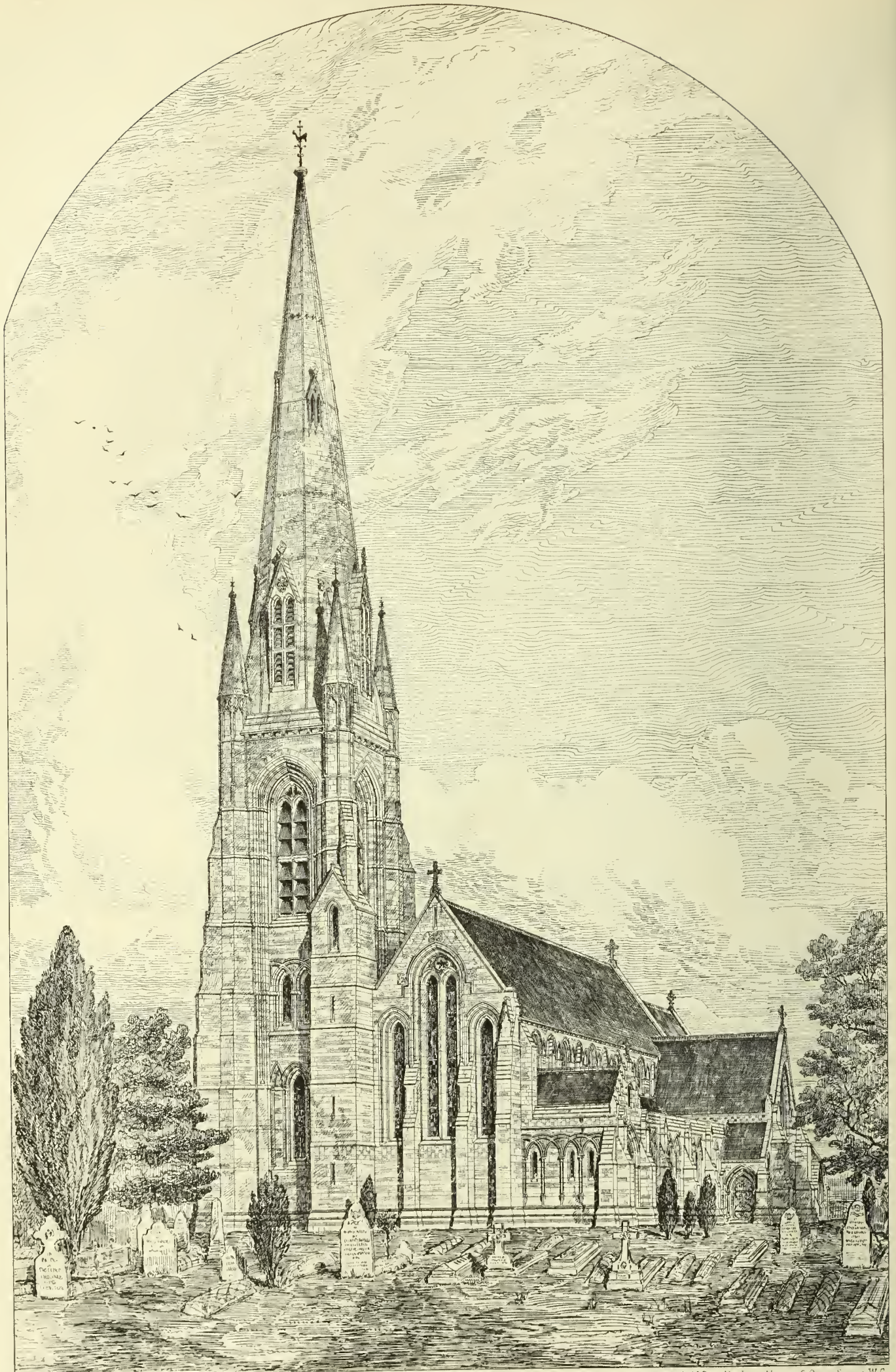
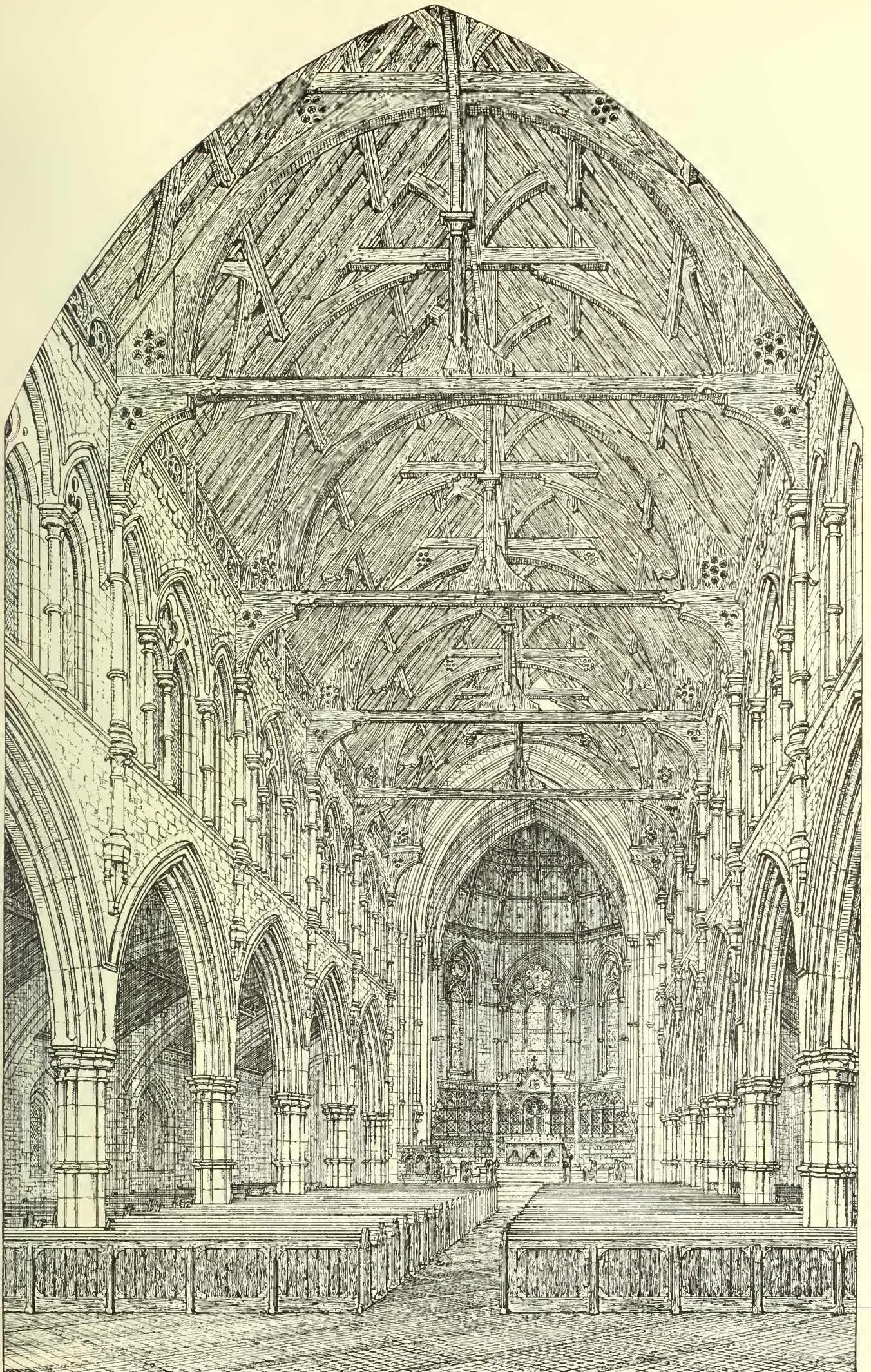


Photo Lithographed & Printed by James Abernethy, 6, Queen Square, W.C.

SLOUGH PARISH CHURCH. VIEW SHOWING MEMORIAL STEEPLE.

J. O. SCOTT, ARCHITECT.

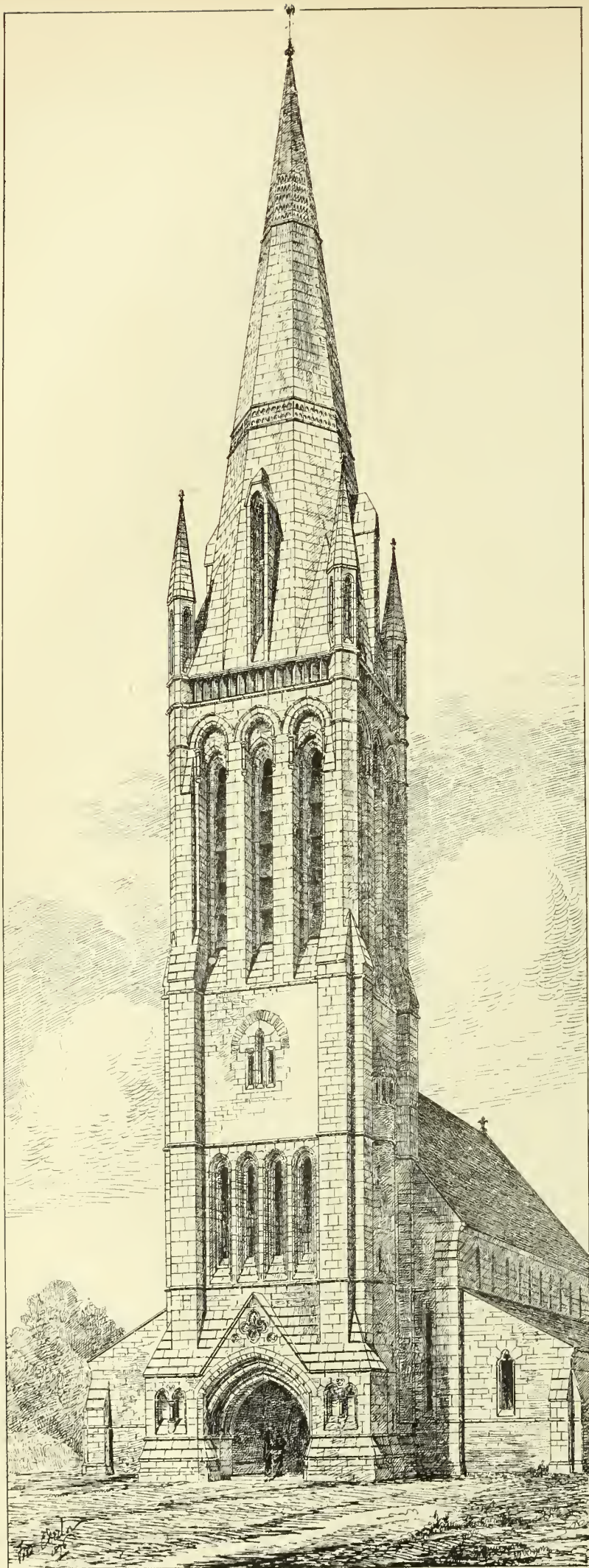


Francis T. Dollman, Archt.

Photo. Lithographed & Printed by James Alcock, 6, Queen Square, W.C.

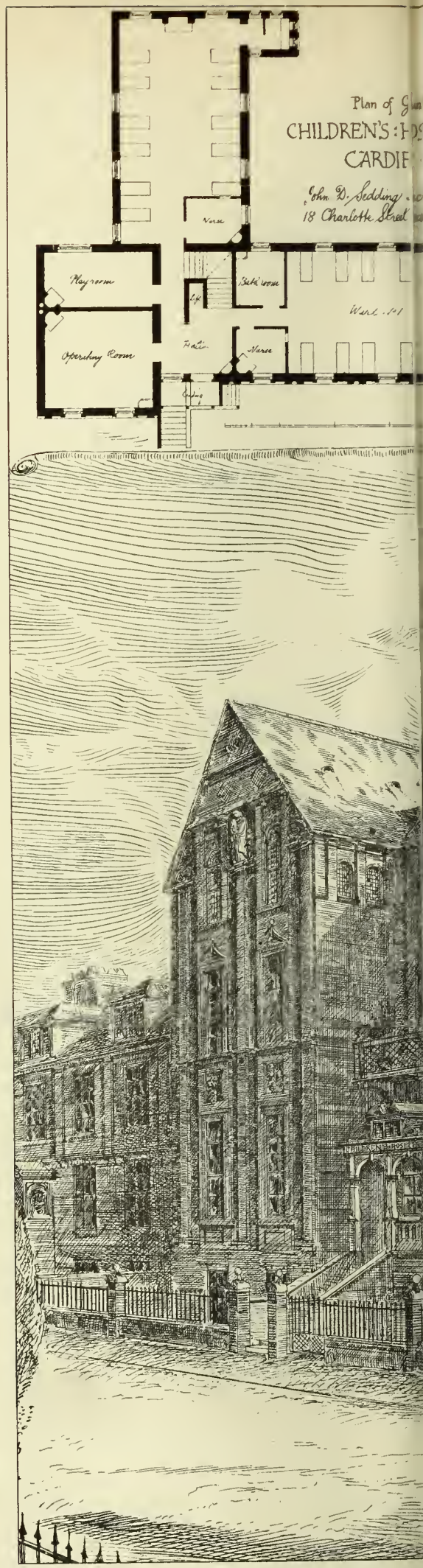
INTERIOR OF ST. SAVIOUR'S CHURCH, WALTHAMSTOW.

LOOKING EAST.



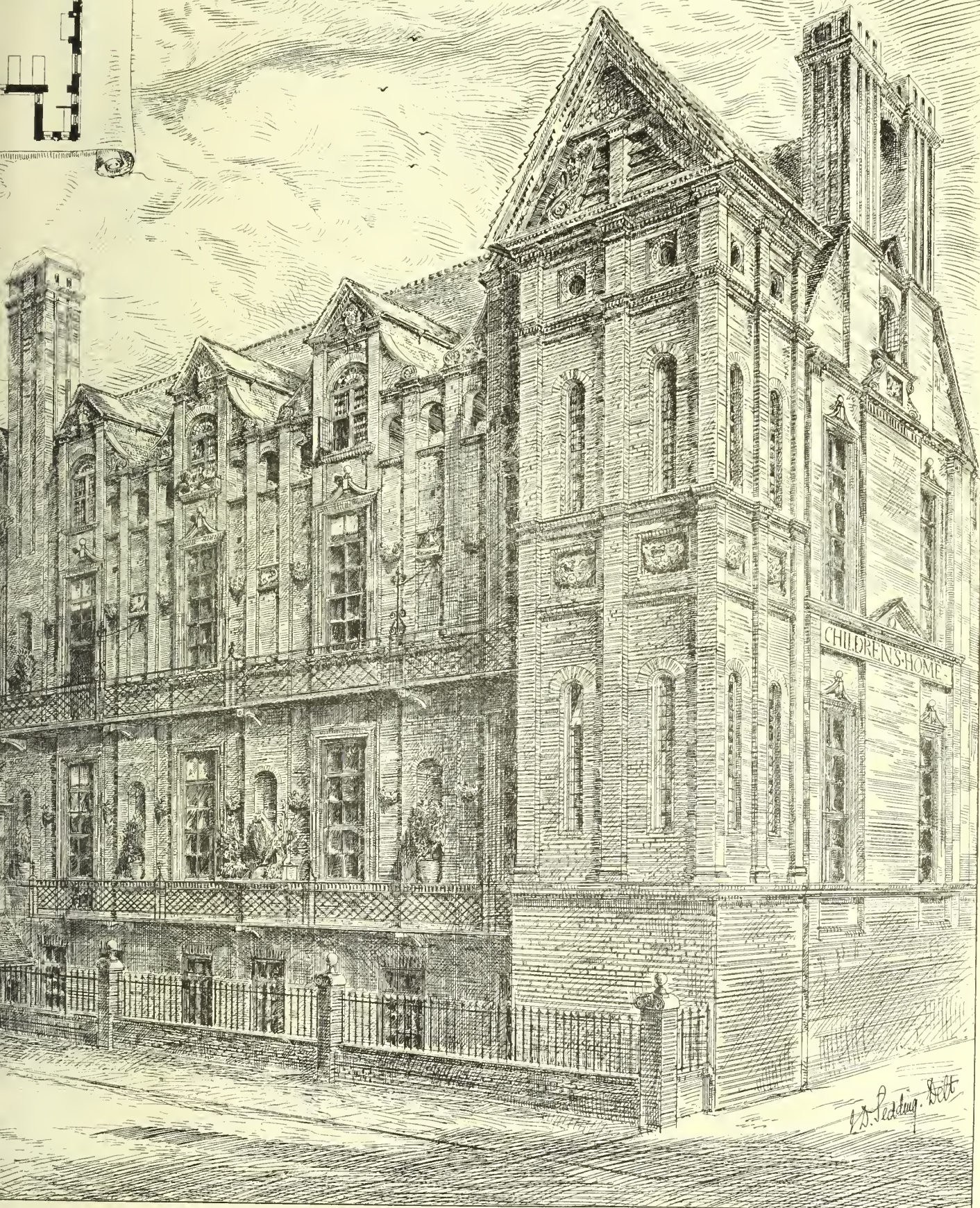
TOWER & SPIRE FOR EAST TEIGNMOUTH CHURCH.

THE LATE F. C. DESHON, ARCHT.



for
HOSPITAL at

by London



W. Sedding del.

THE
NEW
AMERICAN
LIBRARY

THE LATE DR. JOHN STUART.

THE well-known Scottish archaeologist, Dr. John Stuart, died at Ambleside on the evening of Thursday week. He was born at Forgue, in Aberdeenshire, in 1813, and was educated, and for many years practised, as an advocate, ultimately being appointed Principal Keeper of the Register of Deeds at Edinburgh. In 1839, Dr. Stuart, acting in concert with Mr. Joseph Robertson, long superintendent of searches in the literary and antiquarian department of the Register House, set on foot the "Spalding Club," having for its object the collection and printing of ancient historical manuscripts connected with the northern counties of Scotland. Of this society he acted as secretary down to the close of its operations in 1870; while of the thirty-eight volumes which it from time to time gave to the world, no less than fourteen were produced under his editorship. Prominent among these contributions to archaeology were the two folios on the "Sculptured Stones of Scotland," published in 1856 and 1867, through which, perhaps, Dr. Stuart's name has become more widely known than by any other of his numerous publications. While many of his papers bespoke the special bent of his mind towards what may be called documentary archaeology—a bent which led him to seek holiday relaxation in rummaging through the charter chests of old country houses—he from time to time dealt with more popular branches of the subject, such as early monuments and lake dwellings. The latter department of inquiry may be said to have been bequeathed to him by his friend, Mr. Joseph Robertson, who was, perhaps, the first to investigate Scotch crannogs, and who, at the time of his death, had a paper on the subject in preparation for the press. Taking up the incomplete work with characteristic industry, Dr. Stuart produced for the "Society's Transactions" what is regarded as the most complete résumé of the subject anywhere to be met with.

His researches among old family records led him to make one notable discovery. This was the original dispensation for the marriage of Bothwell with Lady Jane Gordon, which was discovered among the records of Dunrobin Castle. The paper, which was believed to have mysteriously disappeared at the time, had been the subject of much speculation; and its recovery had an important bearing on the legality of Bothwell's subsequent marriage with Queen Mary, and it afforded Dr. Stuart the opportunity of discussing, as he did in the volume entitled "A Lost Chapter in the History of Mary Queen of Scots," the law and practice of Scotland relative to marriage dispensations in Roman Catholic times.

In 1866, the degree of LL.D. was conferred on Dr. Stuart by the University of Aberdeen. By the Archaeological Institute of Great Britain and Ireland he was elected an hon. member; and a similar compliment was paid by the Society of Antiquaries of Zurich, and the *Assemblea di Storia Patria* in Palermo.

CONCRETE, AND ITS USE IN BUILDING.*

MR. THOMAS POTTER, one of the joint authors of the "Design for a Concrete Villa," to which we awarded the first prize in one of our competitions, and which was illustrated in the *BUILDING NEWS* of March 17, 1876, has published an exceedingly useful handbook on the use of a material which, as our readers know, we have always predicted would come more largely into use year by year. Mr. Potter is himself the inventor of an apparatus for building in concrete, which is manufactured by Messrs. F. W. Reynolds and Co., but it is only fair to say that few people would guess this from a perusal of his book, so fairly has he dealt with other appliances and means of building. The illustration of Messrs. Potter and Mallinson's premiated design is reproduced as a frontispiece to the work, and will be found a safe and suggestive model—with one or two slight drawbacks connected with the plan which we pointed out at the time of its publication—by any one desirous of using concrete.

In his introduction the author traces the history, and points out the advantage, of

concrete building, and then, in the first chapter, proceeds to review the different systems of construction which have at various times been duly described and commented on in this journal. He then goes on to treat on the method of preparing the materials, and gives some valuable information respecting the natures and capabilities of the different matrices. The more purely original part of the book, and that which is due to Mr. Potter's own experience, will be found in the last seven chapters, wherein he deals with the alleged disadvantage attending the use of concrete, its cost, its external treatment, and the importance of proper specifications for buildings in which it is to be used. These three points are, after all, those on which its more thorough recognition to a great extent depends. There is no doubt that the public were to some extent led astray on the first by enthusiastic patentees, and Mr. Potter frankly admits that this question is such a conditional one that no definite comparison with other materials can be made. The second has always been the stumbling block in the way of architects. The difficulty of using anything but flat surface ornament has prejudiced many against concrete who would otherwise have gladly used it. In the design which is reproduced from our pages, a method was shown of using timber veneers which gives the appearance of a half-timbered building without losing the advantage of a concrete monolithic wall. It is true a very conscientious architect might object to this as a sham, though, as Mr. Potter points out, it need not be such, and certainly is not so flagrant an attempt to deceive as the use of Baltic fir timbers, painted and grained to imitate oak, which is common in half-timber buildings. We agree, however, with the author that the method of externally finishing concrete buildings is still in arrear of the success attained in dealing with it structurally, and that improvements are still open to discoverers. On the last point mentioned above, Mr. Potter is precise and to the point, and this single chapter to any one about to build is worth several times the price of the whole book, which, taken altogether, is the best general treatise on its subject we have yet met with.

KENSINGTON VESTRY HALL COMPETITION.

AT last the award of the Vestry of St. Mary Abbots, Kensington, has been arrived at in the competition of designs for their new Vestry Hall, which is to be built in High-street, on a plot of land adjoining the existing building now used for vestry purposes. At a meeting of the vestry, held on Wednesday evening last, the following designs were selected in accordance with the recommendations of the committee elected to report on the subject:—1. "Experientia," Robert Walker, F.R.I.B.A., of 10A, Kings Arm's-yard, Moorgate-street, London, E.C.; 2. "Expert," John J. Thomson and Frederick Davis, architects, Charing-cross; 3. "Experience," E. C. Robins, F.R.I.B.A., Adelphi, an extra premium of £31 10s. being awarded to the design bearing the motto "Cavendo Tutus," by Mr. Fredk. Mew, of Doughty-street, W.C. Considerable doubt, however, seems to exist in the minds of the vestry as to whether it is possible to carry out either of the designs which they have selected for the stipulated sum of £18,000 named in the particulars issued to architects, so that it has been determined to call upon the authors of the chosen designs to show clearly that the building can be erected in accordance with their respective designs within a reasonable limit of the amount named. This much for the award of the vestry; we now turn to the report of the professional referee, Mr. John Whichcord, F.S.A., who was engaged to assist the committee and furnish a detailed report on some sixteen or seventeen designs already selected by the committee from the whole series of designs. Although we have not as yet been favoured with a copy of Mr. Whichcord's report, we have seen it (a copy is on view at the present Vestry Hall), and, as may be supposed, it is a very carefully-detailed statement characteristic of its author, who, at the outset,

boldly states that however much the merits of architectural effect and artistic treatment may demand consideration, he has been obliged, both by the value of the site and the conditions of competition, to consider plan as of exceptional importance, and the following are the designs which, with all things considered, he recommends for selection. We add the authors' names, in all cases where they are given, from our own knowledge:—"Cavendo Tutus," 1, estimated cost, £19,040, Richard Mew; "Old Kensington," 2, estimated cost, £17,900,* John O. Scott; "Kensington," 3, estimated cost, £19,900, John J. Stevenson; "Experience," 4, estimated cost, £20,800, E. C. Robins; "Serius," 5; "Spero," 6; "Nos" in triangle, 7; "Expert," 8—John J. Thompson, F. Davis. It will thus be seen that in every instance the referee's recommendation has been set on one side, while for the first premium a design entirely outside of his list has been chosen, the second premium being awarded to the design placed last by Mr. Whichcord. It is also to be noted that the design "Alpha," 37, which was more than once reported as being the selected design, is not accounted in either list, although named in the series first selected by the committee for award by the referee, who reports this design to be chiefly faulty with regard to its want of consideration for ancient lights—a point of the utmost import in determining an award in the present instance. Indeed, a model had to be made at last, showing the several and varied claims in this respect. We are not certain whether Mr. Whichcord's report will be published or not.

CHINESE SUSPENSION BRIDGES.

THE most remarkable evidence of the mechanical science and skill of the Chinese is to be found in their suspended bridges, the invention of which is assigned to the Han dynasty, which flourished 1,600 years ago. According to the concurrent testimony of all their historical and geographical writers, Shang-leang, the commander-in-chief of the army under Kaou-tsoo, the first of the Hans, according to Thornton's "History of China," undertook and completed the formation of roads through the mountainous province of Shen-se, to the west of the capital. Hitherto its lofty hills and deep valleys had rendered communication difficult and circuitous. With a body of 100,000 labourers he cut passages over the mountains, throwing the removed soil into the valleys, and where this was not sufficient to raise the road to the required height, he constructed bridges, which rested on pillars or abutments. In other places he conceived and accomplished the daring project of suspending a bridge from one mountain to another across a deep chasm. These bridges, which are called by the Chinese writers, very appropriately, "flying bridges," and represented to be numerous at the present day, are sometimes so high that they cannot be traversed without alarm. One still existing in Shen-se stretches 400ft. from mountain to mountain, over a chasm of 500ft. Most of these flying bridges are so wide that four horsemen can ride on them abreast, and balustrades are placed on each side to protect travellers. It is by no means improbable (as M. Pauthier suggests), that as the missionaries in China made known the fact, more than a century and a half ago, that the Chinese had suspension bridges, and that many of them were of iron, the hint may have been taken from thence for similar constructions by European engineers.

THE METROPOLITAN STREETS IMPROVEMENT BILL.

IN a letter to the *Times*, Mr. Samuel Webb exposes an ingenious attempt on the part of the Marquis of Salisbury to increase the value of his own property at the expense of the public. The Marquis has prevailed on a committee of the House of Lords to insert a clause in the Metropolitan Streets Improvement Bill which has made it necessary for the Metropolitan Board of Works, in the interest

* Concrete; Its Use in Building and the Construction of Concrete Walls, Floors, &c. By THOMAS POTTER. London: E. and F. N. Spon.

* This is the only design submitted at an estimated cost under the stipulated sum—£18,000.

of the public, to abandon the new street from Tottenham-court-road to Charing-cross—a street properly described in the report as one of the most important proposed in the bill. The effect of the clause is stated to be that, after the Board of Works has bought up all the leasehold and trade interests on the marquis's freehold property, through which the street runs, he is to sell to the Board the strip of freehold required for the street, and not the freehold of the entire portions of land acquired by the board. The result will be that the marquis, having obtained an outside price, plus 10 per cent., for his land, will retain in his own hands all the frontages, subject to the Board's interest in the leases, which on the marquis's estate have generally but short terms to run. The houses having been destroyed, the Board will, nevertheless, continue liable for the rents, and must either pay those rents out of the rates or sell the leasehold interest to the marquis at practically his own price. In case the first burden is thrown on the ratepayers the street will be unbuilt on, and an eyesore to the metropolis until the leases expire. In ordinary circumstances the frontages are let or sold by the Board, and so recoup part of the cost of the street. The scheme is ingenious, but it is an attempt to burden the ratepayers which the Metropolitan Board of Works has very properly resisted before the Lords, and has more properly, in the interest of the public, determined not to accept. The marquis by his conduct is obstructing a great public improvement, reported on as necessary by a Parliamentary committee many years ago.

BUILDERS' BENEVOLENT INSTITUTION.

THE thirtieth annual general meeting of this institution was held yesterday (Thursday) at Willis's Rooms, St. James's, the Treasurer (Mr. George Plucknett, of the firm of Cubitt and Co.) in the chair. The annual report congratulated the subscribers and donors upon the satisfactory position of the institution. Through the energetic appeal made by the President (Mr. Charles B. Waller), on the occasion of the annual dinner in November last, the donations then obtained were very liberal, and, as the Court of Chancery had sanctioned the transfer of the "Building Fund" to the "General Relief Fund," the amount now invested in the Three per Cent. Consols was £20,292 13s. 7d. Such being the case, the committee felt they could safely recommend that all future donations should be expended instead of being funded, and that the amount of the pensions should be increased. As to legacies, it was proposed to fund them as heretofore. The report also recommended that the widow of a pensioner should receive a woman's pension on the death of her husband, in lieu of, as at present, receiving the half pension until elected a full pensioner upon the funds of the charity. These alterations will be very advantageous to the recipients, and it is hoped that the donors and subscribers will do their utmost to enable the committee to carry them out. The committee report with much satisfaction that Mrs. Lerner (lately a pensioner) has been enabled, from altered circumstances, to withdraw from receiving her pension, and that she has, with feelings of gratitude, presented the institution with a donation of five guineas. Five pensioners were elected during the past year, and six have died. The thanks of the committee are due to the secretary, Mr. F. W. Keeble, for the ball, and for the interest he took in making it a success by which the sum of £54 3s. was realised. The annual dinner will take place on Nov. 8. The report having been unanimously adopted, the meeting sanctioned, *nem. con.*, the alteration and revision of the rules of the institution. By Rule 1, as amended, the men's pensions are increased from £24 to £30 per annum, and the women's pensions from £20 to £24. Votes of thanks to the patrons, vice-presidents, committee, trustees, treasurer, and auditors, and to the president for the past year, were duly accorded, and the officers and committee for the ensuing year were elected. On the motion of the chairman, Mr. William Higgs was unanimously elected president of the Institution for the ensuing year.

ARCHITECTURAL SCIENCE CLASS.

ELEMENTARY REPLIES.

QUESTION 55.—*Describe different materials used by painter. Describe ingredients of colour.*—The materials used by painters are paints, oils, driers, stains, varnishes, &c. Colours or paints may be divided into five classes, according to their principal ingredients. Lead paints, most commonly used, have white lead or carbonate of lead as a basis. This material is ground up in oil in a stiff paste. Linseed oil, with litharge or other driers, and sometimes turpentine, are added to it to form the paint ready for use. The required tint is obtained by adding to this the proper colouring pigment. The exact proportions of ingredients is regulated by the nature of the work, climate, &c. Red lead enters into the composition of the priming coat because it is a good "drier," and sets "hard." Linseed oil is used as a medium for applying the paint; it fills up the wood pores, and acts as a preservative. Turpentine makes the paint easier to work, and more liquid, but it plays no part in the preservation of the wood, as the greater part evaporates. Driers are mediums to cause the contained oil to dry and set quickly. Various materials are used, as litharge, sugar of lead, &c. Zinc paints have zinc oxide as a basis. Silicate paints are manufactured from almost pure silica, which is not acted upon by any metal or acid—in fact, is almost indestructible. This kind possesses the advantages of great durability, has no galvanic action when applied to iron, as in the case of lead paint, and does not tarnish by the action of gases. Colours are made same as the lead paints, and are mixed in the same way. Oxide of iron paint acts as a good preservative for ironwork. Bituminous paints are used for a similar purpose, and for rough carpentry. Stains are mixtures used to darken wood to the colour of the imitated wood. Varnishes are of various kinds—copal, &c.—and are used to preserve the paint, and give a gloss to the finishing coat.—T. N.

QUESTION 56.—*Describe the process of common painting wood and ironwork.*—Woodwork is prepared for painting by brushing over all resinous knots with a thin coating of knotting (a compound of shellac dissolved in naphtha) or gold size, to confine the resin, and prevent it running under the paint. The priming is then laid on, any plain colour well worked into the pores of the wood, with and across the grain; when this is dry, the stopping is done. All nail and brad-holes, &c., must be well filled up with putty, and lightly rubbed off with glass-paper. The second and following coats are applied with more care, brushed with the grain, and the work covered equally everywhere, showing no tool-marks or running edges. If the last coat is to be light, the second and third should be similar in colour, and if it is to be finished dark, dark colour must be used for the previous coat. Ironwork should be cleaned free of all rust, oil, or grease before painting. A good first coat is colour made up with red lead; the other coats may be similar to that used for wood. Iron being almost non-absorbent, three coats are sufficient for new work, unless in very exposed situations, and for the same reason, care must be taken, especially in ornamental work, not to fill up the fine lines of leafwork, &c., by using too much paint, as the character of the work would thereby be injured. It is not so much a thick coat as a thorough one that is the best protection.—AUBERY.

QUESTION 57.—*In colouring walls what precautions should be used?*—The walls should be thoroughly dry. In colouring walls the coats should be carefully laid on and smoothly, each coat being rubbed slightly with sand-paper before applying the next. The "flattening" or finishing coat should be made a few shades lighter than the pattern, as it darkens in drying. Japanner's gold size, if used, should be applied quickly, as the turps evaporates quickly, leaving an indelible glossy surface. A certain time should be allowed between the coats, the drying of the same depending upon the quantity of driers used, the weather, and temperature of the apartment. To expedite the work, new walls are generally "distempered" when not dry enough to receive the permanent decorations. Distempering is a kind of painting with colour prepared with size or some other glutinous substance. In distempering, the walls must be dry and free from damp; if not, at the completion will be shown all the defects. Two or three coats should be applied, in order to obtain an even colour.—A. L. B.

ADVANCED REPLIES.

QUESTION 55.—*Explain the theory of colouring.*—The accepted theory is that there are certain colours that cannot be produced by any combination of other colours. They are termed primaries, because all other colours can be obtained by mixing them in certain proportions. The primary colours are red, blue, and yellow. Some authorities substitute green for yellow. Secondary colours are derived from mixtures of the primary colours in pairs—as violet from red and blue, orange from red and yellow, and green from yellow and blue. Tertiary colours are produced from secondaries—as citrine from orange and green, &c. White and black are usually considered neutrals. To secure "harmony of colours" they must be equalised to the varying proportions shown in the solar spectrum—the three primaries being used either in their purity or com-

pounded. The eye being constructed to see white light, when looking on a coloured surface, it is best pleased by a contrast. Contrasting colours to harmonise should be mutual complementaries of each other—making up the full complement of colours contained in the solar rays. The complement of any primary—say, red—will be the secondary compounded from the other two primaries—as green from blue and yellow—red will thus harmonise with green, blue with orange, and yellow with violet. The best proportion for mixing primaries, so as to harmonise, is: red, 5; blue, 8; and yellow, 3. The latter is the most vivid, and should obtain a prominent position. Blue is least vivid and retiring, and should be kept in the background—red to be used as an intermediate colour.—S. M. E.

QUESTION 56.—*Describe the proper mode of painting wall surfaces.*—To paint wall surfaces properly often five coats are necessary; but if the plaster be not very absorbent four will be sufficient. If the work is required without gloss the last coat is mixed with turpentine only, which is called flattening; if the work be not flatted the finishing coat is two of turpentine to one of oil. For the priming coat boiled oil should be used, then the three coats of white lead and oil, or more if required; generally the first coats should be some shades darker than the finishing coat. The proper drier to be used for walls is sugar of lead, and in painting wall surfaces great care should be used in selecting the very best quality of oils and white lead—the older the oil the better.—ATTNEAVE.

QUESTION 57.—*What is the best paint for ironwork?*—The best paint for ironwork is either the oxide of iron paint, known as the Torbay paint, or the silicate oxide paint, both consisting of oxide of iron and silicious matter, to which any colour may be added and applied in the usual way. They can be applied even after the surface has commenced to rust, as from their nature they amalgamate freely with the rust, forming an impervious coating adhering well to the surface, and yet sufficiently elastic to prevent cracking when the iron expands or contracts under variations of temperature. Bituminous or tar mixtures, thinned with linseed oil, are well adapted for ironwork, especially when they can be applied hot, or to the heated surface of the metal, so as to insure a firm adhesion by entering the pores. A mixture of silicate oxide with tar also forms a good durable coating on iron. When ironwork is to be painted with ordinary lead paint red lead should be used. The adhesion of such a coating on ironwork can seldom be depended on in consequence of the non-porous surface. This is further prevented by the galvanic action that sets in between the iron and lead. Galvanising, or coating the surface with a preparation of zinc, is also frequently resorted to as a preservative. With all such coatings the surface must be perfectly clean and free from rust. It is advisable, so as to prevent rusting, that all ironwork should be coated with some preservative soon after it leaves the mould, forge, or mill.—S. M. E.

CHIPS.

A new drill-hall has been erected at Gateshead for the Volunteer Engineers. Messrs. T. and R. Lamb, of Gateshead, were the contractors.

A family mansoleum has been erected in the grounds of Manston House, near Wimborne. The architect is Mr. Soppitt, of Shaftesbury, and Mr. Lionel Parsons, of Stalbridge, the builder. In general design the building is described as "eclectic, being a free rendering of the Doric style, with an infusion of Byzantine feeling." The construction is massive, the solid walls of the vault below being 3ft., and those of the superstructure 2ft. thick, composed, as are also the ceiling and floor of the vault and the principal dome, of cement concrete.

The foundation stone of a new Conservative Club-house was laid at Tranmere on Saturday. The building will be of brick, with Stourton stone dressings. Messrs. Hoult and Wise, of Liverpool, are the architects, and Mr. Richard Bell, of Tranmere, is the contractor.

New public baths at Northampton have just been completed by Messrs. P. and R. Phipps. Mr. Hull is the architect.

New cattle markets are about to be erected at Hull from designs by the borough engineer.

A new Board School at Leith will be opened in a few weeks. The building, which has cost £7,000, will accommodate nearly 700 children. Mr. James Simpson, of Leith, is the architect.

The memorial stones of a new Wesleyan chapel, at Langton-on-Swale, were laid yesterday week. Mr. Alfred J. Martin, of Darlington, is the architect.

St. Agnes, Burmahonts, the fourth of the temporary wooden churches now being erected by the Leeds Church Extension Board, was opened on Mouday.

The tenth half annual meeting of the Cork Improved Dwellings Company was held in that city on the 19th inst., when a dividend at the rate of 6 per cent. was declared upon the profits of the half year. The report showed that an addition of £104 had also been made to the reserve fund. The chairman announced that the directors are in search of a site for the erection of additional houses, and that they propose to build some on the northern side of the city.

Building Intelligence.

BELFAST.—The new Roman Catholic Church of St. Patrick, Belfast, will be opened next month. The building is of a Romanesque type. The internal length is 126ft., and the extreme width across the transepts is 102ft. On the ground-floor the area contained westward of the chancel arch—i.e., excluding chancel and sacristies—amounts to 8,500 superficial feet. The church is terminated by a semicircular apse as high as the nave, and separated from it by an arch the height of which is exactly 50ft. from the floor underneath. The apse has round its circle seven single light windows, filled with stained glass by Messrs. Early and Powell. At either side of the apse is a side chapel, lighted by a circular cusped window in each, and these have also been filled with painted glass. The design is by Mr. Timothy Hevey, F.R.I.A.I., with whom has been associated in the work throughout Mr. Mortimer H. Thomson.

BILLINGSGATE.—The new fish market at Billingsgate was opened last week. The old market was erected by Mr. J. B. Bunning, at that time the City architect, but has long been altogether inadequate to the requirements of the trade. The total area of the new market on the level of Thames-street, is about 39,000ft. superficial as against 20,000ft. of the former market. From the peculiarity and nature of the site being the bed of an estuary or creek of the river, it was necessary to excavate the soil—a mingled mass of piling, river mud, cesspools, and refuse of all kinds—to a depth ranging from 30ft. to 40ft. below the present level of Thames-street. Opportunity has been taken to construct a lofty, airy, and fully-lighted basement about 24ft. high, which has been in use as a shell and general fish market, and is applicable for other market purposes should overcrowding on the level of Thames-street render it necessary or desirable. Groined, vaulted, and domed on lofty piers, and open for light and ventilation, it forms no unimportant feature in the work. The general fish market on the level of Thames-street is a broad, level space, about three-fourths of the area of the entire site, and devoted entirely to salesmen's stands, the remainder of the area of the site being used as shops with warehouses over, and let to salmon and other salesmen requiring this accommodation. These shops or warehouses (14 in number) situated on either side of the market, and extending from the river to Thames-street, have their frontages towards, and are entered from the great market area. The accommodation of this floor also includes two large taverns, situated at the south-east and south-west extremities of the river front. The broad area of the market is covered with roofs on the louver glass principle, carried on lattice girders of 60ft. span, affording ample light and ventilation to the general market. The height from floor to roof will be 31ft. 6in. at the plate, and 43ft. at the ridge. The gallery, some 30ft. in width, running from north to south, above the general market (from which it is approached by the staircase halls, which also serve for the access to the basement), has an area of some 4,000ft., and is used as a market for the sale of dried fish—a considerable traffic in which is carried on at this market. The heavy goods, barrels, &c., for the upper and lower markets of this building, will be conveyed from the ground floor by means of hydraulic lifts—one of which is fitted up near Thames-street—to take the land traffic, and another is proposed to be placed next the river to accommodate goods brought by water. This lift is the work of Messrs. Bunnett and Co., of Queen-street. The design of the building is Italian in character, and the materials used in its construction are Portland stone with polished grey granite plinths and wall linings, and the intervals between the archivolts and windows are filled in with yellow brick facings. The front next Thames-street consists of an arcade, terminating in its eastern and western extremities with pavilion buildings, and a pedimental central feature marking the entrance to the shell-fish and dried-fish markets, surmounted by a figure of

Britannia. To the river front is a similar continuous arcade, flanked by Italian pavilion buildings.

BRISTOL.—The memorial stone of a new Congregational Sunday School was laid at Bristol, on Tuesday. The new buildings are designed in the Classic style, to correspond with the chapel, the whole of the exterior being of freestone from the Westwood quarries, and the interior walls of brick. The main school-room will be a total length of 67ft., a width of 24ft. 9in., and a height of 21ft. The entire outlay on the schools, and some repairs which are to be effected on the chapel, will be £2,000. The plans are by Messrs. J. W. Trew and Sons, architects, and the builders are Messrs. Stevens and Gardiner.

CORK.—The new orphanage of St. Vincent de Paul, Cork, was opened last week. The style is a free treatment of the 13th century, with large windows. The ground-floor contains school-rooms, refectories, parlours, and offices, all united by a corridor or cloister 7ft. 6in. wide by a total length of 146ft., terminated at either extremity by staircases. On the upper floor are the cells of the nuns, and the other wing is devoted to the purposes of infirmaries, lavatories, &c. In the centre of this floor is the chapel, the reredos of the high altar of which is enriched with paintings by Mr. N. H. J. Westlake, of London. The top-most story is devoted to dormitories for 40 children, and the requisite number of nuns to superintend them. The edifice has been built of native red sandstone, relieved by bands and dressings of limestone. The designs are by Mr. George Goldie, of London; and Mr. Barry M'Mullen, of Cork, efficiently carried out the work.

DEVON.—The old chapel of South Zeal, in South Tawton parish, has recently been renovated and made suitable for worship. An edifice of the Tudor times, of rather rude granite work, much neglected and dilapidated, it had of late years been used as a school. New windows of granite, consonant with the style of the building, have been inserted; the interior has been plastered; the east window is of stained glass, by Hughes—the subjects being the Crucifixion, the Blessed Virgin, and St. Mary Magdalene. The chapel has been newly roofed in red deal, the bell re-hung, and an additional bell supplied. The seating, of pitch pine, will accommodate a congregation of about 70. The altar, and rail enclosing it, are of English oak; the enclosure and avenue are paved with Mintons' tiles. The granite work, &c., has been well carried out by Mr. John Aggett, of Chagford; and the woodwork by Mr. Underhill, of the same place, from drawings by Mr. Ashworth, architect, of Exeter.

DROMIN ROMAN CATHOLIC CHURCH.—On Sunday, the 22nd July, his Grace the Most Rev. Dr. McGettigan, R.C. Primate, consecrated the Roman Catholic church of Dromin, Co. Louth, Ireland. It is cruciform in plan, with tower and spire over porch; the tower is terminated with octagonal pinnacles with trefoil gables between, and from the apices of the gables commence the angles of the spire, a simple square-based pyramid, placed diagonally on tower, and terminated by a four-way cross. The length of the church from porch to chancel, within the walls, is 74ft. by 24ft. in width. The breadth across the transepts is 72ft. The roof is of wrought rafters, each pair braced by two braces crossing each other diagonally, bolted together at intersections. At the intersection of nave and transepts the valley pieces are braced in a similar manner and secured at their intersection by bolts and iron plates. Upon these the rafters and their braces are continued till they all terminate at the point of intersection. It is entirely open, and stained and varnished. The windows are lancet, filled with plain leaded quarries, with geometrical heads and borders in coloured glass. The high altar is of carved Caen stone, with marble slab and shafts. The communion rail is of pitch pine, with trefoil-headed bays, and capped with polished Riga oak. There is a very convenient suite of vestries occupying the angle between the head of the cross and one of the transepts. The walls are of rubble greenstone, with dressings of silician sandstone,

mountain, and other limestones. The works were carried out from the designs of Mr. P. Henry, C.E., Dunleer, Co. Louth.

LONDON SCHOOL BOARD.—On Wednesday the tender of Messrs. Kirk and Randall, of Woolwich, amounting to £12,430, was accepted for the erection of a school in 2 blocks to provide accommodation in all for 1,040 children on opposite sides of Nichol-street, Shoreditch. That of Messrs. Higgs and Hill, of Crown Works, South Lambeth, amounting to £5,190, was accepted for the enlargement of the school in Camberwell-road. This school is the first of those planned in accordance with the recent rules laid down by the Education Department, the main rooms being 22ft. wide, the desks only five rows deep, and the accommodation reckoned by the number of seats thus provided, showing a cost per head of £12 14s. for school buildings. The erection of additional class-rooms for the Haverstock-hill School, St. Pancras, was entrusted to Messrs. Wall Bros., of Kentish Town, at the same schedule of prices as for the school in Medburn-street, St. Pancras. For fixture and fittings for the new school in Hollydale-road, Nunhead, which accommodates 872 children, £576 19s. was voted. Arrangements were agreed to for holding the first of a proposed series of annual exhibitions of drawings by the pupil teachers and scholars of the Board schools at the Board offices, Victoria Embankment, in October next.

NETHERHAMPTON.—This Wiltshire parish church was opened on Tuesday, after a rebuilding of so thorough a character that, with the exception of the lower part of the tower and one or two windows, nothing of the original structure remains. The style of the new edifice is Decorated English of a simple type. The outer walls are of brick, faced with flint and Tisbury stone, Bath stone being used for quoins and dressings. The tower has been raised 10ft., and surmounted by a spire, sheathed with oak shingles. The roofs, which are of considerable height, are similarly covered; internally they are barrel-vaulted. The entrance porch is on the north side of the nave, and has a front of open woodwork. The altar and rails, choir stalls, lectern, and pulpit (which stands on a base of Portland stone) are of English oak and walnut wood; the open seats in the body of the church of deal, stained and varnished. The chancel and the nave passages are paved with Maw and Godwin's encaustic tiles. The heating is to be effected on Porritt's system. Mr. Butterfield, of London, was the architect; Messrs. Hale and Sons, of Salisbury, the builders; and Mr. W. Cowley the clerk of works. Including fittings, the total cost has been about £1,900.

PENSAERN.—The foundation stone of a new English Presbyterian church was laid on Wednesday at Pensaern, near Rhyll. The style is Gothic, of a Continental character. The plan is a cross, containing a nave 60ft. by 23ft.; two transepts, 16ft. by 8ft.; chancel, 18ft. by 13ft.; organ chamber and vestry, each 11ft. by 10ft. Sittings will be provided for 250 persons, in addition to available spaces for certain occasions. The exterior will be of native limestone, worked random and clean pointed, the dressings being of minera stone. The designs have been supplied by, and the work will be carried out under the superintendence of, Mr. Richard Owen, architect, Breck-road, Liverpool.

PORTON.—The ancient chapel of St. Nicholas, Porton, in the parish of Idmiston, Wilts, being dilapidated as well as unsightly, it has been replaced by a new church, erected on a fresh site, from plans by Mr. J. L. Pearson, of Harley-street, W. The new building was consecrated on Wednesday week. It is built in 14th century Gothic style, of flint with stone dressings and buttresses. Sittings are provided for 153 worshippers. The altar-rail is of scroll-work, ornamented with beaded bands of wrought iron, and is the work of Mr. C. J. Tutt, of Fisherton, Salisbury. Mr. Grace, of Lower Wallop, took the contract for the erection of the church at £1,387.

WEST ORCHARD.—This small church was reopened last week, after entire renovation and partial re-building, from the designs of Mr. T. H. Wyatt, of London. A chancel has been added at the east end, a porch next the south

aisle, and a vestry on the north-east. In the centre of the west front is a double turret of Bath stone. The roofs are panelled, with carved bosses; the seats are open, those in the chancel being of carved pitch-pine, and in the nave of stained and varnished deal. Messrs. Maw and Co. supplied the tessellated tiles for flooring. Mr. T. B. Miles, of Shaftesbury, was the builder. The cost has been £1,500.

WIGAN.—The foundation stone of the new Roman Catholic Church of St. Joseph, Wigan, has been laid. The style of the building will be Gothic. The plan is an oblong of 87ft. by 60ft., the whole available area of the church being occupied. This space will be divided into nave and aisles by an arcade of ten arches, with a lofty clerestory of triplet-lancets, from which the chief light will be derived. The aisles are ended by the side chapels. The organ tribune is above the left side of the chapel, and passes above the sanctuary to the body of the church. To the right of the church, on a narrow plot of land, a presbytery has been planned, affording rooms for three resident priests. The design is by Mr. Goldie, of the firm of Goldie and Child, Kensington. The cost of the church and house combined will be £5,647.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published July 27 contains articles on The Withdrawal of the Public Health (Metropolis) Bill, The Domestic Economy Congress at Birmingham, The International Medical Congress at Geneva, Diphtheria and Group, Some Popular Errors in Sanitary Matters, The Drainage of Bristol, Some Simple Hygienic Rules, Public Health Reports, Parliamentary Notes, Legal Intelligence, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c. Price 2s. (Annual Subscription, post-free, Eleven Shillings.) Office, 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

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ARCHITECTURAL SCIENCE CLASS (Received).—A. L. B.—Attneave.—T. N.—Anbery (in reply to your note, your replies Nos. 52, 53, and 54, did not come to hand in time for examination, or they would have been noticed in our summary. They are all fair replies. Your reply to No. 53, in which you recommend the "setting" coat to be laid on while the second is moist, but firm, is the best.)

Correspondence.

AN AMATEUR'S NOTION.

To the Editor of the BUILDING NEWS.

SIR,—I have watched with interest the phases through which architecture has passed for many years, and, being possessed of artistic proclivities, have had some sympathy with the "Queen Anne" movement, as tending towards the abandonment of dull uniformity in favour of picturesque variety. A similar movement took place in Scotland a quarter of a century ago, when what has been called the "Scottish Baronial style" was revived; and there is some affinity between these two styles, keeping in view that the one is adapted to brick and the other to stone as the material for construction; but in the practice of the architects north and south of the Border there is a marked difference. In Scotland you seldom find constructed decoration; and where you do it is invariably the work of a builder's architect. Where a turret is constructed it is found to be a useful adjunct to the internal accommodation; and where a gable has been constructed it has its roof behind it, and has been so constructed as an essential feature.

Now, when I look at the designs of your most able "Queen Anne" men, I find that even they indulge in "constructed decoration," which (although not a practical architect) I feel to be essentially bad; it destroys my pleasure in contemplating a picturesque design to find that it is made up of shams. By a little care and consideration, with less effort and more reticence, the desired end could be gained without shocking architectural propriety.

These remarks are suggested by the able design of premises in Oxford-street, by Mr. Wimperis (July 13th, 1877), which, to my mind, is most satisfactory, but for one slight blemish, and that is the gablet at the angle of the two-story offshoot, which is so obviously false. It appears to me that an equally effective feature could have been designed without being false; and in architecture, as in everything else, what is false is bad—the terms are synonymous.—I am, Sir, &c., AMATEUR.
Edinburgh, July 19th.

PEEBLES PARISH CHURCH.

SIR,—I was quite as much struck with the mediæval perspective of Peebles Church as your correspondent. To see it as represented would require the varied gifts of being able to fly up several yards into the air, and then see round the corners. This, however, is poetic license with an architect in search of the picturesque. There are two serious and almost unaccountable mistakes to which, in the interests of church-planning, I would call the attention of all whom it concerns:—1st. The pulpit and pews are so placed that the congregation, when they look up, cannot fail to be blinded by a glare of light—than which, nothing is more painful to the eye. 2nd. The vestry is at an unreasonable distance from the pulpit—for instance, on communion days the elements are kept in the vestry, and two verses of the 34th paraphrase generally sung when the elders retire to bring them in; but in Peebles Church the congregation will have to sing the 119th Psalm, or improvise a processional hymn, before the elders reappear. 3rd. There is a lack of exit doors conveniently placed for so large an area.—I am, &c., J. R. W.

WAITING FOR A DETAIL.

SIR,—All persons who have been in any way party to a contract have no doubt learnt by experience that the great source of trouble is that it is undertaken before the parties know exactly what is required of them. If, before signing a contract, a builder had possession of detail drawings, would he not set about his work with much more despatch and economy? I think every contractor will endorse this, and yet who but a contractor is weak enough to sign a deed containing a clause to the effect that it may be added to afterwards? Every builder knows what it is to receive detail drawings when a job is half finished; perhaps not only showing more work than was antici-

pated, but requiring work already in hand to be altered. No doubt many of your readers can enlarge upon this subject, and perhaps suggest some plan to improve upon the present state of things. Suppose builders inserted in their tenders a clause of this kind:—"If, before signing the contract, I am supplied with a full set of detail drawings and a fair copy of the specification, beyond those for use of the clerk of the works, £ s. d. may be deducted from the amount named." Any improvement on the above suggestion will be thankfully received by, yours truly,
CONSIDER THE END.

MORE COMMISSIONS.

SIR,—Some of your trade readers may like to answer the following advertisement which appeared in Monday's *Times*. Some of your other readers who remember a recent discussion in your columns, might perhaps give a guess at the name of the accommodating and enterprising advertiser. He himself will, doubtless, be glad of the additional advertisement gratis—should you give it; and so all will be satisfied except the few purists who contend—it must be admitted with but partial success—for the dignity of the architectural profession.—I am, &c., ONE OF THEM.

[Copy of Advertisement.]

"An architect, with offices centrally situate, would be willing to undertake agency business for manufacturers, owners of property, &c. Apply, by letter, to S., care of Mr. Plummer, News Agent, Brownlow-street, Bedford-row, W.C."

Intercommunication.

QUESTIONS.

[5073].—Wall Decoration in Distemper.—The *Lancet* advocates, from a sanitary point of view, a simple mode of wall decoration which has also many aesthetic advantages—namely, the use of pale distemper colour instead of paper-hangings. It is not generally known, the *Lancet* says, that this distemper can be applied over paper of almost any description. To those whose eyes are constantly tormented by a hideous paper inflicted by their landlord, this cheap and effectual mode of relief will be sure to commend itself. Distemper can be applied with especially good effect over those rich flock papers that so often poison and encumber dining-rooms. Can any one give me plain instructions for carrying out this hint? How is the distemper prepared? Can any of Szecelmeys, or the Silicate Paint Company's preparations be utilised?—KAPPA.

[5074].—Cleaning of Plaster Casts.—Could any of your subscribers inform me how I can clean the above, and also to join one which is broken?—J. T. G.

[5075].—Tar Pavement.—I shall feel obliged if some correspondent will kindly inform me of the best description of artificial asphalt or tar paving, the necessary thickness, the proportional ingredients, and the mode of preparing and laying the same. I wish it not to soften in the sun, and to be capable of withstanding great wear, as it will be on public footways.—SURVEYOR.

[5076].—Legal Fees.—Can an architect's assistant claim the fees allowed by law to a professional assistant as witness in a lawsuit, or are the fees claimed by his employer? I should be glad to know what is usual among the profession in such cases.—KENT.

REPLIES.

[4978].—Refusing to Return certificates.—This question, kindly inserted in the "Intercommunication" of your paper of the 20th of April last, remains unanswered. Would some reader inform me if it is customary to return original certificates, and oblige—AN ILL-USED ARCHITECT.

[5059 and 5069].—Cast-Iron Girder.—"G. H.," in your issue of July 20th, suggests 9in. for the depth of a cast-iron girder of 16ft. bearing to carry a floor. I cannot think it would be safe in practice to make a girder of this bearing, and for the purpose stated, less than 12in. deep, however little the load might be. If required to be of less depth the girder should be of wrought iron.—M.

[5061].—Removing Putty from Old Sashes.—Well slacked lime mixed with a saturated solution of washing soda, then brushed on the putty, will soften the same, which can then be easily removed.—J. T. G.

[5064].—Iron Girders.—Yes, I have heard a practical engineer state that rust would preserve the iron provided it were not disturbed.—A. V.

[5064].—Iron Girders.—A thorough painting will prevent further corrosion of the iron; but it is best to scrape the rust off first.—H.

[5065].—Main Sewers.—1 in 100 is a good fall, and its discharge is about 2,14ft. per minute. In reply to the third question, a charcoal filter is not required, but I should recommend several ventilating-shafts as proposed. 4th. A 4½in. ring of brickwork

would do if properly moulded and cemented, but I should prefer a stoneware invert. Calculate for 30 gallons a head for the houses, the sewer you mention will be sufficient to drain a population of 10,000. Additions to the stream increase the velocity, so that the same area becomes sufficient for any number of smaller inlets. A 15in. sewer with a fall of 1 in 100 is sufficient to drain 250 houses of ordinary size.—G.

[5065].—Main Sewers.—1. Take the number of houses, take an average of five persons to each, and the water supply at 15 gallons per head per day—if with water-closets, say 20 gallons—one-half of which will be used during the busiest part of the day, say, in 8 hours. This will give the amount of sewage to deal with. But the question of rainfall is a matter of more moment in deciding the capacity of sewers. Take the area drained, and allow a depth of from 3in. to 1in. per hour, if in a very rainy district. 2. Yes. 3. Works efficiently if there are plenty of ventilator-gratings, and if at every man-hole chambers wooden flap doors are hung with brass hinges, so as to float on the water, and cause each man-hole grating or ventilator to ventilate its own length, instead of allowing the noxious gases to rise to the highest ends. 4. Never heard of sides being made of less thickness than invert or arch—rather the other way, as they form the weakest part of an egg-shaped sewer. In a 3ft. 6in. x 2ft. 6in. sewer make it 9in. brickwork.—ASSISTANT BOROUGH SURVEYOR.

[5067].—Measuring Plasterers' Work.—In ceilings measure from wall to wall. If there is a cornice then a deduction must be made of one projection of the cornice each way. On walls collect the round of walls for the length and for the height taken from top of skirting grounds to the ceiling. Take all the additions and deductions as they may occur. If there is a cornice to the room deduct one-third of the depth of cornice.—A. V.

[5067].—Measuring Plasterers' Work.—It is usual to deduct for openings, but to allow half depth of cornice, and to take height of walls from top of the skirting grounds.—SURVEYOR.

[5068].—Where to Place the Felt in a Roof.—The lap for countess slating in good work should be 3in., and the slates bedded in patent cement. The slates should be nailed to the battens, and under the battens should be the felt.—A. V.

[5068].—Where to Place the Felt in a Roof.—The gauge for countess slates is 8½in., and a 3in. lap is sufficient for the roof named. The felt is usually placed under the slates, though if it is placed on the ceiling-boards the effect will be the same.—ARCHITECTUS.

[5068].—Where to Place Felt in Roof.—I should think a 2½in. lap, considering the pitch of roof, and its being felted, would do. A 3in. would be ample. It is my opinion you would be right in felting the ceiling above collar beam. You would prevent effectually, in stormy weather, by this means, in addition to the closing of the ventilators, all down draughts on the heads of the congregation. I have tried it in a large Wesleyan chapel, and so far it answers well.—W. M. R.

[5070].—Country House.—If the water can be conveyed the distance you name by an indiarubber hose, the extra cost would be little or nothing, especially if a contractor of means, possessing ample plant, carries out the work. If, however, it has to be done by water-cart or buckets, the cost would be, I should think, from £10 to £20 extra. The well in an ordinary situation would cost—constructed as you describe—about £1 per foot run, if not exceeding 70ft. deep.—W. M. R.

[5071].—Proportion of Rooms.—Flat ceilings may be lower than eaved. If the room be square height should not exceed ½, nor less than ⅓, and when oblong, height may be equal to width. Coved rooms, if square, must be as high as broad; when oblong, height may be equal to width, or more. Galleries should, at the least, be 1½ their width, or more.—A. V.

STATUES, MEMORIALS, &c.

BLenheim PARK.—The monument erected by the great Duke of Marlborough in Blenheim-park is undergoing restoration. The design consists of a lofty column, around the base of which is engraved an account of the many victories and public services of his grace. Upon the capital is a colossal statue of the duke, dressed in the costume of Augustus, holding a figure of Victory in his hand. From the effect of lightning, or long exposure to the weather, the latter has fallen away, and other parts begin to show signs of wear. The work, together with the restoration of other sculptures about the palace at Blenheim, has been entrusted to Mr. Roddiss, of Birmingham, under the direction of Mr. F. B. Osborne (as noted on the following page).

BRADFORD.—On Wednesday Mr. Bright unveiled a statue of the late Mr. Cobden, which has been erected in the Bradford Exchange. Mr. Butler—an artist strongly recommended by Mr. Foley—executed the statue, which has been cut from a block of Carrara marble weighing nearly 12 tons in the rough state. The figure, which, with the plinth below, is 7ft. 9in. in height, and of proportionate breadth, stands on a polished granite pedestal, erected by Messrs. F. Stoke and Co., of Bradford, and on the front of the pedestal is the name "Cobden," which is encircled by the motto,

"Free trade, peace, and goodwill among nations." An inscription on the back bears the name of Mr. Booth, the donor, and states that he was led to erect the statue because of admiration for the character and labours of Mr. Cobden.

THE SOLDIERS' AND SAILORS' MEMORIAL.—Two large bronze figures, representing peace and history, have just been shipped by the s.s. Batavia for Boston. They were modelled by Mr. Martin Milmore, at his studio in Rome, and cast by Messrs. Cox and Son, at their bronze foundry, Thames Ditton. These complete the above important memorials of the war between the North and South. The monument, which consists of a large column ornamented with nine figures, trophies, wreaths, and several bas-reliefs, all in bronze, is to be unveiled in September next.

STAINED GLASS.

ASHBOURN.—The restoration of the window, of flamboyant design, over the door of the north transept of Ashbourn Church will shortly be completed. The subject intended to be illustrated is the Crucifixion. The work has been entrusted to Messrs. Hardman, of Birmingham.

JESMOND.—The east window of the parish church of Jesmond is about to be filled with stained glass by Mr. Baguley, of Newcastle-on-Tyne. The artist has apparently based his design upon the fact that Jesmond, or "The Mount of Jesus," is the name of the church, and the subjects selected for the lower part of the five lights are taken from the "Sermon on the Mount." The upper portion is occupied by our Lord's ascension from Mount Olivet. The tracery, copied from one of the windows in Melrose Abbey, contains the subject of Christ sitting in glory, and angels in the act of adoration. The cost of the whole will be £500.

PARLIAMENTARY NOTES.

NEW LODGE IN HYDE-PARK.—Mr. Rylands last week asked the Secretary to the Treasury if he could state to the House the circumstances under which Mr. Albert Grant was asked by the Treasury to pay the cost of the erection of a new superintendent's lodge in Hyde-park. Mr. W. H. Smith: When his own house was in course of erection, Mr. Grant applied to the First Commissioner of Works for the removal of the brick wall of Kensington-gardens and a lodge which were immediately opposite the new house, undertaking to replace the wall by an iron railing, and to pay the cost of the erection of a lodge in any spot that might be deemed suitable for the residence of the park superintendent. The First Commissioner of Works agreed to the proposals of Mr. Grant, as they were calculated to improve that portion of Kensington-gardens which was affected by them, without involving any charge upon the public purse.

LEGAL INTELLIGENCE.

NOT AN OFFICE, BUT AN EMPLOYMENT.—In the suit of "Frederick Law Olmsted v. the City of New York," the Superior Court, General Term, Judge Speir has decided that the position of landscape architect of the parks is not an "office," but an "employment." Mr. Olmsted, while holding the position of landscape architect, accepted the position of Commissioner of the State Survey. He received no salary for the latter position, and resigned it within three months; but the city declined to pay him for that time, on the ground that the acceptance of any second office is a resignation of a previously held city office. Judge Speir holds that the position on the parks was not an office, and affirms the verdict in Mr. Olmsted's favour.

FRAUDS ON THE ARTISANS' AND LABOURERS' DWELLINGS COMPANY.—The inquiry into the alleged frauds on the Artisans' Dwellings Company, by Dr. Baxter Langley, the chairman; Mr. W. Swindlehurst, the secretary; and Mr. E. Saffery, an estate agent, was resumed at Bow-street, on Wednesday. A new case was proceeded with relating to the purchase of the Cann Hall Estate, part of Epping Forest, by Saffery, for £35,000, which was sold to the company for £48,000; and it was alleged that the defendants divided a large portion of the difference between them. The defendants were again remanded, Dr. Langley's bail being increased.

CHIPS.

Mr. Corbett has resigned his appointment as township engineer to the Bray Commissioners, in consequence of ill-health.

The foundation stone of the new buildings at Cowley Military College, Oxford, was laid on Saturday.

The Town Council of Leicester has under consideration the purchase of public baths in King-street, now rented by the Corporation of Messrs. L. P. Clarke and Co.; the premises are offered for £5,300, and it is estimated that nearly £1,700 would have to be laid out on alterations, and the provision of powerful engines and boilers. Other baths in Bath-lane have been also offered to the Leicester Town Council, the total cost of their transfer being estimated at £12,000.

The land-slip at Beacon-hill-slope, Bath, has recently become more extensive, and many houses at Hedgemoor and Walcot Church have been injured by the sliding away of their sub-soil.

Mr. J. S. Raven, the well-known landscape painter, has been drowned whilst bathing at Harlech. Mr. Raven, who was in his 50th year, has been a very frequent exhibitor since 1849, at the Royal Academy and elsewhere.

The Improvement Commissioners of Bournemouth decided on Monday, to appoint a special clerk of works to carry out the details of the inland drainage scheme; the original resolution, which was lost, proposed that the works should be carried out under Sir Joseph Bazalgette's direction.

A new Congregational Church in South-street, Romford, was opened last week. The building is Early Gothic in character, is faced with Kentish rag and Bath dressings; a prominent feature is a slated spire, 64ft. in height. Open seats accommodate 340 adults on the ground-floor, and 130 in the galleries. Mr. E. C. Allam was the architect, and Messrs. Staines and Co., of London, the builders. The total cost has been £4,560.

Under "Competitions," last week, Mr. Geo. Dale Oliver was stated to be of Newcastle-on-Tyne. It should have been Mr. Geo. D. Oliver, of the firm of Hetherington and Oliver, architects, Carlisle.

The Bradford Band of Hope Union has several times during the last twenty years presented to the Corporation some work of art for the adornment of Peel-park, as a mark of their gratitude for being allowed the use of the park. On Saturday last a statue symbolising Spring was unveiled; it forms a companion to a somewhat similar figure emblematising Autumn, presented by the Union in 1869. The statue and pedestal are 13ft. 6in. in height, and have been wrought from two blocks of stone from Bolton Woods. Mr. W. Aston, of Manningham, was the sculptor.

The discovery of a sub-lacustrine village of about 200 houses, disposed over an oblong surface, is reported from the Lake of Geneva. The ruddy hue of the buildings appears to indicate that they were covered with the vermilion cement, used alike by Celts, Cimbric, and early Gauls. The Council of Vand has decided to have the site of the dwellings inclosed by a jetty stretching from the land, and to drain off the water so as to expose what gives promise of being a very interesting archaeological discovery.

At Poole Quarter Sessions, last week, Frederick Dashwood, formerly a builder at Bournemouth, was sentenced to three months' imprisonment, with hard labour, for breaches of the Debtors' Act, 1869, the principal charge being that prisoner, being a bankrupt, omitted to disclose all his property.

The Corporation of Dublin have agreed to the purchase by the South City Markets Company of a number of premises in Great George, Lower-Stephen, Exchequer, St. Andrew, and William-streets, at sums equivalent to twenty and twenty-five years' purchase.

A new workhouse is in course of completion for the West Ward guardians at Shap. Mr. Pattinson is the contractor.

The surveyor and inspector of nuisances for Bridport, Mr. Henry Patten, died last week. He had held the appointment from the date of the formation of the Local Board.

The new extension railway from Kingsbridge, Dublin, to North Wall, was inspected preparatory to opening on Saturday last. It has been the most expensive line yet constructed in Ireland, having cost £60,000 a mile, while, although it is but 2½ miles in length, the land cost an additional £200,000. The contract was let in 1873 to Mr. Thomas Chester, an English contractor—Mr. William Baker, of the London and North-Western Railway, and Mr. Valentine Browne, of the Great Southern and Western Railway of Ireland, being the joint engineers. The line crosses the Liffey on a bridge of stone and iron, with a centre span of 110ft. At North Wall a station has been erected for the London and North-Western, at a cost of £40,000, and others are being built for the Midland (England) and the Great Southern and Western (Ireland) Railway Companies.

The Corporation of Leicester has been cast in damages at the assizes recently held in that town for damage caused to a ratepayer's property through the improper construction and insufficient cleansing of the public sewers.

Mr. Alfred M. Fowler, borough engineer of Salford, has been elected engineer to the borough of Newcastle-on-Tyne.

Spanish engineers are reported to have arrived at Marseilles for the purchase of apparatus resembling that being used for the St. Gothard tunnel. It is proposed to bore a tunnel from near Algeciras, in Spain, to a point between Tangiers and Ceuta, a distance of nine miles. The cost is estimated at £1,000,000, and the promoters are said to have already raised a considerable sum.

A new chancel, erected at a cost of £1,500, was opened at Pont-aber-Bargoed, in the parish of Gelli-gaer, last week.

Extensive improvements are being pushed forward at Mount Stuart House, Rothsay, the seat of the Marquis of Bute.

Our Office Table.

THE soirée to celebrate the jubilee of the Operative Carpenters' and Joiners' Trade Society was held at the lesser Colston Hall, Bristol, last week. Tea was laid at six o'clock, and about 500 sat down. Mr. J. Westaway, the chairman, said that was the first time a gathering of the kind had taken place, but he hoped in fifty years to come a meeting might be held to celebrate the centennial of the union. He spoke of the spread of the principles of trades unionism, and said it was the wish of that particular society to settle all disputes, or suggested alterations of the wages, by conciliation or arbitration, believing that strikes were ruinous to all the parties concerned. At the end of the last financial year (August, 1876) there were 11,841 members belonging to the society, the accumulated capital being £22,500, after spending during the year £12,680, only £190 being for strikes, thus proving, the speaker remarked, that this system of warfare was dying out. There are about 500 members of the union in Bristol, under whose auspices the soirée was held.

THE Society of Engineers last week visited the new works in connection with the extension of the Victoria Docks. The works are about a mile and three quarters long, and include first the connection with the present docks, beyond which will be a basin having 80 acres of water area, with graving docks annexed on the south side. Near the junction of the new with the old docks formerly ran the North Woolwich Branch of the Great Eastern Railway, which has been diverted, and which will eventually be restored to its former line of route, but not to its former level, as it will pass through a tunnel 40ft. below that level. This tunnel is a fine piece of work, and has an incline of 1 in 50 from either end to the central point, where it passes under the dock. When the docks are finished there will be 25ft. 6in. of water over the tunnel, which is 1,800ft. long. The main basin will be about 6,500ft. long, and 540ft. wide, with a minimum depth of 27ft. of water. Beyond the main basin is an entrance basin nine acres in extent, which alone is just equal to the area of the present St. Katherine Docks. The entrance lock is 800ft. long by 80ft. wide, and is a magnificent piece of work in brick and stone, with the necessary gates, and sluices and channels for the entrance, regulation, and exit of the water. Beyond the entrance gates will be couple of open timber jetties, each extending 250ft. into the river. There will be a depth of 33ft. of water over the entrance sill. When complete the old and new docks will have an aggregate length of about 6 miles of quay. The concrete walls of the dock are progressing rapidly. They are built up in solid concrete on the gravel, and are 18ft. wide at the base, benched up to 7ft. wide at top, and 34ft. high. It is estimated that the works will cost about three-quarters of a million of money.

A CORRESPONDENT of *La Nature* relates the following:—"In the building of a new chateau in the Department of Aisne, materials from the old chateau were used as much as possible. This building dated from the end of the 17th

century. One large piece of stone had in the middle of one side a large moist portion: it seemed otherwise sound. The stone was sawn to remove the moist exterior (the moisture was attributed to a flow of water into the stone in the old building), and was put in position in a window. Time went on, and the stone (much to the builder's disappointment) did not dry, but presented a villainous contrast to its surroundings. It was at length decided to remove and sacrifice it, in order to find out the cause. On sawing right through the moist part, a large irregular cavity (about 0'15m. in all directions) was found in the centre, and in this cavity an enormous live toad, which by squatting had escaped the saw!" The story seems well authenticated.

THE monument of the Duke of Marlborough in Blenheim Park, which is 130ft. high, has just been restored under the direction of Mr. F. B. Osborne, by Mr. Joseph Blackburn, of Nottingham, with the aid of his patent scaffolding, which was fixed at its usual cost of five pounds. The operation of fixing the scaffold somewhat astonished the country people, but it is in reality simple enough. The first operation was nothing more than flying a kite over its top, and when well in position suddenly running out a quantity of the string, thus causing the kite to drop on one side of the monument, and forming, as it were, a communication right over the monument from one side to the other. A slightly thicker string was next attached, and drawn over; then a still thicker one, till at last a strong rope, about an inch in diameter, with a "pulley" fastened in the centre, was pulled over, till the pulley reached the parapet; around this "pulley" is a smaller rope, called the "endless one;" to this rope a seat was affixed at one part, and at another two weights of about equal balance to the man who ascended. The figure of John, first Duke of Marlborough, is 11ft. high, and made of lead, filled in with concrete, as are the eagles at his feet, and the scroll in his hand. The figure of "Victory," which he formerly held in his right hand, but which some time back mysteriously disappeared, was found lying on the parapet. This figure of "Victory" is in the shape of an angel, and is also made of lead, and weighs about three-quarters of a cwt. It was generally supposed that, at one time, a helmet covered the head of the statue, but such appears not to have been the case, as the curls around the head are perfect. On the left shoulder of the statue there is the following inscription, cut with a pen-knife:—"June 18, 1781, G. Austin."—In another column, under "Statues and Memorials," will be found further details as to the works of restoration now being carried out in Blenheim Park.

THE Select Committee on the Metropolitan Fire Brigade have finished their report. They declare that the present arrangements for extinguishing fire in the metropolis are faulty, and urge the consolidation of the police forces, the fire brigade, and the water supply, under one management. They recommend the transfer of the fire brigade from the Metropolitan Board to the Commissioner of Police, but to remain under the immediate control of an Assistant Commissioner, with authority to

act in the City of London as well as the rest of the metropolis. They also recommend that all police-stations and fixed points should, where practicable, be used as fire-brigade stations; that the present rate of one halfpenny on the consolidated rate should be abolished in favour of one of one penny in the Metropolitan Police District; that the Government contribution be correspondingly increased; that the contributions from insurance companies should remain as at present; and that a charge be levied on the owners of all uninsured property saved from fire. It is further advised that the various existing water systems should be consolidated in the hands of a public authority; that no new theatres or music-halls should be opened till certified as safe from risk of fire by the Metropolitan Board, and that that body should be empowered to call upon owners of existing structures to remedy apparent causes of danger.

THE fourth annual conference of the Association of Municipal and Sanitary Engineers and Surveyors was held on Thursday and Friday in last week at Bristol. Mr. F. Ashmead, the President, delivered his inaugural address, and papers were read "On the Drainage of the Borough of Bristol," by the President; "On Some Popular Errors in Sanitary Matters," by Mr. David Davies; and "On the Water-Bearing Strata of Bristol," by Mr. W. W. Stoddart. Reports of these will be found in *Public Health*. The annual dinner was held at the Clifton Downs Hotel.

SLATES — SLATES — SLATES. — Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.
SCAFFOLD POLES, 22ft., 2s. 6d. each;
28ft., 2d. per foot; 35ft., 2d. per foot.
DEALS—BATTENS—FLOORING. — Send for price list.—R. MAY & SON, Timber and Slate Merchants, Acorn Wharf, Old Kent-road, London, S. E.

Trade News.

WAGES MOVEMENT.

CARLISLE.—As yet no settlement has been effected between the cabinet-makers of this city and the employers relative to the advance of wages asked for some months since. Business is not brisk, and the masters are able to meet orders with the aid of men from neighbouring towns. The strike is expected to be continued for some months.

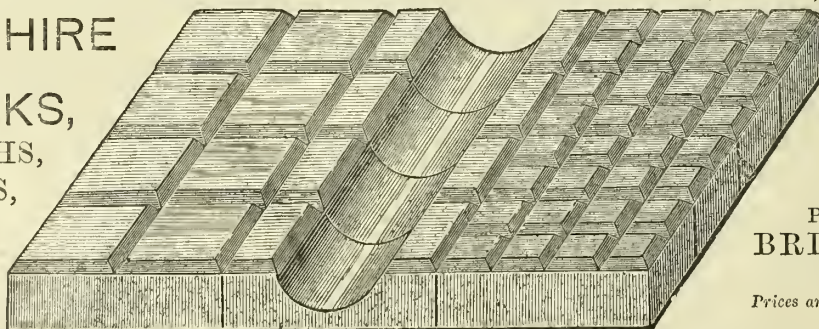
CRIEFF.—The master joiners in Crieff, who, about two months ago, refused to give the workmen a rise of 3d. per hour, have granted the request, and the uniform rate of wages is now 7d. per hour.

KENDAL.—The strike of the joiners at Kendal has terminated, and the men have resumed work, after having been out nine weeks. The demand was for 32s. a week, and the employers recently offered to give that sum for eight months of the year, and 30s. for the remaining four. It has been arranged that the men shall receive 31s. per week during the coming winter (from November to February), and afterwards 32s. per week.

MANCHESTER.—The number of joiners on the pay-books at the close of last week—the twelfth week of the dispute—was 928, and each man on strike is reported to have received as his week's allowance 3s., in addition to the 15s. or 16s., as the case may be, which is the amount of his strike pay. The balance-sheet issued shows that the income from "external sources"—that is, from other trades or from joiners' societies in other towns—is £2,686, and that the balance now in hand is £86 13s. The principal

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THROUGH THE WIDESPREAD REPUTATION WHICH THESE GOODS HAVE GAINED, many Makers have been induced to send into the London and other markets Spurious Imitations, which are only Coloured by a chemical process, and will not bear any comparison, for Strength, Durability, &c., with the Genuine Article.

towns from which levies continue to be drawn are Sheffield, Birmingham, Liverpool, Nottingham, Bradford, Southport, Bolton, and London; and in most cases the levy, varying from 6d. to 1s. per man, has been made compulsory. The funds derived from this source average about £300 per week. At a meeting of the United Trade Committee, on Monday evening, it was reported that six firms had that morning opened their workshops at the advance sought by the men, one firm alone having engaged 30 workpeople. During the day applications for men were received from various towns, and the number at present answering the roll is 850. It was stated that the strike pay has again been increased 1s. per man.

SUNDERLAND.—The strike of the masons at Sunderland, which commenced last Monday week, has ended by the concession of the men's claim by the masters. It was not a question of wages, as the Sunderland masons work on the hour system, but of the introduction of certain new rules of work promoted by the Central Executive of the Workmen's Union. The chief rules are:—The abolition of sub-contracting for labour; the limitation of apprentices to a proportion of one to every five men (unless the lads be sons or stepsons of any mason employed on the work); and the allowance of travel time, at the rate of three miles an hour, to all jobs more than one mile distant from the centre of the town, which, in the case of Sunderland, is reckoned as "Mackie's Corner." Sunderland is the first town in the North of England in which the workmen have succeeded in getting these rules adopted.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—[ADVT.]

Holloway's Pills, early sought and properly taken, would avert sickness from many happy homes. Nature needs only a little assistance, as afforded by this medicine, to stamp out imminent illness. Failing appetite, indigestion, flatulency, hysterics, colics, constipation, and flying pains through bones or muscles readily succumb to Holloway's treatment.

TENDERS.

ABERYSTWITHE.—For alteration to Blue Bell Tavern Terrace-road, for Mr. David Roberts, the Brewery. Mr. Walter W. Thomas, architect, Liverpool:—

- Day Work: Jones, David, masonry and joiners' work. Griffiths, J. J., plastering. Jones, T. H., painting, glazing, &c.

CAMBERWELL, S.E.—For the enlargement of the school in Camberwell-road and George-street, S.E., by the erection of boys' and girls' departments for 350 children, for the London School Board. Mr. E. R. Robson, architect:—

- Brass, W. £3,163 Downs, W. 5,682 Wall Bros. 5,640 Newman and Mann 5,572 Nightingale, B. E. 5,543 Thompson, J. 5,472 Jerrard, S. J. 5,352 Tyrerman, J. 5,351 Higgs and Hill (accepted) 5,190

[This school is the first planned under the new rules of the Education Department. Cost of site, so far as purchased (area 25,140 sq. ft.), £9,905 11s.; boys' and girls' school buildings, including teachers' rooms and closets, £4,570; tar pavement, £270; boundary walls and gates, £550; cost per head of school buildings only, £12 13s. 9d.; total cost per head of buildings, including boundary walls, tar-pavement, &c., £14 8s. 4d.]

CARDIGANSHIRE.—For the erection of school and master's house at Goginan, for the Melinodr School Board. Mr. Walter W. Thomas, architect, Liverpool:—

- Charles, J. and J. £1,087 Jones, T. (accepted) 1,027 Griffiths, T. 935

CARDIGANSHIRE.—For the erection of a cottage villa at Capel Bangor, for Mr. Henry W. Morgan, Bronllan-guria. Mr. Walter W. Thomas, architect, Liverpool:—

- Williams, James, Aberystwith £800

CARDIGANSHIRE.—For the erection of a cottage villa at Llanfanzel, North, for Mr. David Jenkins, Panty-dderwen. Mr. Walter W. Thomas, architect, Liverpool:—

- Hamer, Daniel £332 10 0

CHWILIG.—Chwilig Independent chapel, Carnarvon-shire. Owen Moins Roberts, architect:—

- Jones, William, and Humphreys, Portmadoc £274 Criecieth, Robert, Thomas, 195 Owen, William, and Edwards, Chwilig 192

ESSEX.—For rebuilding the parish church of St. Lawrence-on-Sea, near Maldon. Mr. R. Wheeler, Tunbridge Wells, architect:—

- Letch, W., Braintree... .. £1,920 Gozzeth, H., Woodham 1,616 Read, C., Burnham 1,598 Stammers, Wild, Southminster (accepted) 1,553

KINGSTON.—For house and offices at Kingston-hill, for Dr. Kane. Mr. Henry Macaulay, architect; quantities by Mr. Alfred Boxall:—

- Wells £2,550 Oldridge 2,463 Todd and Saunders 2,437 Jarvis 2,375 Lane (accepted) 2,306

LONDON.—For alterations and repairs at 21, Woburn-square, W.C., for the Misses Thompson:—

- Henson £320 Phillips, Messrs., and Son (accepted) ... 301 For decorations: Phillips, Messrs., and Son 231

LONDON.—For rebuilding the "Boy's Refuge," Great Queen's-street, Lincoln's-inn-fields, for the committee. Mr. W. Williams, secretary. Messrs. E. Habershon and Brock, architects:—

- Coloman £8,579 Brown and Robinson 8,356 Fenor, Julian, and Co. 8,355 Nightingale 8,058 McLachlan 7,960 Bowman 7,900 Mattock Brothers 7,833 Brass 7,698 Haynes 7,300 Newman and Mann 6,725

LONDON.—For cleaning and painting works at Christ's hospital, Newgate-street, E.C. Mr. Thomas Renton, architect:—

- Shaw £735 Morby 715 Hayward and Son 700 Patman and Fotheringham 685 Pitman and Cuthbertson (accepted)... .. 610

LONDON.—Alterations, 177, East India-road, for Mr. Hall. Messrs. A. and C. Harston, architects:—

- Johnson £322 3 0 Sheffield (accepted) 297 0 0

LONDON.—Alterations, 175, East India-road, for Mr. Chapman. Messrs. A. and C. Harston, architects:—

- Wood and Sleep (accepted) £165

LONDON.—Stepney Union Workhouse, Bromley, enlargement of boiler-house. Messrs. A. and C. Harston, architects:—

- Seward £181 Heiser 165 Le Frere (not in attendance) 148

PORTMADOC.—Wesleyan Methodist chapel, Portmadoc, new gallery and other alterations. Owen Moins Roberts, architect:—

- Lloyd, Thomas, Portmadoc £542 Jones, W., and Humphreys (accepted) ... 490

SHOREDITCH.—For the erection of schools for 1,040 children, on opposite sides of Nichol-street, Shoreditch, for the London School Board. Mr. E. R. Robson, architect:—

- Wood, F. and F. J. £14,589 Perry and Co. 13,956 Pritchard, G. S. 13,901 Brass, W. 13,564 Higgs and Hill 13,384 Boyce, T. 13,292 Atherton and Latta 13,150 Sheffield, A. 12,983 Kirk and Randall (accepted) 12,430

[This school is one of those which has been planned with the main rooms 24 feet wide by the consent of the Education Department. Cost of site, as far as purchased (area 14,860 sq. ft.), £10,719 17s.; cost of boys' and girls' school buildings, including teachers' rooms and closets, £6,591; cost of infants' school buildings, £5,103; cost of tar pavement, £36; cost of boundary walls and gates, £287; cost of schoolkeeper's residence, £363; cost per head of school buildings only, £11 4s. 9d.; total cost per head of buildings, including boundary wall, schoolkeeper's house, &c., £11 19s.]

TOTTENHAM LOCAL BOARD.—For the following works:—

Bonds-green drainage: The tenders received varied from £5,650 down to £299, but five of the tenders received were declared to be informal, and therefore excluded, and of the two remaining that of Messrs. Humphries and Son, being the lowest, at £3,250, was accepted. For the Penners-brook bridge contract seven tenders were received, which varied from £1,300 down to £670, and the latter, that of Messrs. Humphries and Son, was accepted. For the large suitable for the river Lea two tenders were received, and it was referred to the surveyor to examine the barges. Two tenders were received for supplying a steam roller of 15 tons, and that of Messrs. Aveling and Porter, of Rochester, at £612, with 23 per cent. discount, and a month's trial previous, was accepted.

BATH STONE OF BEST QUALITY. WESTWOOD GROUND BOX GROUND, CORSHAM DOWN, and COMBE DOWN.

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Lamplough's Pyretic Saline is refreshing, most agreeable, and the preventive of FEVERS, BILIOUSNESS, SMALL-POX, SKIN DISEASES, and many other spring and summer ailments. Sold by chemists throughout the world and the maker, 113, Holborn Hill. Use no substitute.—[ADVT.]

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BRICKS FOR SALE.—A large quantity

of BRICKS for SALE, now standing on the Queen's Park Estate, Harrow-road, W. May be seen by order of Mr. SEARLE, Sub-manager on the Estate. Tenders for the purchase of the same in large or small quantities, may be sent on or before August 1st to the Artizans', Labourers', and General Dwellings Company (Limited), 34, Great George-street, Westminster, S.W. JOHN KEMPTER, Hon. Sec. pro tem.

MORTAR MILLS.—Ready for immediate

delivery, 3 MORTAR MILLS, with 7ft. pans. Other sizes in stock and progress. These Mills are all made to fixed sizes, and duplicate parts are kept constantly in stock. They are the cheapest and best in the market, and the weights are guaranteed.—For particulars, prices, and terms, apply to J. GARVIE, Jun., & Co., Albion Iron Works, Aberdeen.

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To Persons desirous of Making Provision for the Future, of leaving their Families well off at the Time of Death; or wishing to procure an Advance of £100 and upwards, this Society is specially recommended.

From the Monthly Guide to Investors, July 26th.

"Our readers will no doubt have remarked that for the past six months or twelve months we have refrained from noticing any companies or societies, or anything appertaining thereto; but we have now much pleasure in directing special attention to the WORKING MEN'S MUTUAL SOCIETY, and from inquiries we have made at the offices of the Institution in question, and from other sources, we do not hesitate to say that this should be supported by every household in the Kingdom, and by every-body in employment of any kind.

"It offers a safe and lucrative means for depositing savings, and also great advantages to borrowers.

The moneys which are subscribed by the members are advanced every three or four weeks to those who tender the highest premiums, the loan being repayable with the premium in quarterly instalments spread over twenty years; or if it be in any time under that period, discount is allowed.

These premiums, which are paid for the advances, form the profits of the Society; and they must undoubtedly be large, when it is borne in mind that, as they are paid back to the Society, they are re-advanced again and again. Indeed, the profits are so large that they are enabled to advance every fourth month a large sum (one of all interest or premiums, the members entitled to receive the same (£100 each) being determined by drawing in the presence of a Notary Public.

"For instance, supposing a person holds an advance certificate numbered 1,000, if that number be drawn, the holder becomes entitled to a loan of £100, which is duly paid over to him on his giving security for its payment (say the security of himself and a friend).

"The £100 is repayable in quarterly instalments of £1 5s., making £5 a year.

"Therefore, for advances by drawing, no charge whatever is made.

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"A person procuring an advance by 'drawing' continues to pay his subscription of 2s. per month in respect of the certificate which obtained the advance; but persons obtaining an advance by 'tender' may discontinue such payments, and the amount at their credit can be withdrawn.

"We heartily commend this Society to all persons—those wishing to borrow, and those wishing to leave their families well off (for 2s. 6d. payable monthly will have amounted to £150 in some fifteen years)."

Sunday Times, Oct. 15th.

"This Society offers a safe and lucrative means for depositing savings."

Christian Globe, Oct. 15th.

"It presents, according to the soundest principles of political economy, a safe and lucrative means for depositing savings, and also furnishes unquestionable advantages to borrowers. . . . Nothing could be more simple and equitable in its nature and results."

The Weekly Times, Jewish World, South London Chronicle, Foresters' Journal, and many other newspapers of standing have recommended this Society for the deposit of savings, and to prove an advance.

£400 was advanced in July; £500 in August; £700 in September; £800 in October; £900 in November; £1,000 in December; £1,000 in January; £1,000 in February; £1,000 in March; £1,000 on May 1st; £1,700 on May 31st, and £1,000 on June 30th to the holders of the following Certificates:—Nos. 4107, 3611, 2935, 7481, 1158, 4020, 4538, 2274, 2151, 2937.

The next advances will be £1,000 on July 31st; £1,000 in August, and £1,000 in September, all by Tender (i.e., by paying interest for the loan).

Successful members are duly informed the same day by letter. Unsuccessful members continue to participate in future advances until they have procured the sum to which they are entitled.

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Every member should provide himself with a copy of the Articles of Association (otherwise called "Rules"), price 6d. Non-members can have copies, 6d. Stamps are not to be sent as payment of subscriptions.

According to the new rule of the Society, non-members may witness the opening of the tenders or drawings as well as members. Early application should be made for admission tickets, as only fifty can be allowed to attend, so as to prevent overcrowding.

The Society is open to persons of all classes in town or country, and male or female.

Prospectus and stamp. Rules, 6d. Persons making inquiries must send a stamp.

Unsuccessful members says:—"The Public are thus enabled to procure an advance on such extremely easy terms, and the mode of repayment is made in such small sums and spread over so long a time (twenty years), that no one wishing to start himself in business, or desiring to acquire land, houses, stocks, shares, or other property, need be without the means."

CHARLES MORGAN, Assistant-Secretary.

SPECIAL NOTICE.

The Working Men's Mutual Society (Limited).

The Offices of the Society are kept open the last MONDAY in each month (July 30th), till 9 p.m., to enable persons who are engaged during the day to call and take out certificates *outlining them to participate in the forthcoming advances*. The office hours are from 10 till 4; Saturdays till 2.

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THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 3, 1877.

NATIONAL COMPETITION DESIGNS,
SOUTH KENSINGTON.

DESIGN is not a strong feature in this year's collection of national competition drawings at Kensington. We remarked last week on the paucity and weakness of the architectural drawings, and suggested the cause of failure. Taking the design for Town Hall, motto "Industria," as an example of the kind of subject placed before the student, we note the extreme redundancy displayed in the over-florid features—there is not a plain sensible window in the whole of the elevations. The windows are, of course, Gothic, with the gabled and crocketed finishings, as if there could not be too many of them. Of course we excuse youthful ambition and love of display, but the whole tendency of the design is towards a false notion of architectural ornamentation; it is like the tyro's prose composition, full of metaphors and expletives without meaning. In looking at the plan we find the offices surround a quadrangular area outside a corridor, and that the public hall and borough court are in the centre—one placed at right angles to the other; the section shows a very ornamental hammer-beam truss, one quite impossible for the span and the height and thinness of the walls of hall. Again the excessive height of the octagonal tower, with Gothic dome and lantern, is out of proportion, while its detail is too tawdry. The faults are all those of a youthful imagination let loose upon a subject far too great for the student who wants to leap before he can run. Among other designs we notice "Tempus," Lincoln, a clever water-colour study of the interior, showing the base of a pillar and some tombs; a design for a decorated fireplace, a jumble of styles with a very rococo-looking superstructure over the mantel-shelf, and with the intimation that it can be executed in "oak or marble;" what facility! a band-stand, by Charles Wilson, Birmingham, cleverly treated in iron, and some studies in decoration. The Westminster St. Mary's school contributes the larger number of the latter. We note the silver medal has been given to a rather unique design for a ceiling conceived in a Japanese spirit. The centre is deep azure, with the orb of night surrounded with stars, and the border is in four panels, filled with folial ornament, in a similar style. The author's name is Walter Dunn. A mosaic floor, by R. D. Green, is a design of some merit, but we do not like the large scrolls; they are unmeaning on a flat surface. Mary Ann Denley sends a chimney-piece, with pointed tiles, light and cheerful-looking. The silver medal is awarded to a design for sgraffito decoration for wall of entrance hall, showing an oak dado, red panels divided by pilasters with white ornament on black ground. But by far the best study in this branch of design is the decoration for a dining-room, marked "Onward," Nottingham. The author shows a strictly conventional and highly artistic design, with a bay recess and settle, and a doorway. The paper-hanging is of a rich neutral olive tint, and the whole of the colour used is low toned; the pattern of the wall partakes of a Japanese character, being covered by a square-linked panel, relieved alternately with square and round medallions in brown with devices. The dado pattern is in a series of upright panels, breaking a continuous folial pattern. The frieze is deep, and relieved by medallions with the stork or some similar bird. The colours are olive grey, puce and gold, and the

whole is a clever work, though only a book prize is awarded it. The designs for iron-work are not remarkable for a study of the material. Charles Edward Wilson, Sheffield, sends an entrance gate in cast iron, heavy in parts, while the bronze medal is bestowed on a Belfast design (Sidney M. Thompson). Bradford sends a chimney-piece in oak, with a huge canopy of antique design. The idea is a misconception; the screens which project from the fireplace on each side and carry the canopy would certainly obstruct the heat from radiating upon the sides of the room. The Westminster St. Mary's school sends a design for a street front intended for a porcelain warehouse. The general outline is not devoid of merit, but the sgraffito panels with black ground do not improve the effect, and the pillars of terra-cotta resting on the cornice of lower window are bad. Lincoln contributes a study in oils of a part of the transepts and cloister of the cathedral—a clever sketch, and with knowledge of detail, but rather heavy in tone. Of other designs we see a poor attempt at a font, the details of which are below par; a sketch for lamp-pillar, Rotherham, not happy; a flower-stand, Birmingham, chaste; a heavily-overeased clock, motto "Line by Line;" and a design for ewer and salver, by the same author, to which a bronze medal has been given, though we prefer the design which has won the book prize, also by the same hand. The silver medal for the enamelled bowl is not well bestowed.

For surface decoration and designs for textile fabrics the work this year is not remarkable, though there are some excellent studies. Kidderminster sends some studies for linoleum, carpets, rugs, tiles, &c.. We like "Nihil sine Labore," and "I do my best." The silver medal design, "Charity," Halifax, is a clever conventionalised design of leaves and fruit on a grey ground for paper hangings—the tints, red, olive, and brown, being low, soft, and harmonious. The blending is happy and varied. Northampton takes a bronze medal for a too bluish and naturalesque treatment, and the flowers are coarse. The book prize awarded to the same school is a well-covered ground with leaves and berries of a light olive tint. Leeds wins a book prize for "Work"—a clever wall-pattern, conventionally arranged. We like, *ab initio*, City and Spitalfields, and Bradford Mechanics' Institute, as good patterns of wall hangings. The latter is a very pleasing arrangement of the daisy type. We note also "Onward," bronze medal pattern, Westminster; "Try on," Wolverhampton—a green ground and leafage.

We generally turn to the lace designs as marvels of handiwork and artistic elegance, and those exhibited this year are by no means behind previous attempts. The gold medal is awarded to a design for Flinders point—Dublin carrying the honour. It is drawn on a black ground, and the pattern is a rich conventionalised one. Birkenhead wins the silver medal. For lace curtains, the gold medal is bestowed on "Onward," who sends by far the best designs. No. 5 is *recherché*—the middle portion being worked with ferns and rich folial borders. "Onward" also obtains the silver medal for a rich lace curtain of a square panelled pattern, thoroughly lace-like. The bronze medal is won by the same hand, also a book prize for a very rich mantilla, and his shawl patterns, and *rotonde*, are unique designs for lace—all showing a masterly knowledge of the material and manufacture.

Among the works of the art-training students, we notice a design for a small mansion by J. A. Kenn, in a Gothic dress, not devoid of architectural merit, but with a wasteful plan, and illustrating the vice

of attempting architectural design without the necessary qualifications in construction. In drawings from the round we find the stock capitals and friezes of the schools of art have been reproduced. Dundee exhibits an Early English capital, well known to all students of the Government schools, and rather a favourite model. We think the Dundee a better copy than the one that has gained the book prize. "Tempus," Lincoln, sends a better drawing in oil than either, though it is without a prize. Edinburgh Male School also goes unrewarded, though the lion's head cymatium is a cleverly shaded copy of the east in oils. A silver medal is taken by Rotherham for a drawing of a Byzantine panel, in which birds are gracefully combined in interlacing foliage. The charcoal studies from the round are as numerous as ever—models from the antique figure being most favoured. The gold medal goes to the Art Training School, Kensington; the Bloomsbury Female School, "Conquiesco," taking the silver medal for a gladiator, in which the muscled are cleverly and boldly shown, with good foreshortening of the advancing portions of the figure. A silver medal is also given to "Set not the Dial by your own Watch," and a bronze medal to the group of wrestlers under the same motto. Of course we have several chalk and oil studies of the torso of Venus, Hercules, the Laocoon, and other models of antique sculpture. The heads in charcoal form an interesting group of studies. Manchester wins the silver medal for a girl's head; Salisbury a book prize for a very expressive girl's face; and Lambeth School a bronze medal for a capital life-rendering of a sailor's head. The silver medal is also given to a sepia drawing from measurement of the north porch of St. Paul's Cathedral to H. P. Watson, Art Training School; and another for a fire-dog, by E. Singer.

To add to our previous notice of the subjects in water-colour, we notice a book-prize piece (Selby)—a clever water-colour sketch of an architectural subject; a silver medal for a group of fruit and tarts; a group of pomegranate and dates, handled with considerable breadth of colouring; "Ars Longa," fruit and metal goblet, with colours well blended, no prize—though it, in our opinion, surpasses "Honori," distinguished by a gold medal. Limerick deservedly takes a prize of books for basket and apples overturned—the blue drapery and the rendering of the apples is quite equal to those awarded the highest prize, and there is a breadth of colouring. "Strive" is the motto of a jar of preserved ginger, onions, and eggs, broadly coloured, and the Edinburgh Female School stands high for its present exhibits. The same may be said of "Onward," Nottingham—a clever group of pine apple, blue vase, and drapery. A lovely group of geraniums (Sheffield) must not be overlooked; while among the oils we cannot leave the exhibition without saying a word for Newcastle-on-Tyne in "Cede Deo"—a well-painted blue Lambeth vase, with a basin of dried leaves against a background of drapery; and, by the same author, a clever sketch in oil of a hedge, in which a "tangled mass" of briar, honeysuckle, and ferns has been charmingly depicted. On the whole we think the provinces have won an honourable place this year.

THE RUBENS EXHIBITION AT
ANTWERP.

WE have received a rough copy of the catalogue of pictures by Rubens, to be collectively exhibited at Antwerp, the city of the great painter's birth. It does not include, of course, those which the Queen has allowed, for the first time, to be photographed; nor does it represent, other-

wise than in shadows, the celebrated Rubens' Gallery in the Louvre, the most perfect illustration of the Flemish artist's genius existing. Still, the exhibition, judging from the imperfect epitome before us, will be one of the deepest interest, as regards both the history of art and the career of the artist himself, and it is curious to note how closely the one was identified with the other. Antwerp is justly proud of her "Sir Peter Paul," whose life was, in its way, a romance. In fact, Antwerp is half made up of him, his house, and his works. But we have now to do with the forthcoming display of his genius at the easel, leaving out of sight his characteristics as a soldier, a scholar, and a statesman. The "School of Antwerp" undoubtedly owes its origin to him, though the title is claimed for earlier artists, who, no doubt, in their generation laboured conscientiously for the furtherance of the fine arts. Who that has visited the "town of the steeple" has not looked over the catalogue of the Antwerp Museum, compiled by the Council of its Royal Academy? A prodigious industry has been bestowed by the Council of the Guild upon the history of the Antwerp painters—the Van-Dycks, of which name no less than twenty-seven sat in the Painters' Chamber; the elder and the younger Teniers; Quintin-Matsys, Durer, Franz Floris, and Martin-de-Vos. But Rubens was the crown of all, as he is the crown now, shortly to be honoured with a new laurel wreath. It was he who infused the spirit of Italy into the Flemish style, and hence his surpassing excellence as the pupil of Romano, Tintoret, and Titian. The impression of one among these masters, at least, is visible in his copies from "The Marriage of Psyche" and "The Fall of the Titans," both, in the original, afterwards attributed to him in hundreds of catalogues. But it was necessary for Antwerp, in order to illustrate, historically and for all the world, the genius of her mighty master, to borrow his canvases wherever they were available. Thus, how could the collection have been complete without the "Rainbow," the "Wood of Laeken," or the "Atalanta and Meleager," from Madrid, all three of which are to be lent; or the "Château of Stein," from the National Gallery, with the "Peace and War" in the same place. The distribution of this painter's works is remarkable. His ghastly "Scourging of Our Saviour" is in Antwerp itself, with the equally terrible "Martyrdom of St. Lieven," but the "Brazen Serpent" is in London, and the "Great Judgment" at Munich, startling every eye by its colossal proportions and furnaces of colour. It will be a singular sight, the gathering in one gallery, for a time, of these wonderful pictures, with the not less marvellous contrasts they present. Thus, the catalogue tells us, that group, most unlike Rubens of all, and yet one of his masterpieces, of "The Virgin being Taught to Read by St. Anna," tenderly imagined and exquisitely painted—a picture with which Antwerp has never parted—will hang by the equally beautiful Magdalen among the "Four Penitents," lent by the King of Bavaria. Then there will be Lord Ashburton's treasure, "The Wolf Hunt," and that singularly misnamed portrait known as the "Chapeau de Paille." The young beauty is not wearing a straw, but a felt hat, and the mistake arose through a confused translation of terms. Again, the mother city of Rubens will borrow from Bavaria his "Seven Boys," and, indeed, there is hardly a town of any position on the Continent which does not possess an original from his hand. We know, at any rate, with what haste and rapidity he worked. Between the ages of nineteen and sixty-two he gave thirteen hundred pictures to the world; he generally worked standing—his hand hardly ever re-

quired the steadying of the maulstick; and, whether these tales, like most others of the kind, be apocryphal or not, he certainly was a master so complete that a thorough illustration of his art-life, such as is proposed at Antwerp, must be of an interest overpassing all common occasions. The catalogue informs us that it will include the "Offering of the Wise Men," containing thirteen figures of more than life size, and said to have been begun and finished in eleven days, will be sent from the Grosvenor Gallery, with copies from his own brush, now in the Pinacothek at Munich; the "Rape of the Sabines" and "The Interposition of the Sabine Women," from Bath House—the last a wonder so long as the art of painting lasts; the portraits of Isabella Brandt and Helena Fairment, and the universally-familiar "Going to Market." From Bleuheim Palace will go the celebrated "Rape of Proserpine." In Antwerp itself will be found the awful picture, usually veiled to strangers, of "The Descent from the Cross," concerning which so furious a controversy raged between the arquebussiers of the ancient Flemish city and the artist himself. But it is imperfectly known what became of the canvases painted by him, and hanging under his own roof, after his bankruptcy, when the entire cabinet was purchased by an agent for George Villiers, Duke of Buckingham, or how far his work was then mixed up with that of Van Dyck, Snyder, or Jordaens, his pupils; so that the critics at the Antwerp Rubens Exhibition will require all their perspicacity to distinguish between the doubtful and the true. Such an exhibition however, is, so far as we are aware, unique, and may well test the connoisseurship of amateurs. No artist has had more copyists—witness his "Prometheus" and "Daniel in the Lion's Den;" no man ever had his name more frequently forged on canvas, whether as "Pietro Paulo Rubens," or "Petrus Paul Rubennis." He complained, in fact, to the English Ambassador that the Prince of Wales had been asked to purchase "a piece scarce touched by his own hand," and it will be an advantage to art-history if the galleries at Antwerp enable competent critics to separate the specious signatures of Peter Paul Rubens from his actual works. The "Holofernes" and the "Hunt of Lions" are, to say the least, dubious; but there can be no question concerning "The Crucifixion of St. Peter," which, being a fixture at Cologne, cannot be sent to Antwerp, though a copy of it will, we are told, be there. If the somewhat disjointed preface to the catalogue, indeed, be justified in its promises, we shall have the scarcely-known illustrations of the "Æneid" from Mantua, the studies after Titian and Veronese from Venice, the portrait of Philip III. from Madrid, the "Circumcision" and "St. Ignatius Working a Miracle" from Genoa, and so forth; but there are some of his masterpieces which cannot be mustered for show—those in the Gallery of the Luxembourg, in the Convent of the Carmelites in the Spanish town of Loeches, in the grand saloon of the Royal Palace at Madrid, the ceiling of the Banqueting House at Whitehall, the "Bath of Diana," the "Rescue of Perseus by Andromeda," the "Rape of Helen," the "Judgment of Paris," "Venus and Minerva," and the "Triumph of Bacchus." It is not to be expected, moreover, that the British Museum will lend its specimens, or, at all events, more than fac-similes of them, to the Exhibition at Antwerp. They were purchased at the Buckingham sale, in 1834, and form a cabinet of examples in niello altogether incomparable, all traceable to the Rubens school, if not to the master's own hand; nor is it to be expected that the former *chef d'œuvre* of the Penrice collection, "The Judgment of Paris," will, to employ a popular term,

put in an appearance; neither the "Book of Costumes," also at Bloomsbury, though promises are made from Stafford and Devonshire Houses, and particularly from Hertford House, where hangs that superb work, "Christ Giving the Keys to Peter," painted in the very meridian of the master's power for the Cathedral of St. Gudule, at Brussels, besides a "Holy Family," which Lord Hertford shows himself liberal enough in allowing to cross the seas. Contributions too, we perceive, are to be made from the Holford, Breadalbane, Apsley House, and Coleridge collections, and, as already noticed, Windsor Castle, where "The Rubens Room" is a perfect treasure-house of art. Thence, however, only photographs will go to Antwerp:—Rubens' portrait of his second wife; "St. Martin Dividing his Coat with a Beggar," "The Virgin supporting the Infant Christ," "King Philip IV. of Spain on Horseback," the artist's own portrait, a winter landscape, other landscapes, other portraits, and so on; with none of which the public have hitherto been familiarised, even through the medium of engraving. It is almost astonishing, however, to note through what labyrinths the art-hunter must pursue his game if he be really intent on gathering a real Rubens' cabinet to exhibit, if only for a limited time. He is sent from Stanstead House to Arundel Castle, thence to Oxford; from Oxford to Winchester and Salisbury; through Bath, Birmingham, and Edinburgh, to York, Chatsworth, and Alton Towers: for Rubens is ubiquitous, his pencil is everywhere; and the audacious idea of the day is to concentrate his genius, as it were, in a focus. So far for England. Upon the Continent the dispersion of the Rubens' canvases has been far wider, notwithstanding the great galleries at Paris, Dusseldorf, and the Hague, from the two latter of which, however, loans, it is stated, have been guaranteed, together with Brussels, Amsterdam, and Bruges. If, collectively, they cannot furnish magnificently a limited space of wall for a few months, it will not be the reputation of Rubens that will suffer. Of course we have not by any means exhausted the account of the distribution of the master's works in England; but the gathering of them at Antwerp from various cities and galleries of the Continent must be still more remarkable—from St. Walpurg, in the antique Flemish city itself; Brussels, Berlin, St. Petersburg—where in the Palace of the Hermitage the "Adoration of the Magi" occupies a room, lined with jasper and chalcidony, by itself; the "Ascension," at Mechlin; the "Jouas Cast into the Sea," at Mechlin also; and the "Marriage of St. Catherine," a marvel of grouping and colour, at Frankfort; though a fine copy of it is to be seen in the Duke of Rutland's cabinet at Belvoir Castle. There are others, however, which will not be allowed to leave the hands of their actual owners, even for an hour. "The Descent from the Cross," at Lièves; the "Adoration of the Magi," at Paris—at least it is not enumerated in the catalogue; and the "Christ brought before Caiaphas," little known to the world, except through the brilliant engravings of Gaspar Huberti. To Antwerp, moreover, has gone back again, we are told, after a curious history, the "Christ's Charge to Peter," a work glowing with the highest genius of the artist, sold by auction over and over again, never commanding a price equivalent to its value, and often disparagingly compared with a replica possessed by the Prince of Orange. We may look out, then, for a Rubens controversy upon the most fiery scale, and, as the French catalogue says, "the picture will now be brought into court; its judges are the public, to whom it confidently appeals, and it prays that a verdict of acquittal may be recorded against those who have conspired against its cha-

acter and fame." The jury this time will sit at Antwerp; whither also are to be sent, from Munich, "The Martyrdom of St. Lawrence," "Job," tormented by three demons; "Job," seated on a dunghill, and enduring the bitter reproaches of his wife; another "Adoration of the Magi," from the museum at Brussels, with a "Procession to Calvary," hung on the same walls, and the "Adoration of the Shepherds," from Bree-street, Amsterdam. Thus far-scattered are the relics of Rubens. The catalogue points to his "Diogenes seeking for an Honest Man" as from the Louvre. This is incorrect, or, as the French themselves say, "inexact." The picture at the Louvre is a copy; the original is at Munich; but both will come, together with a host of others, from the unsurpassed Bavarian galleries. "The Assumption," "The Adoration of the Shepherds," "The Reconciliation between the Romans and Sabines," "St. Michael overthrowing the Great Dragon," "The Ruin of Sennacherib and his Host," "The Descent of the Holy Ghost," the "Silenus and Satyrs," and so forth. Indeed, except for the accident of its being his birthplace, and easy of access from all quarters of Europe, we might rather wonder why Antwerp and not Munich was selected as the locality of the forthcoming Rubens Exhibition; for, indubitably, his principal illustrations are there; but, it may be supposed, the old house on the Scheldt, in the Flemish city, where the artist was born, and where Quentin Matsys wielded his hammer, has its charm. From the Luxembourg, it is to be feared, few contributions will be obtained. They consist principally of sketched episodes in the life of Marie de Medici—her education, her marriage, her embarkation, coronation, government, flight, and ultimate fate. From Dresden, again, the catalogue assures us, will be volunteered some of Rubens' most characteristic portraits, actual and ideal: of a gentleman, of a lady, of the Magdalen, of the artist's children, and of sundry queens. Vienna, too, with Hesse-Cassel and the old Lichtenstein gallery, with the Escorial itself, Sans-Souci, Frankfort, and that mystic personage, "the Landgrave of Fürstenburg," will add their riches to the Rubens triumph, besides Brunswick, Vienna, and the palaces of Genoa. In truth, there is scarcely a corner of Europe wherein we do not find that the hand of the magnificent Antwerp master has been busy; and well, therefore, may Antwerp celebrate his festival, by displaying as his monument a collection of his works. It was a happy idea, only marred by the impossibility of its being carried out in its entirety. But, notwithstanding this drawback, which the promoters of the exhibition must have anticipated, the catalogue already printed, defective though it be, promises us a splendid chapter in the history of Flemish art.

EARLY CHRISTIAN ARCHITECTURE. No. XI.

WE present our readers to-day with one of the most unique examples of ancient planning to be found of the earlier ages of the Christian Church. It is the plan of the Church of San Lorenzo Maggiore, at Milan, with its dependent chapels—a building resembling in its main features the celebrated structure at Ravenna, known as the Church of St. Vitale. It was once the Cathedral of Milan, and it is supposed to have been built before the time of Justinian; Hübsch thinks the foundation belongs to the fourth century, and the structure has undergone various transformations since it was destroyed by fire in 1071. The church, indeed, may be regarded as a further development of San Vitale, and another step towards the solution of

the problem of covering a square with the dome, which the Byzantine architects ultimately achieved. It will be observed, on referring to the plan, that the square, octagon, and circle are all combined in a remarkably ingenious manner—the four alternate sides of the octagon forming segmental apses, with an outer ambulatory. The present dome is octagonal, 78ft. in diameter, and the internal diameter of the building is stated to be 150ft. Referring to the plan of M. Hübsch we find an atrium, with colonnade in front; while at the east there is an octagonal building, thought by Mr. Fergusson to be a tomb-house, but called by Hübsch the Chapel of St. Hippolytus. On the north side is another, though smaller, octagon apartment, named the Chapel of St. Sixtus; and on the south side a still larger structure dedicated to St. Aquila. The aggregate of structures was never accurately delineated till Hübsch undertook the task, and we therefore translate his remarks:—"This celebrated work (subordinate to which are the chapels of St. Hippolytus, St. Sixtus, and St. Aquila, of almost equal antiquity) has neither been thoroughly examined nor accurately represented hitherto. Nevertheless, even setting aside its magnificent structural dimensions, it throws most valuable light on Early Christian architecture. The octagonal dome which surmounts the principal enclosure is no less than 78ft. in diameter, and from the floor to the crown, it was 127ft. in height. The internal diameter of the building is 150ft. During the last six years, I have made repeated examinations of this edifice, and have frequently compared it with other monuments of a similar kind, notably those at Ravenna, and with descriptions of ancient historians. I may consequently, fairly claim exactness in the plans [reproduced by us], wherein I have endeavoured to show what was evidently the original form of the building. The original walls are concealed by numerous chapels of later date, indicated by dotted lines in the plan (Fig. 11). The existing cupola and most of the more prominent parts are chiefly of modern construction, though it is not very difficult to point out where departures have been made from the original details. The external walls are preserved, and the principal pillars of the interior up to a considerable height. The brick masonry is constructed with so much care that archaeologists have fancied it to be a classic Roman work. The original cupola fell in suddenly in 1573. The archbishop of the time, St. Charles Borromeo, gave orders to Martin Bassi to rebuild it, and the work was completed in 1591. The architect, in order to reassure the church authorities, and to prove that the eight pillars were sufficient to support the cupola, notwithstanding their small diameter, wrote a treatise on the subject, wherein he mentions the cause of the accident, and describes the ancient cupola with the arches and the semi-cupolas surmounting apses. As will be seen, the primitive plan, which is of great originality (see Fig. 1), was followed in the rebuilding. The central space, covered by an octagonal cupola, forms a perfect square, bounded by twelve large pillars, with four apses or exedrae. It is the Greek cross, with arms short and rounded, surrounded by a vast ambulatory or aisle of equal breadth, so that the form of the interior, that of a Greek cross, is reproduced externally. The aisle is divided into two stories, as shown in Fig. 5, and reminds one exactly of that of St. Vitale, at Ravenna, which remains in its original form. At St. Vitale may be seen in the façades the same ribs with this difference, that St. Vitale is polygonal, whilst the outer walls of San Lorenzo are in segments of circles, and approach the apse form of the most ancient churches of Rome. In front of the principal façade there was a

porch of three entrances, and which, judging by some remains, was vaulted." Such is the general description given us by Hübsch of this splendid domical church. The same authority rather seems to think the porch extended and formed an immense atrium. He also infers that the altar was placed in the centre, as at St. Stephen the Round, at Rome, which we shall describe further on.

The plans, which we publish from the authentic work of Hübsch, show by the relative shadings of the walls, the main parts of the structure. M. Hübsch, in his elaborate description of this edifice, gives us a section of the structure carefully taken from measurement. The base of dome is gathered into a regular octagon by a series of five enlarging arches, or species of squinch, shown by the dotted lines in our plan, and from these the dome springs. It is of a pointed section, pierced below by a series of circular-headed windows, two in each side, just above the roof of the circular aisle. The four apses, or segmental colonnades, on the alternate sides have octagonal columns below marked *h* (Fig. 1) supporting an arcade of three round arches in each apse, the capitals to which are bevelled at the angles converting the octagon to a square under the abacus. Above, in the gallery plan (Fig. 5), the circular arcades are subdivided, forming in each apse an arcade of six arches. The shafts to these are round, and have a species of Ionic capital. From these circular arcades or screens spring semi-domes decorated with figures in mosaic, which abut against the alternate sides of the inner octagon. The outer aisles, both on the ground and gallery floors, are groined, as will be noticed by the dotted lines in plan. The great arches supporting the dome are also circular, the archivolts being canted—that is to say, their soffits are bevelled to agree with the canted piers noticed in plan, and which coincide with the segments. These piers are panelled with marble, and the arch soffits have a kind of guilloche on them. The four squares which protrude at the junction of the lateral apses are angular towers terminating at the base of dome. The dome has a small octagonal lantern, and is roofed by a flat roof of timber, the walls of the drum being carried up above the dome, and pierced by openings above its extradosal surface. Turning to the smaller lateral structures the chapel of St. Hippolytus or tomb (marked 4 on plan) is groined in the centre by the introduction of two circular vaults—the four lateral arms being also arched at the same level. Hübsch shows a flat-pitched roof over—the angle columns are Corinthian in character. The smaller northern structure (3), Chapel of St. Sixtus, is a simple dome, octagon on plan, with similar lateral recesses arched below the dome. The larger structure of St. Aquila on the south side, marked 2 on plan, is a repetition of the last, though on a larger scale—45ft. in diameter—and with a row of circular apertures round the base of dome, with an upper arcading round the springing, above which is a flat roof and lantern so characteristic of the Pisan or Romanesque style, the external angles being relieved by slight projecting pilasters divided into three stages by string courses. The connecting vestibule is of two stories, the upper one vaulted. In the upper plan, Fig. 6, the triforium or gallery round the dome of the octagonal structure, or church of St. Aquila, is seen, and this is formed in the thickness of the wall. The second stage is illustrated by a half plan, taken at the level of the upper arcade (see Fig. 8).

These constructions are chiefly interesting to us as examples of the development of the dome, which reached its acme in Sta. Sophia in the reign of Justinian, and the

general features of which we described and illustrated in our last volume. The angles or towers of San Lorenzo supplied the office of counteracting buttresses to the thrust of the great arches carrying the dome, but the use of the pendentive had not been fully developed. In the smaller chapels the dome is seen to spring from a solid wall or substructure, which was pierced laterally, giving all the advantage of area with deep counterforts. In the plans of the four structures, indeed, we trace the successive steps of a problem which the Byzantine architects worked out with astonishing vigour and beauty. The details also of this example are specially interesting. The arches are composed of bricks of the usual long shape; the cornices are simple projecting courses of bricks, relieved in the lower courses by plain brick dentils, and the whole effect is the result of singularly vigorous forms, plain surfaces, and vertical brick piers at the angles. Of the other illustrations, Fig. 12 is the plan of the sepulchral church of Galla Placidia, Ravenna, now known as the church of SS. Nazario and Celso, constructed between the years 420 and 450. The three arms form chambers for three sarcophagi. Its polychromatic decorations are still perfect. The other plans we shall describe in our next.

THE COST OF THE MANCHESTER TOWN HALL AND ITS PROPOSED MURAL DECORATIONS.

AT the monthly meeting of the General Purposes Committee of the Manchester City Council last week, the following report by Mr. Waterhouse was considered:—"As requested by the committee at the last meeting, I have made a careful calculation of the amounts which are due or will become due to the various contractors on the building. The total amount of the various certificates I have already granted appears to be £149,179 19s. 7d.; and, as nearly as it is possible to judge, a sum of £29,500 will cover the various outstanding claims. From this latter amount, however, may be deducted the sum of £2,155 which I understand has been paid to M. Cavaille-Coll, for which I have given no certificate. The sums I have mentioned are inclusive of furniture, decorations, organ, bells, clock, machinery, and all other matters coming within my cognisance. In this connection I wish to remark that I have observed in the report of the proceedings of the last meeting of the General Purposes Committee that some uncertainty appears to exist as to what may be due to me with regard to certain portions of the work, and especially with regard to the proposed mural paintings. As to this latter point, I beg to remind the committee that I have already distinctly volunteered to do all that lay in my power in connection with this matter without any pecuniary remuneration whatever. I have from to time urged the carrying out of this scheme solely from a conviction that I so strongly feel that the building furnishes a great opportunity for pictorial embellishment of the highest order. I do not wish to refer at length to what I have done in the matter, but you are aware that I have paid two visits to the Continent in pursuing my investigations on the subject, that I have sought and obtained interviews with a great number of artists and others, and that I have presented to the Decorations Sub-committee many and voluminous reports. For my trouble, however, I shall feel myself amply rewarded when the scheme shall have been brought to a successful issue. It may not be out of place, perhaps, to state on this occasion that when the time shall come for me to present my bill for professional services in connection with the new Town Hall, it will be my duty to divide my charges under two respective headings—one relating to the structure of the building, with the fittings and furniture designed by me, and the other relating to the works which have been carried out more or less under my superintendence, and which involve on my part negotiations,

and the choosing or revision of other persons' designs. In the latter category will be included the organ, the clock, the bells, the upholstery, and some portion of the decorations. For these works my charge will be 2½ per cent., and for the general works my fee will be, as was arranged, the usual one of 5 per cent. After the remarks which have been made in the General Purposes Committee, I feel that it is as much a duty to your committee as to myself that there should be a clear understanding in this matter."

THE SEVERN TUNNEL.

THE conclusion of the meetings of the Institution of Mechanical Engineers, at Bristol, was marked on Thursday in last week by a visit to the Severn Tunnel Works, by invitation of the Great Western Railway Company, who acted as hosts in an excellent manner. On arriving at Portskewet the party—who numbered about 140, and included the President (Mr. Hawkesley) and other prominent members of the Institution—were met by Mr. J. J. Geach and Mr. A. Gooch, the resident engineers, and were conducted by these gentlemen over the surface works of the undertaking, there not being sufficient time to go underground. One of the most interesting features of the visit was the exhibition of Mr. Geach's specially designed rock drill at work. Pieces of stone of the same character as those encountered in the tunnel were placed on a bench and pierced by one of the drills worked by the air-driving machine. Compressed air at a tension of 60lb. to the square inch was used, and the drill made 600 to 700 strokes per minute, rapidly forming a 1½in. hole through the section of rock. The average speed of boring was stated to be 9ft. per 24 hours, but under favourable circumstances 13ft. has been pierced. With this drill 1,500 yards have been bored through in the heading, the total distance to be got through being about 2 miles. This heading will be subsequently enlarged, and form part of the tunnel proper. The air compressors by which the drill is driven, and the workings ventilated were also shown. The powerful pumping engines, capable of throwing 100,000 gallons per hour, were seen at work. The visitors then inspected a new permanent shaft in course of construction, fitted with a pump capable of throwing 150,000gals. per hour a height of 180ft. In the course of conversation at the tunnel the opinion was generally expressed that the undertaking, if completed, will prove a great advantage to the trade of Bristol, and give a powerful impetus to the long-talked-of project for a Channel tunnel.

The members, after a full inspection of the Tunnel works, reassembled on board the special steamer, and after a cruise past Clevedon, were landed at Portishead and viewed the docks, now nearly completed, Mr. Barbenson (resident engineer) and Mr. Daniel (contractor) pointing out the principal features. The party re-embarked and proceeded to the recently-opened Avonmouth Docks, where they were met by Mr. H. Dalrymple (managing director), Mr. Brunles (engineer of the dock), Mr. J. Abernethy (engineer, Alexandra Dock), and Mr. J. B. Mackenzie (resident engineer, Avonmouth Dock), and examined the docks, especially noting the hydraulic machinery. On Friday the members visited the Great Western works, at Swindon, the company again being their entertainers.

MR. RUSKIN ON CHURCH RESTORATION AT BEWDLEY.

THE letter of Mr. Ruskin, quoted below, appears in the *Kidderminster Times* of Saturday, in reference to the "restoration" of Ribbesford Church, near Bewdley. The church has become so dilapidated from age that it is thought dangerous to continue the services there, and this has led to the question of a restoration being mooted. Plans have been prepared by Mr. Preedy, architect, of London, and it is estimated that £2,500 would be required to carry them out. The Rev. Mr. Ingham, the rector, has received promises of nearly £1,000, and the provisional committee appointed recently will, we believe, recommend

to the vestry the adoption, in substance, of Mr. Preedy's plans. The "Archer Knight," mentioned by Mr. Ruskin, is represented killing a salmon and a deer with one shaft, and this is supposed to refer to the abundance of game in the neighbourhood in bygone times. Ribbesford formerly belonged to the church at Worcester, and the subjects of the manor were required to furnish weirs for taking fish, and appointments for hunting as well. Mr. Ruskin's letter is as follows:—

"Brantwood, Coniston, Lancashire, July 24, 1877.

"Sir,—It chanced that on the morning of the Sunday when the appearance of danger in the walls of Ribbesford Church began seriously to manifest themselves (according to the report in your columns of the 21st inst.), I was standing outside of the church, listening to the singing of the last hymn as the sound came through the open door (with the Archer Knight sculptured above it), and showing to the friend who had brought me to the lovely place the extreme interest of the old perpendicular traceries in the freehand working of their apertures.

"Permit me to say, with reference to the proposed restoration of the church, that no modern architect, no mason, either can, or would if they could, 'copy' those traceries. They will assuredly put up vile geometrical models in their place, which will be no more like the old traceries than a Kensington paper pattern is like a living flower. Whatever else is added or removed, those traceries should be replaced as they are, and left in reverence until they moulder away. If they are already too much decayed to hold the glass safely (which I do not believe), any framework which may be necessary can be arranged to hold the casements within them, leaving their bars entirely disengaged, and merely kept from falling by iron supports. But if those are to be 'copied,' why in the world cannot the congregation pay for a new and original church, to display the genius and the wealth of the nineteenth century somewhere else, and leave the dear old ruin to grow grey by Severn side in peace?—I am, sir, your faithful servant,

"JOHN RUSKIN."

THE APPROACHING ANNUAL MEETINGS OF THE ARCHÆOLOGICAL SOCIETIES.

THE annual Congress of the Royal Archæological Institute will this year be held at Hereford, under the presidency of the Bishop of that city. The following are the presidents of sections:—

ANTIQUITIES.—President, Sir William Guise, Bart., President of the Bristol and Gloucestershire Archæological Society; Vice-President, Rev. H. M. Scarth, M.A., Hon. Canon of Wells.

HISTORY.—President, A. J. Beresford Hope, Esq., M.P., D.C.L., LL.D.; Vice-President, Rev. John Jebb, D.D., Canon of Hereford.

ARCHITECTURE.—President, J. Gambier-Parry, Esq.; Vice-President, J. H. Parker, Esq., C.B.

The meeting will commence on Tuesday next, and the general programme is as follows:—

TUESDAY, August 7.—Reception by the Town Council. In the afternoon to visit the Cathedral, an historical description of the fabric of which will be given by Sir Gilbert Scott.

WEDNESDAY, August 8.—Railway Excursion to Ludlow and Leominster Churches, &c. The churches will be described by Sir Gilbert Scott, and Ludlow Castle by Mr. G. T. Clark.

THURSDAY, August 9.—Annual Meeting of the Institute; afterwards visit to the City Antiquities. In the afternoon, Excursion to Sutton Walls and Marden Church, via Holmer, Pipe, and Moreton-on-Lugg, and return via Sutton.

FRIDAY, August 10.—Excursion through Haywood Forest, to Kilpeck Church and Castle; thence to Kenderchurch, Ewyas Harold Castle Church, and Abbey Dore Church, to Whitfield, where the party will be received by the Rev. A. Clive; thence to Madley Church, and home by Clehonger and Belmont Priory. Mr. G. T. Clark will, on the sites, lecture on the Castles of Kilpeck and Ewyas Harold.

SATURDAY, August 11.—Railway Excursion to Ross, Goodrich Castle, and Flanesford Priory.

MONDAY, August 13.—Excursion to Kenchester (Magna Castra), thence along Roman-road, crossing Offa's Dyke, through Garmon's-park, to Byford Church, Monnington Church, and Moccas, over Moccas bridge, thence to Bredwardine Church; returning over Bredwardine-bridge, via Staunton-on-Wye and Norton Canon, through Foxley Grounds, to Mansell Lacy, Briansop, and Credenhill Church and Camp.

TUESDAY, August 14.—Left open for Tewkesbury Abbey, &c., on invitation from the Worcester Diocesan Architectural and Archæological Society, who hope to arrange an excursion to Tewkesbury for this day, particulars of which will be duly announced.

The temporary museum of the Institute will be formed in the museum at the Free Library, under

the direction of the Rev. F. T. Havergal and Mr. J. T. Owen Fowler, by whom objects for exhibition will be received.

Further information as to tickets, &c., will be found in our advertising columns.

The British Archaeological Association have selected Llangollen as their starting point, and the following is their programme:—

MONDAY, August 27th.—Opening meeting at the County Hall, Llangollen, at 5.30 p.m. Members and visitors will then be conducted to Plas Newydd, formerly the residence of the "Ladies of Llangollen." Public dinner in Assembly-room. Inaugural speeches, &c.

TUESDAY.—Visit at 9.30 a.m. to the Castell Dinas Bran, and the ruins. Leave Llangollen at 12.30 p.m., arriving at Wrexham at 1.5 p.m., when the church will be described by Mr. B. Ferrey, F.S.A. Luncheon at Wrexham. Afterwards to Gresford Church, &c., and return to Wrexham for the 6.25 p.m. train, arriving at Llangollen at 7 p.m. for evening meeting.

WEDNESDAY.—Leave Llangollen at 10 a.m. in carriages for inspection of Offa's Dyke, which will be explained by Mr. J. Tom Burgess, F.S.A., then to visit Chirk Castle. Luncheon at Chirk, and then in carriages, by Pont Cysylltu, to visit Valle Crucis Abbey, and Elisig's Pillar. The abbey will be described by Mr. Loftus Brock, F.S.A., and others. Mr. Bloxam, F.S.A., will give the history of Elisig's Pillar. Return to Llangollen. Evening meeting at 8.30.

THURSDAY.—Leave in carriages at 10 a.m., and visit the site of Owen Glendower's House (Sychant), Mound, and Farm, on which Mr. George R. Wright, F.S.A., will make some observations, and then on to Corwen Church, Rûg Chapel, which will be described by the Rev. W. Richardson, B.A. Ascent of the Gaer, an ancient British encampment. Afterwards luncheon at Corwen. Return to Llangollen for evening meeting.

FRIDAY.—By special train to Dolgelly, at 8.45 a.m., for a visit to the remains of Cymer Abbey, Abbot's House, &c., which will be commented on by Messrs. Wynne, John Reynolds, Loftus Brock, and others. Luncheon at the Golden Lion Hotel, Dolgelly. At 2 p.m. by special train to Bala; and there carriages will convey them to the ancient Manor House of Rhiwaeod, which will be described; then to Palé, the seat of Mr. Robertson, M.P., and Llanderfel Church. Special train to leave Llanderfel at 6.30, arriving at Llangollen for evening meeting.

SATURDAY, Sept. 1.—VALE OF CLWYD.—Leave by train at 9.50 a.m. for Llanhaiadr, via Corwen. On arrival at the station, carriages will be in readiness to convey the members and visitors to the church, and then on to Denbigh, for luncheon at the Town Hall. The castle will afterwards be visited and described, and the party will leave by train for Derwen Church. Leave Derwen by special train at 6.35, arriving at Llangollen for the evening meeting.

MONDAY.—Leave by train to Mostyn at 9 a.m. for the examination of library, &c., at Mostyn Hall, afterwards it is proposed to visit the remains of Basingwerk Abbey and the Holy Well of St. Winifred, and return to Llangollen in time for the closing meeting and reading of papers.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

MIDLAND INSTITUTE.—The members of the archaeological section of the Midland Institute had their last walking excursion for the present summer on Saturday. Leaving the Great Western Railway at Kingswood, the party set out to walk to the 15th century mansion at Baddesley Clinton. They were met at the gateway by the owner, Mr. Marmion Edward Ferrers, who conducted them over the house. On leaving the house, Mr. Ferrers conducted the party to Baddesley Church, where he pointed out the portions of the building of chief interest. From these along some well-wooded roads, and through fields skirting the well-known Hay Wood, the party made their way to Wroxall Abbey and Church. Mr. Everitt read a description, taken from "Churches of Warwickshire," of this interesting 14th century building, once the conventual church of the then adjoining abbey. On leaving the church the members were allowed to visit the remains of the abbey buildings. The members next made their way to Rowington, paying a hasty visit on the road to the picturesque half-timbered house, known as the Shakespeare House, where they were kindly received. After tea at the Elephant and Castle Inn, they visited the church, where the vicar received them. After a stroll through the vicarage gardens, the members returned to Kingswood Station, and reached Birmingham about ten o'clock.

SUSSEX ARCHÆOLOGICAL SOCIETY.—The annual general meeting of the Sussex Archaeological Society has been arranged for Thursday next, the 9th inst., when Horsham is to be visited. The members will assemble at the Town Hall at noon, and after the business meeting the temporary loan museum to be arranged in the Town Hall will be examined, and the church of St. Mary will be visited. After a public dinner it is proposed to proceed to Chesworth, and, if time permit, to Sedgwick, where the remains of the ancient castle are to be examined.

THE NORTH STAFFORDSHIRE ARCHÆOLOGICAL SOCIETY.—The fourth excursion of the present season in connection with the above society took place on Saturday week, under the conduct of Mr. A. Scrivener. The day's programme consisted of a visit to Tamworth, Seckington (Warwickshire), and Clifton Campville. Arriving at the former place by the 9.45 train, the party at once proceeded *en voiture* to Seckington, the Saxon *Seccondum*. At this village, which is situated in the midst of a beautifully wooded country, an early defensive earthwork was visited. The church, dedicated to All Saints, was the next object visited. Among the points of interest in the interior are the remains of an old carved oak screen, and in the north wall of the nave the recumbent effigy of a lady murdered by her husband, who afterwards founded the Abbey of Alvecothe in expiation of his crime. The south wall of the chancel contains, close to the floor, a leper's window. At Clifton Campville, which was next visited, the church consists of a western tower and spire, nave with south aisle, north chapel with parvise, and chancel with south aisle or chapel. The oldest portions—part of the north walling of the nave and chancel—are said to be of early 13th-century work. The north chapel is more modern, being of later 13th-century work. The rest of the edifice generally is of the 14th century. The other objects of interest are some old screens, a row of "misereres," and an altar tomb in the south chapel, date 1545; also several monuments to members of the Pye family in the chancel, one of which is the work of the celebrated Rysbrach. The register, which is in a ruinous state, dates from 1594. Here the party partook of luncheon. Another delightful drive brought the sight-seers to Tamworth, where the church was again the object of attraction. Here the rector (the Rev. Brooke Lambert) kindly exhibited the registers, which are very curious, dating from 1556. Mr. Scrivener then described the church, giving a sketch of its earlier history. It seems probable that the cross which stood close by was the first preaching place, and that the present church occupies, or nearly occupies, the site of the first (Saxon) church. The latter, doubtless destroyed by the Danes when the town was burnt in the 9th century, was rebuilt by Ethelfleda, King Alfred's daughter, in the following century. In the same century Edgar re-founded the church and gave it a college of canons, and Edith being canonized, established a convent at the old castle, which was afterwards removed to Polesworth. The festival of canonization was celebrated annually, and is supposed to be the origin of the fair still held in July. The church consists of nave, north and south aisles, western tower, remains of central tower, transepts, chancel, south chapels or sacristies, crypt, north chapel of St. George, and north porch. What remains of the edifice prior to the fire of 1345 indicates that it once possessed great magnificence. The principal part of the church, except the clerestories and north chapel, belongs to various times of the 14th century. The clerestory windows, added early in the reign of Henry VIII., contain glass representing the history of the connection between the church and the castle. There are several tombs of great interest under arches in the north wall of the chancel; one to Sir John Ferrers, another probably to Lady Jane de Freville, and a third to Sir Baldwin de Freville and Lady (1400). Besides these monuments, there is a recumbent effigy under an arch in the north wall of the north chapel, apparently of a secular canon, with cassock, surplice, tippet, with long lappets in front, and hood, presumably Baldwin de Whitney, dean of Tamworth in 1369. From the church the party proceeded to the castle, which was thrown open

to the members by Mr. T. Cooke. Given to Robert de Marmion by William the Conqueror, it passed to the Frevilles, and afterwards to the Marquis Townshend, the present owner. The party afterwards dined at the Castle Hotel.

COMPETITIONS.

BIRMINGHAM.—The Midland Land Corporation, having offered three premiums of one hundred and fifty guineas, one hundred guineas, and fifty guineas, for the three best designs for laying out for building purposes the West Combe Park Estate, Blackheath, Kent, seventy-two drawings have been sent in, and have been open to public inspection at the Masonic Hall, New-street, Birmingham, during the week.

COMPETITION FOR CEMETERY CHAPEL.—NOTTINGHAM CHURCH CEMETERY COMPANY.—There were 39 sets of drawings in this competition. Mr. Fowler, architect, of Durham, was appointed by the committee to adjudicate upon the designs. He has reported in favour of the designs by the following gentlemen, in the order of merit as placed below:—1. Design marked with a black Maltese cross, Mr. E. W. Godwin, F.S.A., 8, Victoria-chambers, Westminster. 2. Design marked "Black and White," Mr. Richard Charles Page, 18, Buckingham-street, London. 3. Design marked "Economy," Mr. Albert Lowenthal, 10, Adelphi-terrace, Strand, London. The premiated designs have been publicly exhibited in the Art Museum, Exchange-rooms, Nottingham. It is understood that a meeting of the committee will be held on August 9, after which an official report upon the matter will probably be made.

KENSINGTON.—On Wednesday the Kensington Vestry met to inspect and decide upon the plans for the new Vestry Hall, when the designs were hung round the room for examination. The report of the joint committee was read, from which it appeared that the committee regretted they could not agree with the selection of the professional adviser, and recommended as follows:—"Experientia," 1; "Expert," 2; "Experience," 3; and "Cavendo Tutus," 4 in merit. From the statement of Mr. Lewin it seems that eleven of the committee thought "Experience" the best, and he considered it should stand first, and moved an amendment to that effect, which was seconded by Mr. Shapcott. Mr. Freeman argued that the design "Experientia" was distinctly voted as the best. He objected to the Queen Anne style, which the professional adviser had a fancy for, on the ground that we had enough of it in the School Board buildings. He also contended that they could not adopt the elevation of "Experience," but that "Experientia" was without a rival, making the remark that they "should refer the matter to the committee to consider what plan should go behind the elevation of 'Experientia.'" Mr. Saunders objected to "Experientia" as not among those selected by the referee, but it was stated that the committee intended to call upon the authors to show that their designs could be executed for the amount. After the reply of Major-General Boileau, the report was adopted with only one dissentient. By an inadvertent transposition last week in our report of the award of the referee, the design of Mr. J. J. Stevenson, marked "Old Kensington," was accredited to Mr. John O. Scott. It should have been "Kensington," John O. Scott; "Old Kensington," J. J. Stevenson—the last being placed second, and the former third, by Mr. Whichcord. The estimated costs which we gave were those quoted in the report of the referee as his own.

A new Board school was opened at Ladybarn Greenock, on Saturday. It accommodates 312 scholars, and has been built from designs by Mr. Mercer, architect, at a cost of £22,400—a little over £7 per head.

The sanitary committee of Warrenpoint, near Newry, have requested Messrs. Mayne and Atkinson to report whether a water carriage or dry system of sewage disposal would be best suited to the requirements of the district.

A working men's institute is being built at Charmingston, Dorset, by Mr. Cooper, contractor, from plans by Mr. Miles.

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ILLUSTRATIONS.

PROPOSED MORTUARY CHAPEL AT NOTTINGHAM—NEW ROMAN CATHOLIC CHURCH AT KILMALLOCK—"BUILDING NEWS" CLUB DESIGNS FOR LODGE AND GATE ENTRANCE—KENSINGTON VICARAGE—EARLY CHRISTIAN ARCHITECTURE—CHURCHES OF ST. DIONIS BACK CHURCH, AND ALLHALLOWS, BREAD-STREET.

OUR LITHOGRAPHIC ILLUSTRATIONS.

TWO CONDEMNED CITY CHURCHES: ST. DIONIS BACK CHURCH, FENCHURCH-STREET—THE CHURCH OF ALLHALLOWS, BREAD-STREET, CITY.

THESE drawings are of interest just now, as they represent the first two of the condemned City churches to be demolished:—

The Church of St. Dionis has its east front in Lime-street and south side towards Fenchurch-street, though the latter is almost hidden by a range of low buildings, fronting upon Fenchurch-street. The present building is the third church dedicated to St. Dionis, or, rather, St. Dionysius, which has stood upon this site. When the original church was erected is unknown, but it is mentioned as early as the 13th century. This gave place, at the commencement of the 15th century, to a new building, which seems to have been of considerable importance, till it was destroyed in the Great Fire of London, in 1666. The present building was finished (with the exception of the tower) in 1674, from the designs of Sir Christopher Wren. The tower (erected in 1684) stands at the south-west corner of the church, and was originally surmounted by a small turret, which was removed about 50 years since. It will be remembered that this is the tower Mr. Street is said to have proposed to Gothicise.—J. F. S.

Respecting the general appearance of the building which preceded the present church of Allhallows, Bread-street, now, in its turn, about to be demolished to make room for business premises, nothing is known; but, on referring to Godwin and Britton's "Churches of London," we find mention made of such a building occupying this site as early as the year 1349. After the burning of this place of worship in the Great Fire of 1666 no steps seem to have been taken by the parishioners to supply its place till in 1680, under the superintendence, and from the designs of Sir C. Wren, the present edifice arose. The cost of this new building was £3,348 7s. 2d., part of which sum (£600) was raised by a tax on coals (levied for the purpose of erecting new churches in the City), and the remainder obtained by loans. In the vestry-room attached to the present church is a monumental tablet to the memory of the Rev. Lawrence Saunders, who, February 8th, 1555, suffered martyrdom, by burning, at Coventry, for preaching here sermons in defence of the doctrines of the Reformation. There is, also, at the west end of the north wall (outside), a tablet setting forth, in exceptionally beautiful writing, that John Milton was born in Bread-street December 9th, 1608, and baptised in this church (the original building) December 20th, 1608.—R. K.

EARLY CHRISTIAN ARCHITECTURE.

SEE descriptive article on p. 97.

NEW CHURCH OF KILMALLOCK, COUNTY LIMERICK.

THE new Church of SS. Peter and Paul, about to be built in the ancient town of Kilmallock, is illustrated in our present issue. Kilmallock, though much fallen from its mediæval splendour, when it was one of the most important of the walled cities of Ireland, is still remarkable for the number and excellence of its ancient architectural monuments, both civil and ecclesiastical, which have caused it to be called the "Baalbec of Ireland." The new church will occupy a central and commanding position. Its plan comprises nave and aisles, chancel and side chapels, and tower and spire at the west end of south aisle, the sacristy and presbytery being situated on the north side of chancel. The style generally is of the 13th century, which corresponds to the neighbouring Dominican priory, founded in the year 1291 by Lord O'fally. The walls will be built of local limestone, the interior pillars of polished Cork marble. The roofs will be framed and panelled in pitch pine. Mr. J. J. McCarthy, R.H.A., Dublin, is the architect.

KENSINGTON VICARAGE.

THE old vicarage is being pulled down for the purposes of a new street leading straight up from Church-street. The new vicarage is placed on the lower part of the garden of the old vicarage house. The garden occupied about four acres of ground, one of which only is devoted to the new vicarage. The house is built in red brick, and covered with red roofing tiles, and stands on the slope of the hill facing south, so that some of the servants' offices in the basement are arranged to look out on a level with the garden. There is a large lantern over the staircase, terminating in an octagon light. The spirelet is roofed in sheet copper. There is a private oratory in the north-east corner, terminating in an apse. The remainder of the garden is being laid out as building sites.

"BUILDING NEWS" DESIGNING CLUB—LODGE AND COVERED ENTRANCE.

WE illustrate two of the selected designs, "Fleur-de-lis" and "Début," for the above subject, and refer our readers to our review for the remarks we made upon them. (See page 63.)

PROPOSED MORTUARY CHAPEL, NOTTINGHAM.

THE design which we publish to-day was prepared in accordance with the instructions given by the directors of the church cemetery, at Nottingham, for a new mortuary chapel to be erected in their cemetery. The cost was confined to the stipulated sum of £2,000. From the designs which have been selected* (the design by Mr. E. W. Godwin, F.S.A., is determined upon for erection), it seems that besides a chapel the directors intended a dead-house and a reception-room for coffins, with an inquest-room, as well as a vestry to the chapel, but as none of these were named in the conditions of competition most of those who responded to the invitation to compete sent in designs simply for a cemetery or mortuary chapel, as specified. The accompanying design only proposes to fulfil the requirements of such a chapel, and is so simple in its arrangements that it requires but little description. First, a good roomy porch is provided for the hearse and carriages. A wide cloister running at right angles with the church forms an ample approach, at once securing retirement from the public. A waiting-room, with windows commanding a view of the drive to the chapel, is provided, and over the cloister is a loft intended for a small organ, which would project slightly into the chapel through the arched opening at the west end. A wide aisle in the centre of the church secures ample space for two or three coffins without crowding. A vestry is situated at the N.E. corner, with a heating chamber under. The materials are Hollington stone for the dressings, with a local stone (hammer-dressed) for the walling. The roofs are intended to be covered with green slates and red ridge tiles. The author of this design is Mr. Maurice B. Adams, A.R.I.B.A., architect.

* See p. 99, under the head "Competitions."

SCHOOLS OF ART.

CRYSTAL PALACE.—On Saturday last Mr. Louis Haghe and Mr. Edwin Long, A.R.A., awarded the medals and certificates to lady students in the Crystal Palace Company's School of Art, Science, and Literature. The silver medal for water-colour painting in the class conducted by Mr. E. A. Goddall was given to Miss F. Fawcner, of Cornewrthy House, Lee; the certificate in this class to Miss Townsend, from Attleborough Hall, Nuneaton; and a drawing of the Pompeian Court by Miss Bertha Griffith was highly commended. The silver medal for water-colour painting in the class conducted by Mr. Frederick Smallfield was given to Miss Ledsam, of Norwood; the certificate to Miss Maud Robinson, of Streatham. The certificate for drawing from the antique in the class conducted by Mr. W. K. Shenton was adjudged to Miss Kate Gow, of St. Julian's-road, Streatham.

PARLIAMENTARY NOTES.

HEIGHT OF BUILDINGS IN LONDON.—In reply to Mr. P. A. Taylor, last week, Sir J. M'Garel Hogg said: The attention of the Metropolitan Board has been directed to the buildings to which he refers near to St. James's Park. No inquiry has been made as to how far buildings of such height are calculated to injure the neighbours, who would, I apprehend, be able to assert their legal rights if injuriously affected as regards light and air. The rules of the Building Acts at present in force are calculated for walls up to 100ft. in height, but where it is intended to exceed that height a discretionary power is given to the board, which they have not felt justified in refusing to exercise in the present instance, having regard to the unusual strength and stability of the building. A bill was introduced by me in 1874 which would have dealt with this question, but it did not receive the sanction of Parliament, and up to the present time the board has not come to any resolution to renew their application for further powers.

LONDON STREET TRAFFIC.—Mr. Gregory, last week, asked the Home Secretary whether there was any law or regulation relating to the metropolis for preventing waggons or carts stopping in the streets for an indefinite time for the purposes of loading and unloading, or for preventing the public thoroughfares being blocked for a great part of the day, as in Covent-garden and other places; and, if so, whether the police had instructions to enforce such law or regulation. Mr. Cross said that, under the regulations framed in pursuance of the Act with respect to London street traffic, no cart or wagon was to be allowed in its position longer than was necessary to load or unload, and it was for the police to see that such regulation was complied with. An exception was made in the case of Covent-garden, the traffic being so great and the space being so limited.

THE METROPOLITAN STREETS IMPROVEMENTS BILL.—On Tuesday, on the consideration of the Lords Amendments to the Metropolitan Street Improvements Bill, Mr. Fawcett took exception to the particular amendment inserted in the interests of Lord Salisbury relating to the new street from Tottenham-court-road to Charing-cross, and suggested an adjournment until Monday. Sir J. M'Garel-Hogg deprecated adjournment, on the ground that it would defeat the improvement altogether; but on a division the House, by 98 to 96, adjourned till Monday the consideration of the Lords' amendments.

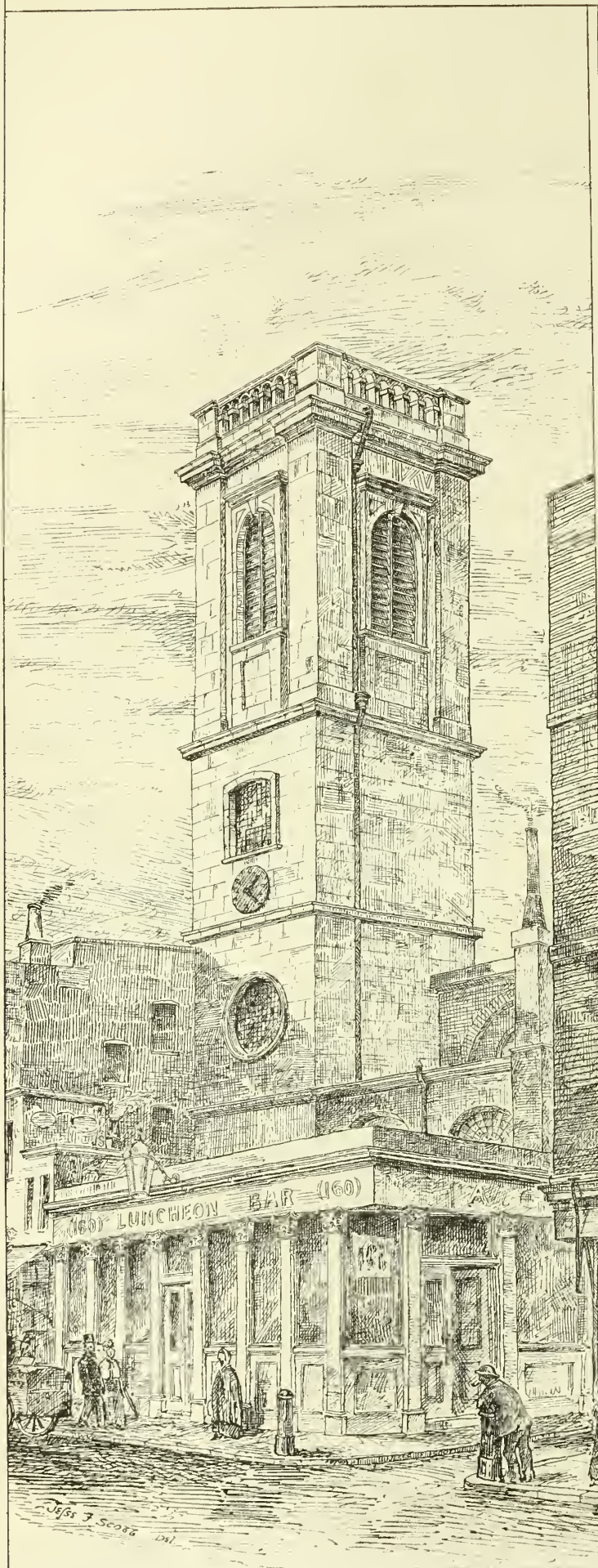
A movement is on foot at Brecon for pulling down several small houses which conceal the view of the town church from the High-street.

Through the exertions and perseverance of Major Moore, pupil of the late Robert Dennis Chantrell, architect of Leeds parish church, the interesting "old cross" has been restored to Leeds, and will shortly be re-erected on its former site.

Hereford public baths have been enlarged, restored, and renovated. Mr. W. Pritchard, builder, executed the repairs, Mr. W. Smith the painting, and Mr. Edwards, of Stoke Edith, supplied the fittings.

During the progress of restoration works at Ross Church, Herefordshire, under the direction and plans of Mr. J. L. Pearson, of Harley-street, W., indications have recently been met in the east wall of the nave of Norman work, of which no traces were previously known to exist. Near the south capital of the Early English chancel arch has been found a quaint piscina of red stone, uncouthly masoned, its cap being 13ft. above the present level of the church floor. Its position has led to some discussion—the most generally accepted explanation being that a crypt once occupied the present portion of the nave, and that there was once a side altar in the chapel above.

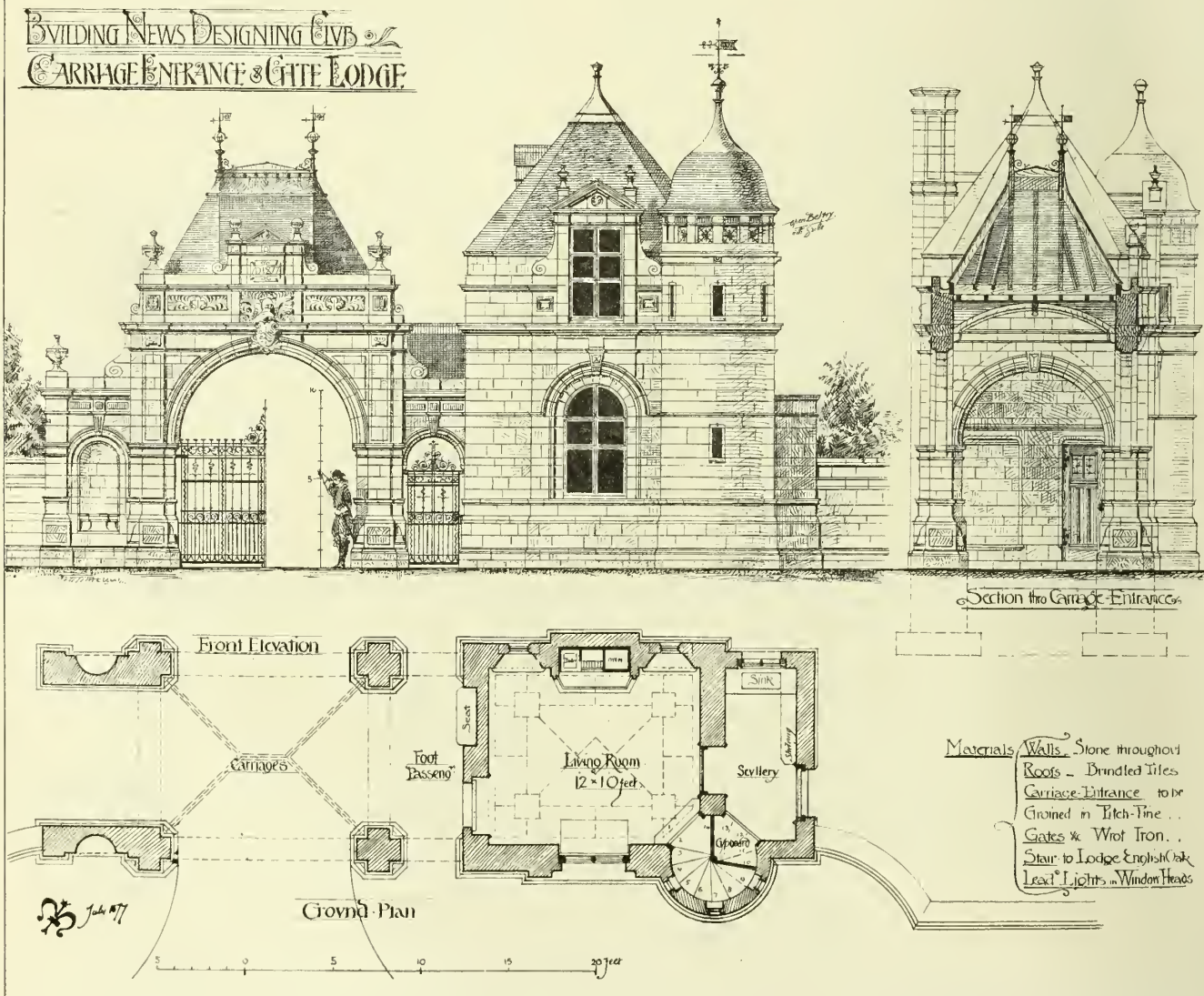
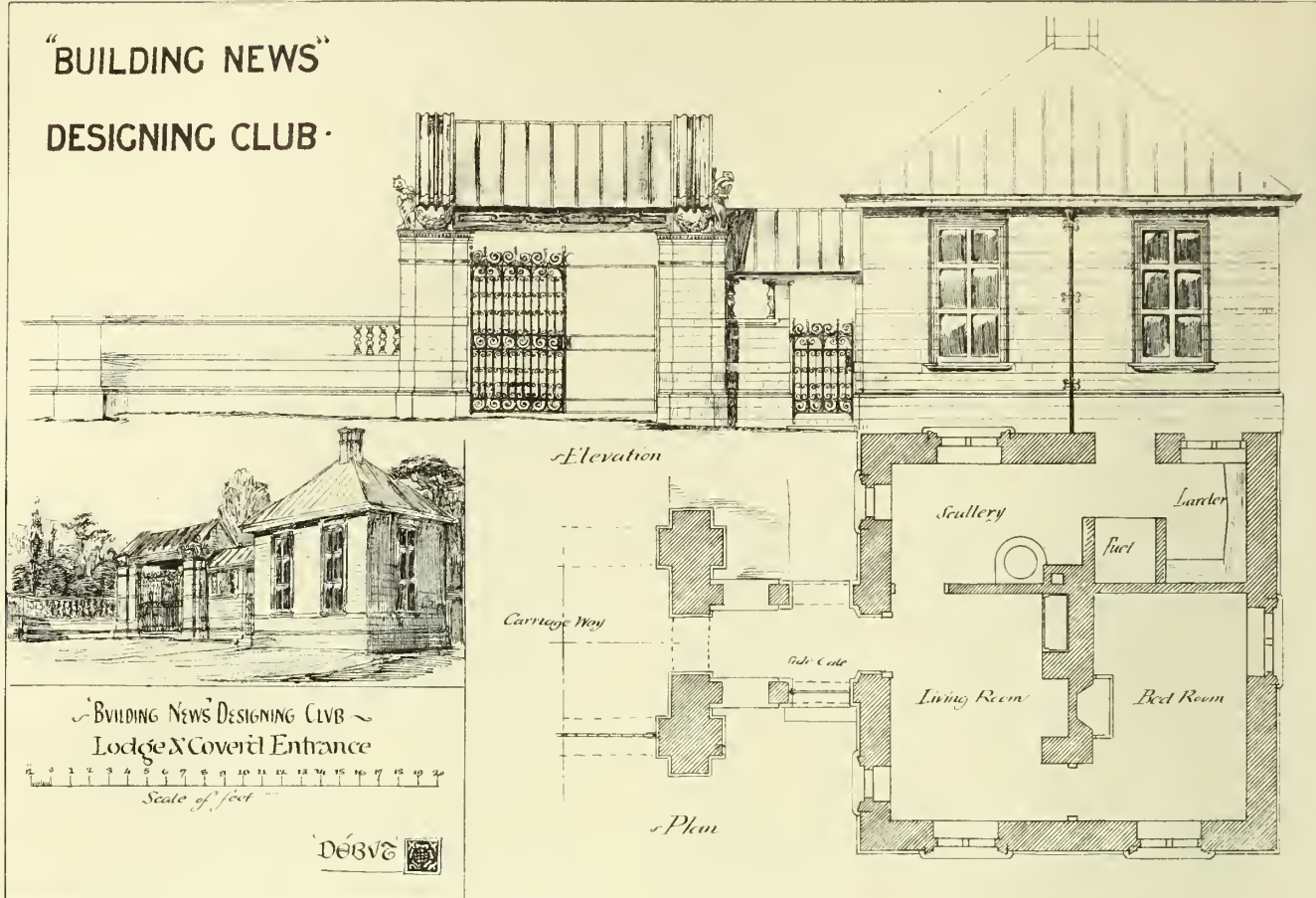
Two condemned City Churches



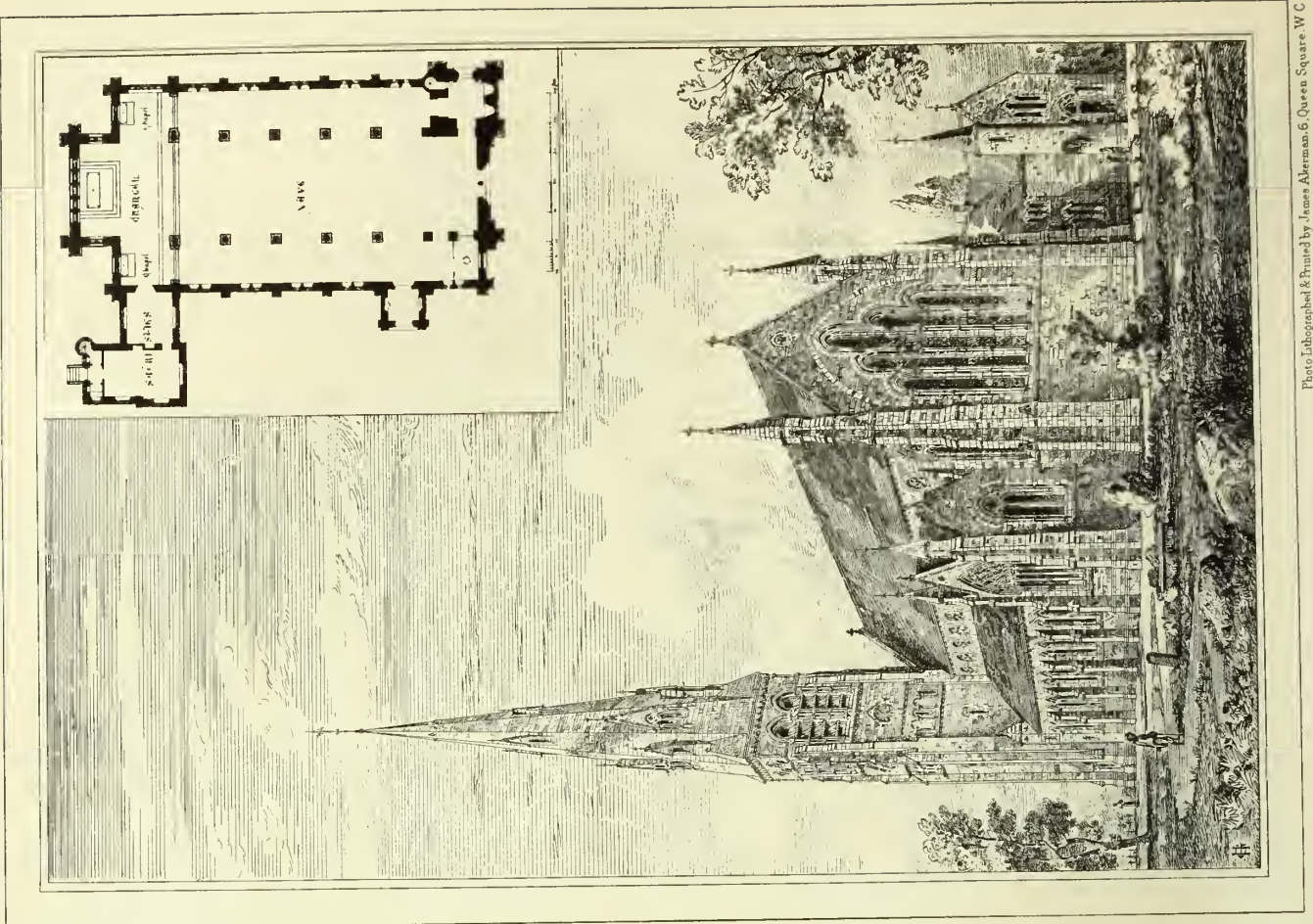
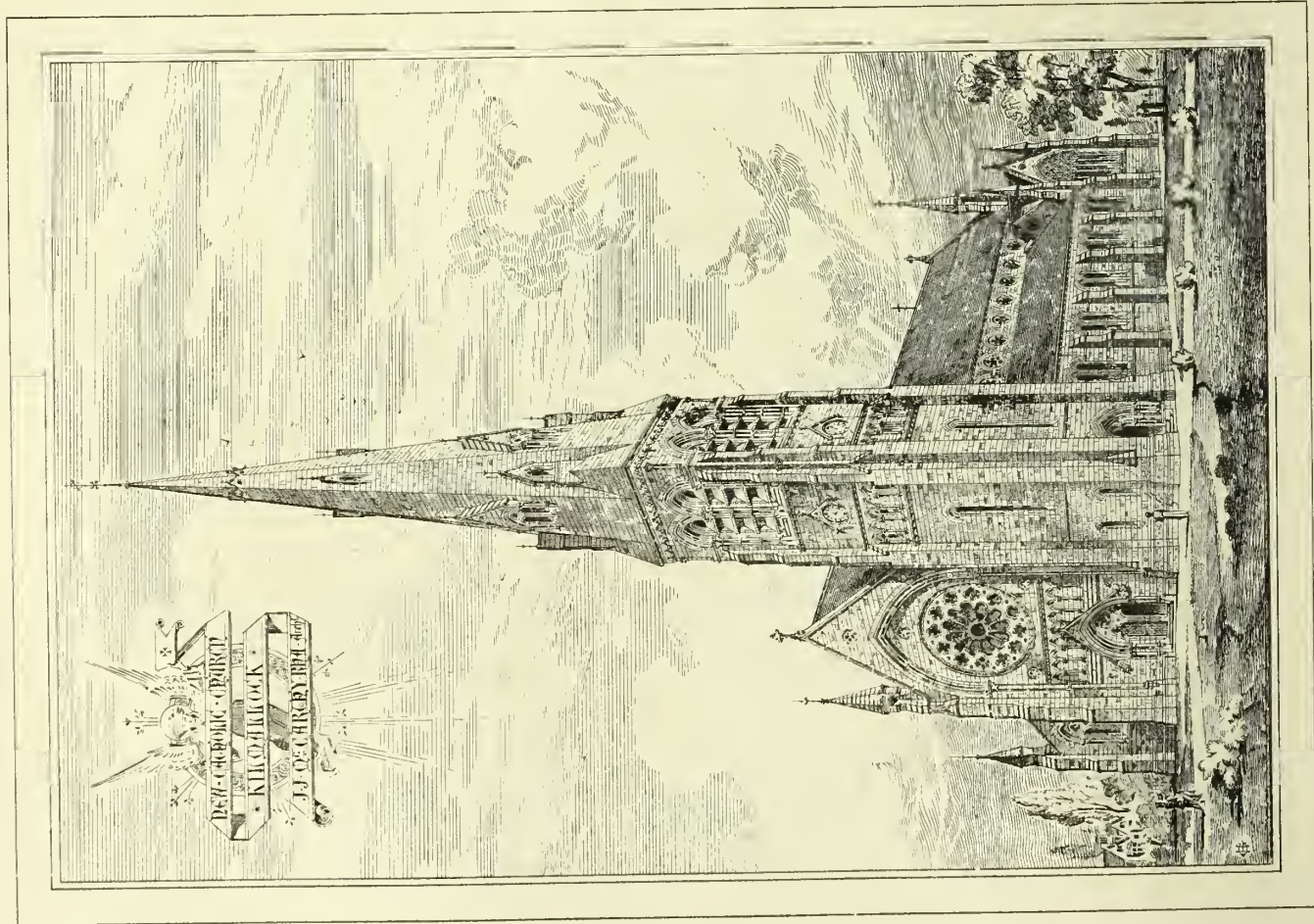
Tower of S: Dionis Backchurch.

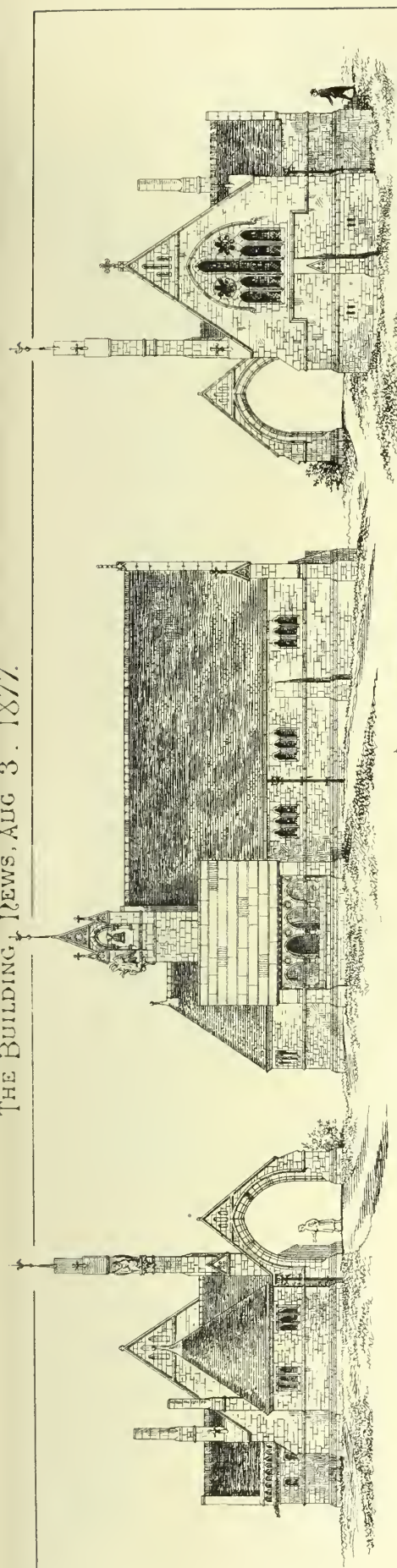
Church of Allhallows: Bread St.

"BUILDING NEWS"
DESIGNING CLUB.



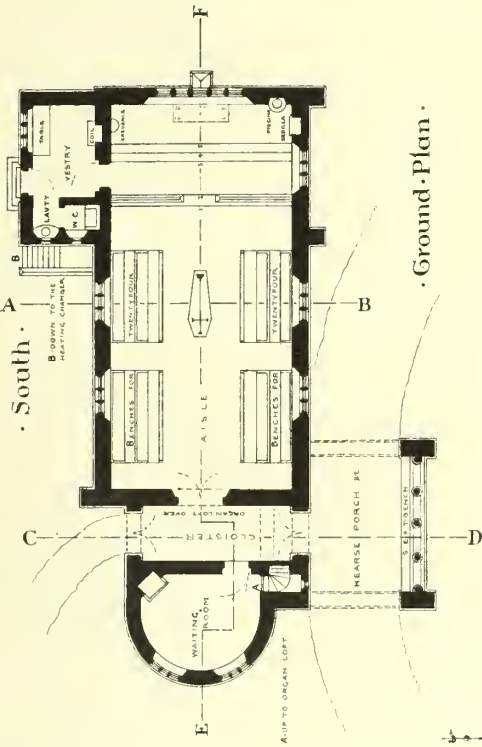
THE BUILDING DEWS, AUG 3. 1877.



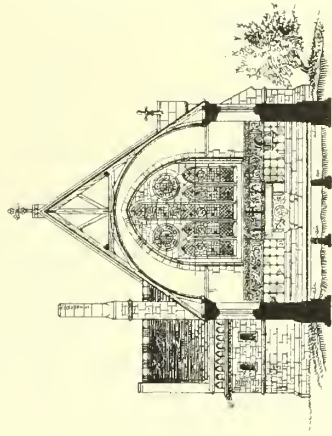


West.

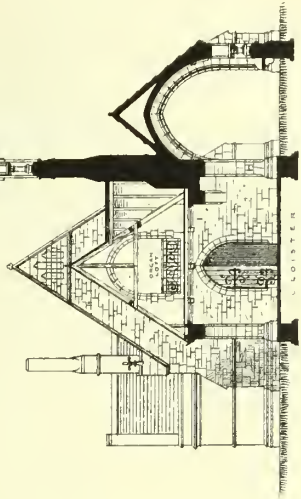
East.



Ground Plan.

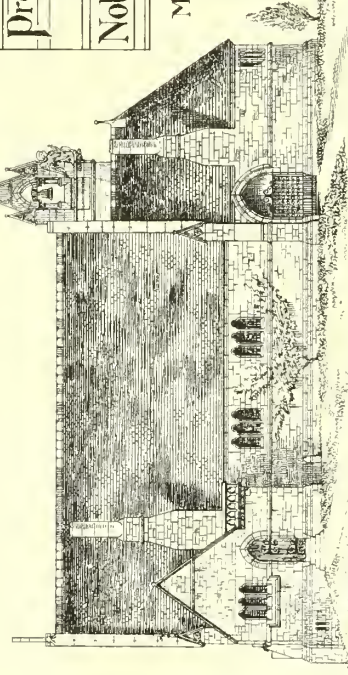


Section A-B.



Section C-D.

Proposed MORTUARY.
 CHAPEL
 DESIGN BY
 MAURICE B. ADAMS Architect



North.

Section E-F.



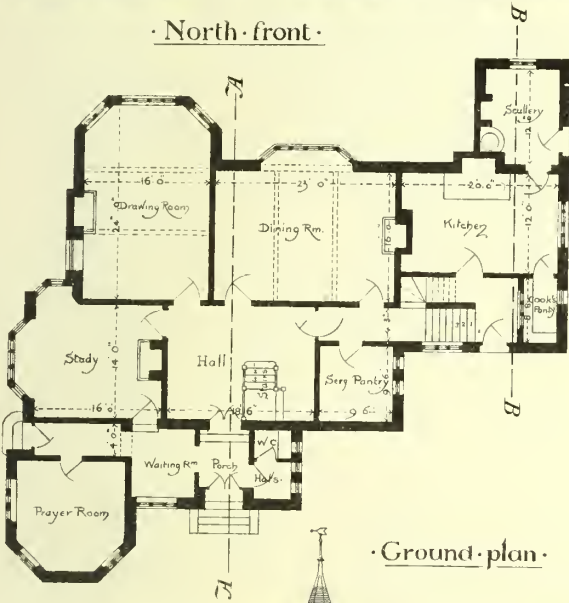




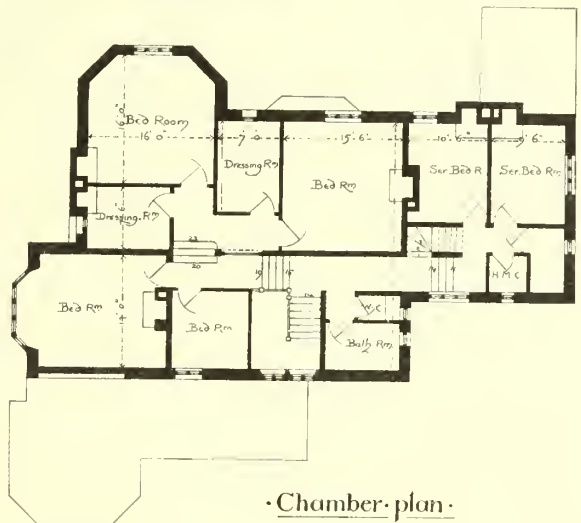
· North front ·



· West front ·

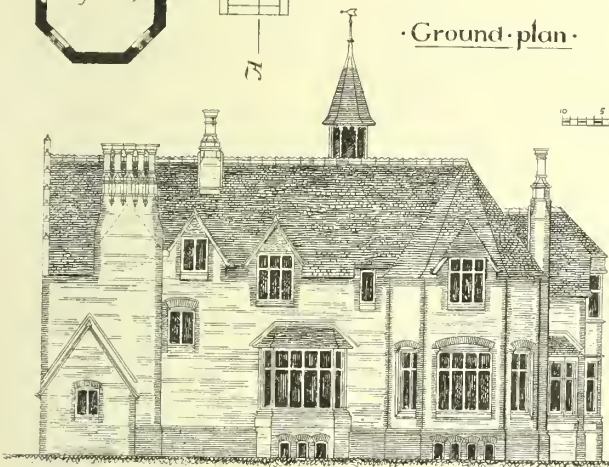
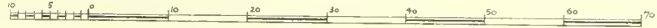


· Ground plan ·



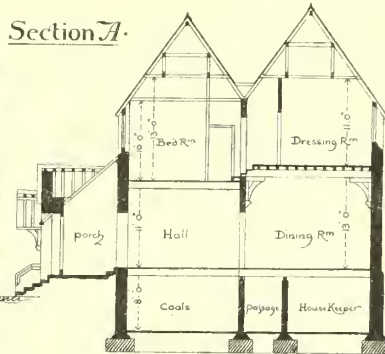
· Chamber plan ·

· Scale of feet ·

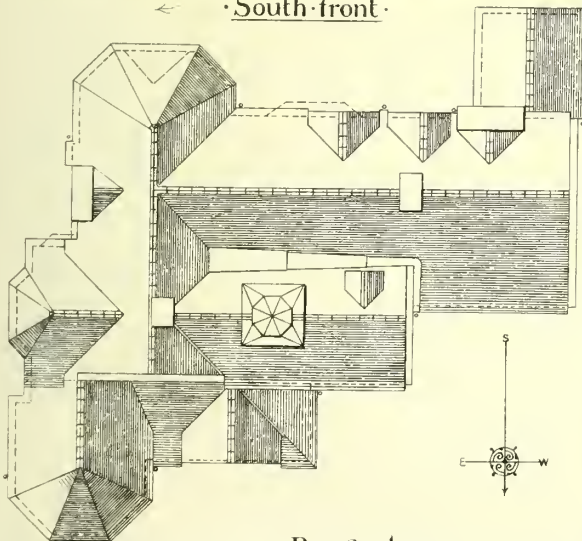
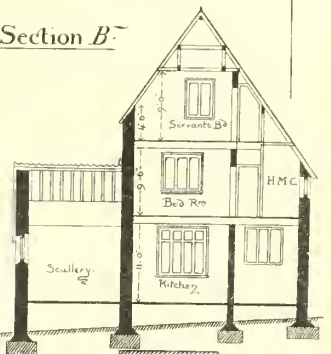


· South front ·

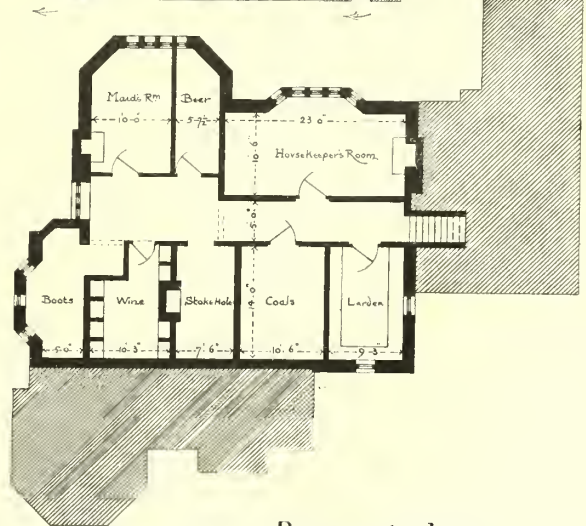
Section A



Section B



Roof plan



· Basement plan ·

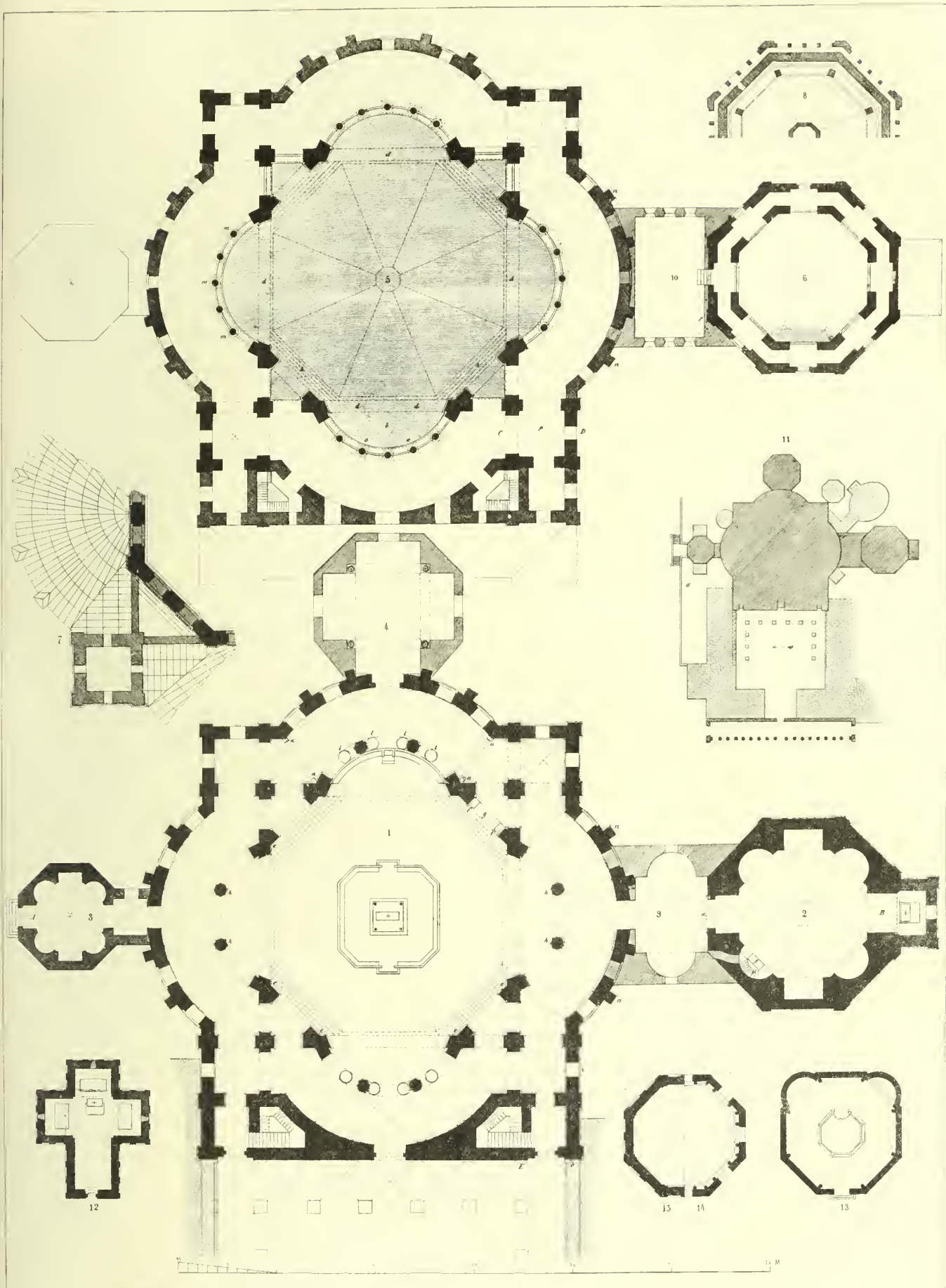


Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XIII.

A Small Villa.

THE conditions of this subject required the accommodation of two sitting rooms and offices on the ground-floor, and three bedrooms and a bath-room and dressing-room on the chamber floor, the cost not to exceed £500. In selection we have had regard to the convenience of arrangement, as well as to the cubic capacity of the design. Looking over the designs, we find the cubical contents vary from 18,000ft. to 21,000ft., which has been generally worked out at 6d. per foot. "Mechlin" seems to us to combine the requisites of convenient arrangement and compactness; the ground plan is nearly a square, and has a centre entrance to a parlour 12ft. by 12ft. on the left-hand, and another, 12ft. by 10ft., with bay window, on the right, a kitchen 12ft. by 12ft. behind first parlour, and a scullery and larder, with garden entrance at the side, the last being at right angles to the front entrance. The w.c. is conveniently arranged under the stairs at side of garden entrance, and another for servants is placed externally, reached through the scullery. On the upper floor a spacious landing, in central position, gives access to three bedrooms, a bath-room, and dressing-room. The walls of the upper story are of timber, filled in with plaster, and the treatment of the elevations, the bay window being carried up and hipped with a pointed roof, and the rest gabled and tile-hung, is pleasing. The details are fairly worked out, and the windows are mullioned. The cubic contents are 18,050ft. at 6d., £451 5s. Next in compactness of planning we must place "St. Lucy." The plan is rather oblong, and has a recessed porch at one corner, a side hall and stairs lighted from the front, a dining-room 14ft. by 10in. with bay, placed in connection with the kitchen behind by a serving door, a drawing-room 14ft. by 11ft. with square bay on the return side. We take exception to the rather awkward entrance, though there is a skilful economy in the plan: the offices can be closed off from the reception rooms by a door, and they are conveniently placed at one angle of the area, while the store closet and serving door add considerably to the comfort of the arrangement. The upstairs plan is very convenient. There are three good bedrooms, a bath-room, and dressing-room, and the positions for the beds are well placed with regard to the door and fire-places. We do not approve of the thin walls of the upper story. Externally the author is less successful, though the elevations are simple and the bays well treated. A wide span roof with brick copings, into which the south bay is hipped, covers the whole area. Contents, 20,200 cubic feet at 6d. = £505. "Hampton" we place next. The lobby and hall stairs and back entrance are well placed in connection with the rooms, though the plan is not happily grouped on the entrance side. The drawing-room, 14ft. by 11ft. 6in., besides bay, is made to break out on both sides, forming a gabled front. The dining-room, kitchen, and scullery form a continuous range, the last being roofed low, and the office part is well shut off by a hall door. The author adopts a solid brick substructure, with half timbering above, the gable end being bracketted out over the canted bay of drawing-room. The drawings are carefully done. Contents, 20,212ft. at 6d. = £505 6s. "B," in circle, is less compact in plan. The entrance and stairs are on the north-west side, the offices are closed off by a door at side of staircase, the dining-room is 16ft. by 13ft., and the drawing-room 13ft. square, besides a deep bay 6ft. by 8ft. The principal rooms have the windows towards the best aspect. The bedroom over the kitchen is on a lower level, and is roofed low. The style of treatment is scarcely villa-like, and is rather too rural, the upper story is tiled and slightly timbered in gables; we certainly dislike the device at the head of the door, which is more clumsy than artistic. No cubic capacity is given. "Bee" in circle shows a convenient separation of offices, though without a direct communication between kitchen and scullery. The style is rural, but simple and picturesque. "Fleur-de-lis" is a plan with several defects, and its

author this time has not been so successful as he generally is. The porch is barely 3ft. wide, and is awkwardly placed for turning a large piece of furniture, such as a table or piano; the stairs are cramped, and the windows close to the front door highly objectionable. It would have been better if the dining-room had a serving door, to avoid crossing the hall from the kitchen. The step down from the latter to scullery is bad, the pantry under stairs opening from kitchen is a mistake. Upstairs the arrangement looks less faulty, though the bath-room, lavatory, w.c., and linen closet, all combined, is an arrangement few would like. Externally there is a want of study; the thickening and recessed seat outside of dining-room is awkward, and by no means pleasing, and we scarcely admire the treatment of the bay to sitting-room, and the high-shouldered gable over. The entrance front is more pleasing in elevation. The points of merit of the design are compactness, the thin cavity walls, the position of chief rooms, as regards aspect, and the roof, and ventilation. The materials are bricks, red stocks for angles and chimneys, and Welsh slates. Contents, 20,000 cubic feet. "Trefoil," in circle, is a very concentrated plan, about square, and tolerably well-planned, as regards the position of the rooms, and entrance hall, the stairs turning over front door—a plan not conducive to a dignified entrance, however. We object to the three steps within the hall opposite the entrance, and to the distance of the kitchen door from the dining-room, the crossing of the hall with the dinner service, and especially the wasteful arrangement shown of pinching the scullery to get an entrance into the pantry. The plan is convenient upstairs, and the rooms are of fair proportions. The upper portion of the structure is shown tile-hung, flush with outside, but there is a crowded appearance in the entrance and canted wooden bay above. Contents, 21,000ft. "Eclipse," has a plan in which the two living-rooms and kitchen form a —| arrangement; the hall and stairs run through at the junction of the parts, but the winders at bottom of stairs, and the necessity of crossing the hall every time meals are partaken of, and the nearness of the doorways of the sitting-rooms to the front entrance, are weak points. The china closet and pantry, with the pipes from w.c., &c., passing through the latter, have neither the happiest position nor the pleasantest of associations; and we dislike the combination of bath-room and w.c. This is a half-timbered design, with a verandah in front, the cubing being priced out in two parts. Main building, 18,816ft., at 6d., and the offices at 4d.; total, £500. "Discere Volo" fails in economy of plan; the kitchen door faces the entrance—a fatal objection; the connection of kitchen and scullery is awkward, and the stairs ascending close to the entrance door is awkward also. The bedroom plan is defective in the bath-room arrangement. Externally we must find fault with the porch and balcony over—a rather objectless feature—and the generally quaint details. Of a similar class is "Omega." The hall and stairs, dining-room and kitchen, are fairly placed, and the kitchen offices are shut off by two doors, but a few defects are apparent. The front door opens under the stairs, the covered balcony over bay, and the cottage-like arrangements are more rural to our minds than suited for a villa. We don't like the chimney caps. "Début" sends us a design too quaint for a villa. From the clever little sketch we might imagine a wayside inn with the flat bays of a commercial-room, but certainly not of the drawing-room of a villa. The author arranges his plan on the cross. One arm forms the drawing-room, another the kitchen, and a third the dining-room, the centre being the hall and staircase. We certainly cannot accept the haphazard arrangement of offices—fancy the pantry and larder windows overlooking the entrance; convenience, also, has not been consulted. The author indulges in a flavoured bit of Queen Anne, with its narrow sash windows and brickwork. We would add, too, that the hall would be larger than necessary, though the circular bay and landing throwing light into the hall is artistically clever. "Leizid" is a compact plan, and occupies a smaller area than any other, but the positions of drawing and dining

rooms would have been better reversed. The bath-room and w.c. are on ground floor. "Sperabo" exhibits a plan that is more original in its double-hall arrangement than practicable. The hall would be ill-lighted by the staircase window, and the same inconvenience we have before pointed out, of separation between kitchen and sitting-room, is noticeable. The treatment externally is heavy. "Prenez Garde" has not adopted the simplest arrangement: the main and garden entrance are too close to each other, and the kitchen is too far away from the dining-room. The author wants a little more experience in design, or he would never have roofed his porch as he has done. "Jacobus" sends a plan with a fair idea of concentration, and with indication of the right aim of design, but the roofing and the detail are not satisfactory. In a second group we name "Coute que Coute" with some good points of plan, but lacking coherency of design; "S. J. M." (in square), defective in design, and in showing the scullery as a passage room to kitchen; "Trefoil," a jumble of ideas, kitchen offices in basement; "Student," fair, but too Gothic; "Coute que Coute" (2), expensive in plan; "Silkworm," defective in economy of plan; another (no motto) original, but poor in plan, and too archaic. We may also name "Gad" with a circuitous passage from kitchen to dining room; "Torpedo," a better plan, but not finished; "Bath" (in circle), a better plan than elevation; and "C. H. B." more like a school-house than a villa.

A Sofa and Easy Chair.

We have only received one design for this subject, and this is by "Fleur-de-lis." The sofa is double-armed, with scroll ends cushioned, the side being open below, filled in with small turned balusters. The framing is walnut or oak, and the covering greenish or uaroon leather. The arm chair is framed with square and turned legs, balusters, and rails. The arms are parallel with the cushioned seat, and supported by small turned balusters, and the back is straight, but inclined, leading by a curve into the back legs. The chair back is of stamped leather of a suitable design, and the seat and arms are cushioned and fringed with leather. The designs are suitable, without being open to the charge of apeing the antique.

A Brick Cornice.

This subject has almost gone begging. "A. L. B." is the only design to hand, and while we commend him for his painstaking drawings, we would advise him not to attempt too much. In the present instance he has overdone his mouldings. No. 1 is the best, though the projection of the corona, or the "planceer," as it is called, is too wide. No. 2 is what we might term a pleonasm of members, and there is no deep shadow anywhere to relieve the eye. We should advise "A. L. B." to follow and study old examples before he ventures to compose a moulding. No. 3 is rather too lumpy, and the top member is too small for the lower ones. A cornice should always have two distinct parts—a cover or drip or a crown member, and a bed moulding, or a series of corbels or dentals. We cannot avoid the remark that our young architects are too prone to shirk anything of a dry or abstract kind, and we believe if we had proposed a grotesque head we should have been overwhelmed. Few things call out the exercise of the faculties of design more than a moulding.

At Keighley Petty Sessions, on Friday, a mason's labourer, named Patrick McEniff, was fined 20s. and costs on two summonses for assault and intimidation of non-union men at work on drainage works near the railway station, Keighley. A masons' strike exists in the township.

The Dorset Natural History and Antiquarian Field Club paid a visit to Bridport on Tuesday week. After a ramble along the coast, under the guidance of their vice-president, Professor Buckman, F.G.S., who pointed out the geological strata, and set the members at work, clambering the cliffs, and hammering for specimens, the members responded to the invitation of Mr. and Mrs. T. Colfox, of Rax House, and partook of dinner. Afterwards a paper, which had been written by the hostess, was read, on the "Dolmens and Cromlechs of the Channel Islands and Brittany."

ARCHITECTURAL SCIENCE CLASS.

THEORY OF COLOUR—PAINTING—
CONCLUSION.

PAINTING is the finishing art in the operations of the builder, and, though simple and of comparatively slight importance among the constructive arts we have already noticed, it is one requiring in its skilful performance a nicer amount of discrimination than many of the others. The painter should be an artist in the higher branches of his calling, and no mechanical aptitude for his work will atone for mistakes in the choice of colours and in the combination of them. A keen perception of colour in its varied tones and shades is of the utmost consequence, for, although the colours are usually specified or agreed upon, to the painter is often left the choice of the particular tint and the combinations required to produce an agreeable effect. The eye can be educated to perceive harsh or disagreeable contrasts; but it is by a knowledge of the due proportions of the primaries and their compounds that the painter is enabled to select his colours with precision, and proceed upon some recognised principle in his work. In the absence of an acquaintance with the theory of his art he is, at the best, a groper in the dark; while the mechanical workman, who understands the theory of the mixing of his colours, is better able to qualify himself for the common operations of the house-painter. The theory of colour has been concisely stated by "S. M. E." in the published reply last week. The decomposition of light by the prism known as the solar spectrum is the basis of all our notions of colour. White light is produced by a combination of elementary colours, but which we, in the rough, call red, blue, and yellow. By certain proportions of these three primaries we can produce pleasing effects of colour. If we use any primary colour the harmonious and only true contrast is that composed of the compound of the other two, and harmony results in proportion as the full complement is made up. Thus the complement of red will be the secondary colour, green—a compound of the blue and yellow. The complement or right contrast for orange (red and yellow) is the primary, blue. Again, violet (blue and red) harmonises best with yellow. On the contrary, green and blue do not form a contrast of harmony; neither do orange and red, and such combinations are best avoided. This principle is exceedingly simple, and every painter should be aware of it. In a combination of primaries the blue should predominate—the red follows as the intermediate colour between it and yellow. The proportion of 8, 5, and 3 has been laid down as the best, that being the proportion required in the production of white light. We advise our readers to study chromatic equivalents and "Chevreul on Colour." A series of articles appeared about two years ago in the BUILDING NEWS on the subject.

In reply to question 55, "Aubery" and "A. L. B." have fairly answered; but the chemical ingredients and manufacture of colours have not been considered except by "A. L. B.," who says of white lead that it is obtained from rolls of sheet lead placed vertically in earthen pots containing vinegar, and then exposed to heat; the vapour of the vinegar corrodes the lead, and white flakes are formed, which are afterwards bleached and ground. The best linseed oil is obtained from the Baltic and Bombay linseed, which is crushed and purified. It is said that its clarification by sulphuric acid destroys the cohesive property of the vegetable oil. White lead should be ground with the oil in its pure state; but modern adulteration with oils of resin, &c., is largely practised. Time bleaches linseed oil, and the older it is the better—hence the value of old ground white lead.

The process of common painting has been fairly described by "T. N.," "A. L. B.," and "J. S. A. M." The leading points are the dryness and evenness of the surfaces, the "killing" of the knots by a preparation of shellac or size, white or red lead, to stop the resin; the priming, or red-lead paint; and the finishing colours. For inside flatted work turpentine, instead of oil, is used with the colour, but external work requires oil. Pouncing should be resorted to to bring the surface to a

smooth state before the after coats are laid on. "A. L. B." mentions the use of silver leaf to cover the knots that show through the second coat. The last coat consists chiefly of white lead, and the required colour mixed with oil and turps in the proportion of 1 to 3. Graining is mentioned by "A. L. B.," but it is an imitative art that is scarcely within the province of our questions. In painting ironwork, the main consideration is the cleaning of the iron from all rust, and to coat it so thoroughly that corrosion cannot take place. Iron oxide paints are, perhaps, the best and least adulterated. A recent method of coating iron, with magnetic or black oxide, has been found advantageous; the iron is shown to resist the action of the weather as well as any mechanical injury. Boiled linseed oil, applied hot, is a good preparation for after painting. Sanding the paint adds to the durability. "T. N." mentions several anti-corrosive paints, among them Sir W. A. Rose and Co.'s oxide zinc paint (anti-corrosion), and Hubbick and Son's patent white zinc paint, and anti-oxidation ditto; Peacock and Buchan's composition; and Carson's well-known anti-corrosive paint. "Atneave," replying also to this question, says, the priming coat should always be of oil, two in coats of red lead, and finished as desired. He mentions the Torbay paint and Szerelmev Co.'s iron paint. The next question (57), on painting walls, has been fairly answered by "T. N.," "Aubery," and "J. S. A. M." "T. N." says the plastering should be first primed with glue size, and then finished as in wood painting. "Aubery" says, when the walls are quite dry they should be clearcoated or sized over, and, when this is dry, the colouring may follow. "G. H." says:—"Before painting walls their state of dryness should be taken into the first consideration, as no colour will stand upon a damp surface long. Absorbent surfaces, too, require a special treatment. Their degree of porosity must be taken into account in priming. When they are very porous the priming coat should be thinned with oil, or a coat of boiled linseed oil applied hot, so laid on as to enter the pores more freely, or the opposite treatment of sealing them up with a thick coat like glue size should be resorted to. After one or the other of these processes the subsequent coats should be of white lead and linseed oil, mixed with a little litharge or gold size, to give it a creamy consistency. The latter addition operates as a drier. Sometimes a coat of glue size is placed over the priming of boiled oil, or red lead is used to give a ground for the after coats, which should be thinner, and have a small quantity of turps. The finishing coat should be thinned with turps, and have some drier mixed as gold size. The wall should be rubbed smooth between the coats, which should be allowed to dry. Battered or hollow walls are best adapted for painting, and Parian cement being non-absorbent, can be treated with the usual coats of white lead and oil. The secret of painting walls is to give a good foundation for the finishing coat, and unless this be secured the painting peels off, or gets completely discoloured."

We have now gone through all the leading branches of building, or those trades which the architect is required to be proficient in. Their natural order, as we have discussed them, appears also to be the right order of study for the student. We have endeavoured in the questions given to lead the student to those more practical points which are apt to be neglected in the instruction afforded to architectural pupils, and those engaged in the various trades of building, leaving to him the following up of the branches we have described, and the working out of special problems. We strongly recommend him to begin with those studies that are based on geometry and mechanical principles, such as the problems of masonry, carpentry, and iron construction, as the best groundwork for the others, and the best mental discipline. If he once masters these, the other trades will be quickly acquired. Let him also, if possible, pursue his book knowledge and practical knowledge together. One will be found wonderfully illustrative of the other—in fact, in some branches it is impossible to understand one without the other. It is only by

theory and experience combined that the mind can fully grasp the conditions of a problem in construction. It requires to be led up to the theory as well as to it. In one word, what the logicians call *à posteriori* and *à priori* reasoning are necessary. In conclusion, we thank those who have so zealously followed us through the course. The benefits have been mutual. Let us hope the progress made has been proportionate to the labour bestowed. We hope to publish the award in our next issue.

CHIPS.

The governors of the Bovey Tracey Endowed Schools have selected the design by Mr. E. H. Harbottle, A.R.I.B.A., of Exeter, for their new buildings to be erected on Bovey Down. Sixteen designs were submitted.

The two principal stores of the permanent nave of St. James's Church, Great Yarmouth, were laid on Wednesday. The first portion of the church was built some years since, an iron mission-room serving as a nave. Funds have now been collected for completing the edifice, and the contract has been taken by Mr. W. E. Martin, of Hereford. Mr. J. P. Seddon is the architect of the church. The cost of the nave will be about £3,200.

Ipswich Museum has just been enriched by the presentation, by Sir Richard Wallace, of a splendid collection of crag fossils, consisting of nearly every species of mollusc found in the red crag of East Suffolk, together with remains of various extinct vertebrata.

The Bolton Corporation have under consideration designs for the laying out of the new cemetery at Rogerstead, near Gillow. Of the 13 designs sent in six have been chosen by the Parks Committee, who recommend two for the £30 and £15 premium. That for which the first prize is recommended is stated by the *Bolton Guardian* "the most in accordance with utilitarian and economical views, while that given the second place" is pronounced "by far the most beautiful and artistic."

Mr. Whistler contemplates an action for libel against Mr. Ruskin, on account of some recent articles in "Pors Clavigera," and it is said that notice of the action was served on Saturday, and that Mr. Whistler means to press it to a hearing, even if an apology should be contemplated by the great art-critic.

A new block of barracks at Tipperary is nearly completed, and will be occupied at an early date.

At the fortnightly meeting of the rural sanitary authority of Malton, on Saturday, it was reported that the new system of water supply and drainage for Hovingham has been completed to the satisfaction of the local committee. The total cost has been £1,635—£35 more than the estimate.

The offer of the Retford Corporation to purchase the gas works and undertaking for £24,000 has been accepted by the gas company, and the transfer will take effect on the 1st July, 1878.

The members of the Keighley Art Schools visited Leeds, on Saturday, and inspected the town hall, mechanics' institute, new infirmary, philosophical museum, Beckett's bank, post-office, and parish church, and spent the afternoon in Roundhay-park.

The Theatre Royal, Manchester, has just been re-decorated and improved under the direction of Mr. E. Salomons, architect, of that city.

Mr. William Duckett, late master of the Dover School of Art, has been presented with a gold watch and an illuminated address as a token of the esteem of his former pupils. Mr. Duckett is about to undertake the direction of the school of art at Barrow-in-Furness.

The foundation stone was laid last week at Stokenchurch of a new school to be erected by the Stokenchurch School Board, designed by Mr. Arthur Vernon, architect, High Wycombe. The school will accommodate 160 children.

The foundation stone of a new middle class school for girls, in the parish of St. Giles, Cripplegate, was laid on Monday week. The style of the new building will be Elizabethan, and the material red brick, with stone dressings. The building has been designed by Mr. Edmund Woodthorpe—the builders being Messrs. Bays, Brothers, and Allen, and the clerk of the works Mr. J. Coleman. The cost will be about £5,500.

On Saturday week the foundation stone of a new Presbyterian Church of England was laid at Crouch-hill. The structure will in style be Geometric Gothic, and will cost £5,500. The church is so constructed that when opened it will be capable of seating a congregation of 600, which subsequently may be increased to 900.

Negotiations have been commenced for the transfer of the gas works at Elgin from a private company to the Town Council. The arrangements will not be completed till after the elections of next November, in order that the townspeople may have an opportunity of expressing an opinion on the point.

Building Intelligence.

AISKEW.—The foundation stone of the Church of St. Mary and St. Joseph, Aiskew, near Bedale, Yorkshire, was laid on the 26th July, by the Bishop of Beverley. The building will have the character of a small country church of thirteenth-century English Gothic. There are to be a nave, chancel, and baptistery, with convenient sacristy, &c., connecting the new church with the existing presbytery. The stone walling of the church is from local quarries, and of a warm tint, which will harmonise well with the red tiles with which the roof is to be covered. A picturesque stone belfry covers the west gable facing the high road, beneath which is a traceried rose window and deeply-recessed doorway. The nave windows are of two lights, with simple tracery. A well-proportioned arch will open into the chancel, which will have simple side-lights and a four-light eastern traceried window high up in the gable. The total length of the church is 74ft. by 25ft. wide. The design is by Mr. G. Goldie, of the firm of Messrs. Goldie and Child, Kensington-square, London; Mr. Wood, of Leeds, is the contractor; and the works are under the superintendence of Mr. W. Watson as clerk of works. The cost of church, including sacristy and additions to presbytery, will be £1,575.

BIRMINGHAM.—The foundation stone of the new Church of St. Catherine, Necheels, Birmingham, was laid on Friday last. The church is being built by Messrs. Jeffery and Pritchard, from the designs of Mr. F. B. Osborn, architect, of Birmingham. It will consist of nave, chancel, north and south transepts and aisles, organ chamber, clergy vestry, and a large choir vestry. The nave will measure 80ft. long and 30ft. wide; the chancel 20ft. long and 22ft. wide. The width of the church from transept to transept will be 82ft.; and the height, to the ridge of the roof, will be 58ft. The building is to be in the style of the 13th century, and constructed of red brick and stone, with red tile roof. In the interior, the arches of the nave arcade, chancel arch, &c., will be red brick; and the columns will be stone, with moulded capitals. Light will be derived principally from a series of large clerestory windows, and from windows in the west end and in the chancel. The seats will supply accommodation for 756 persons. The estimated cost is between £6,000 and £7,000.

BOLSTONE.—The parish church of Bolstone, Herefordshire, was reopened on Tuesday week, after restoration, under the care of Mr. W. E. Martin, of Hereford, at a cost of £700, the contractors being Messrs. Stone Bros., of Fownhope. The Norman character of the building is preserved, and its shape is still rectangular. The three semi-Norman windows in the east end, peculiar to old churches in Herefordshire, have been left almost undisturbed, and form an interesting feature; and for the same reason one or two more of the old windows have been retained. Another relic which has been incorporated with the building consists of the remnants of a low Norman doorway on the north side near the west end. A portion of the west end wall also stands, and the old font is retained too, the stone having perished very little. Otherwise the building is entirely new; with the exception of the pulpit, which is of Bath stone, local stone only has been used in rebuilding. The floor of the body of the church is laid with Staffordshire tiles, Godwin's encaustic tiles being used inside the altar rails and in the new porch on the south side. The church is very small, but the inhabitants of Bolstone only number some 50, and there are seats for about 100.

BROUGHTON.—On Monday the foundation stone was laid of a new church in Cheetham-street, Higher Broughton. The church, which is dedicated to St. James, is estimated to cost £7,000. It will be built of brick and terra cotta, in the Decorated style, and will furnish accommodation for 600 adults. The architects are Messrs. Paley and Austin, of Lancaster, and the contractors Messrs. Foreman and Todd, of Higher Broughton.

COLSTERWORTH.—The parish church of St. John the Baptist was reopened on Wednesday

week, after having undergone extensive restoration. The works involved the entire removal of the barn-like structure, which for the past 100 years had done duty for a chancel, and the construction of new chancel and Newton aisle upon the old lines. Clear evidences of the design and character of the old work were found when the eighteenth century building was removed, for the whole of the east window jambs and much tracery, together with portions of the Newton aisle windows, had been buried as walling stones. The Newton aisle is separated from the chancel by a Decorated arcade of two arches. The whole of the buildings are covered with simple framed roofs. Every sound piece of ancient work has been preserved. The fittings comprise moulded and carved oak pulpit, lectern, and choir-seats, and pitch pine nave seating. Mr. J. Fowler, of Louth, was the architect, and Messrs. Rudd and Son, of Grantham, were the builders, by whom the work has been carried out. Stained glass memorial windows have been placed in the church, and also some small lights in the south side of the chancel—one representing the angel appearing to Zaccheus; the other representing John the Baptist preaching in the wilderness.

LONDON.—The Church of St. Mary Aldermary, which for upwards of sixteen months has been closed for repairs and renovation, was reopened last week. The building was commenced in 1510. A great portion of the church was destroyed in the Great Fire of London, and was afterwards built by Sir Christopher Wren, and completed in 1682 at the expense of Henry Rogers, a great grandson of Sir Henry Rogers, Privy Councillor to Queen Elizabeth. The works which have now been executed at the church consist chiefly of the removal of the cement which covered the external face of the stone walls, and reinstating the stone ash-laring; rebuilding the buttresses where the old foundations were found to exist; the reopening of the windows in the north aisle, which had been blocked up after the Fire of London; a general repair and restoration of the external stonework, including the tower; new doorways and oak doors, the removal of the gallery and old internal fittings; the fitting up of the church with new oak seats, and the chancel with stalls; the erection of a new oak glazed screen across the church, at the west end, and a new lobby to the south doorway; the erection of a stone reredos; the repaving of the church with tiles, with marble steps to the chancel; the reglazing of the windows, principally with painted glass. The works have been carried out from the designs and under the superintendence of the architect, Mr. C. Innes, of 27, Queen-street; Mr. C. Fish, of Pimlico, was the contractor for the general works. Messrs. Simpsou and Sons, of St. Martin's-lane, provided and laid the tile paving.

LOUTH.—The new reredos of the restored Church of St. James, Louth, has just been completed from the designs of Mr. James Fowler, architect. It is composed of Ancaster stone and alabaster, with green marble columns, and consists of three central canopied compartments and four lesser ones. Each contains a statue executed in the purest Carrara marble. That in the centre represents our Saviour, the compartment on either side being occupied with a figure of an angel, while the outer ones are filled with those of the four Evangelists. The statuary was executed by Mr. Samuel Ruddock, of West-street, Pimlico.

METROPOLITAN BOARD OF WORKS.—On Friday the clerk was directed to reply to a memorial from owners and occupiers in South Hackney, complaining that it is the intention of the trustees of the Cassland Charity to let the triangular piece of ground in the Kenton-road for building purposes, that the Board do not consider it desirable to interfere in the matter. It was decided to establish a fire brigade station in the neighbourhood of Knightsbridge, and to purchase the 80 years' lease of a house in Chapel-place, and two stables in Renton-mews, Brompton, for that purpose. The Board also agreed to institute a bronze medal to be given to men of the Metropolitan Fire Brigade who distinguish themselves by extraordinary bravery at fires. On

the recommendation of the Building Committee the application of Mr. F. Butler, for approval of a plan for the construction of buildings to be named "Alexandra Mansions," in Victoria-street and Alexandra-street, with walls exceeding in height the limit prescribed for dwelling-houses by the schedule of the Metropolitan Building Act, 1855, was not granted; and the application of Mr. John Whichcord, on behalf of Mr. H. A. Hankey, for approval of a plan for the construction to an additional height of the external and cross walls to the south wing of Queen Anne's Mansions, Queen's-gate, Westminster, was similarly refused. An official representation, under the Artisans' Dwellings Act, was received from Mr. John Little, as medical officer of health for Whitechapel, with reference to certain areas in the parish of Spital-fields; on the other hand, Mr. T. Stevenson, medical officer of health for St. Pancras, wrote to state that an area in Brook's-gardens and King's-cross-road, as to which complaint had been made by twelve ratepayers, was not, in his opinion, an unhealthy one for the purposes of the Artisans' Dwellings Act. The first of these representations was referred to the works' committee, and to the finance committee was relegated a letter from the vestry of Islington, applying for sanction to their borrowing, and requesting the Board to advance, the following amounts, to be repaid by instalments extending over a period of twenty years—viz., £3,750 for erecting stabling, workshops, &c., on the old workhouse site, Liverpool-road; £600 for an extension of mortuary buildings at the Chapel-of-Ease grounds; £1,800 for the erection of additional office accommodation at the vestry hall; and £500 for the erection of an open shed at the old workhouse site, Liverpool-road.

MILTON, DEVON.—The foundation stone of a new church at Milton, near Buckland Monachorum, Devon, has been laid. The building will consist of nave, 37ft. 6in. by 20ft., chancel, 20ft. by 15ft., a vestry, and west porch. The style is Early English. The nave will be lighted by six 2-light windows of Bath stone. The eastern triplet chancel arch will be constructed of Hamhill stone. At the west end of the edifice there will be a bell-turret of Bath stone. The quoins are to be of Roborough Down stone, and the walling of local stone. The nave is to be seated with chairs to accommodate 110, and the choir seats, in the chancel, of oak, having Minton tiles in the sacarium and avenue. The roof is to be open, of red deal, plastered between the rafters. The contractor for the new building is Mr. Blowey, of Buckland; the architect, Mr. Ashworth, of Exeter.

SHEFFIELD.—The new covered wholesale vegetable market, which lies between the Market Hall and the Old Corn Exchange, Sheffield, was opened on Monday. The roofing, which is entirely of iron—wrought and cast—is remarkable for its simplicity and adaptability for the purpose for which it is required. The roof is supported on metal columns, and is glazed, without the use of putty or paint, on the principle patented by Mr. W. E. Rendle, and to which we have frequently alluded in these columns. It is perfectly watertight, and presents a light and elegant appearance. The pavement of the market is asphalted, and divided into squares. The cross avenues by which carts enter are 27ft. wide. When completed, by the demolition of the Old Corn Exchange, the space covered will be upwards of 5,000 square yards, or rather more than an acre. The entire fulfilment of the scheme must await the rebuilding of the Corn Exchange, the plans for which are in progress. Messrs. Hadfield and Son are the architects; the roofing has been executed by Messrs. A. Handyside and Co., of Derby; and the masonry, &c., by Mr. John Pearson, of Sheffield.

WENTWORTH.—The new church of Holy Trinity, which has been in course of erection at Wentworth during the past five years, as a memorial to the late Earl and Lady Fitzwilliam by members of the family, was opened on Monday. Mr. J. L. Pearson, of London, the architect, has adopted Early English as the style for the church, which consists of nave, north and south aisles, and transepts, chancel, and vestry. The external length is 130ft.—the chancel being 25ft. long, the transepts 20ft. across; the nave, including aisles, is 53ft.

wide external, and 46ft. measured internally. The space between chancel and nave is lighted by a lantern tower, the parapet of which is 100ft. from the ground; from it springs a spire, rising to a total height of 196ft. from the ground. The edifice is built of Darfield and Hooton Roberts stone; the roofing is of grey-stone slates; the pews and all other woodwork are of English oak; the pulpit, reading-desk, communion-table, and rails being handsomely carved. 550 worshippers are provided for, all on the floor level. The internal roof is groined, the clerestory windows have curtain arches, and the arcades and capitals are ornamented with dog-tooth and nail-head carvings. The design for a stone reredos has been prepared, but has not yet been executed. The floors have been laid with Roman mosaic paving by Messrs. Birks and Co., of London. The heating is by high-pressure water pipes, supplied by Mr. Baiton, of London; and a series of sound-tubes have been laid from the pulpit to various parts of the building. An organ has been erected by Mr. Willis, of Camden town, in the north transept, at a cost of £700. Mr. G. W. Booth, of Bedford-street, Covent-garden, W.C., and Gosport, was the contractor. The total cost is estimated at £25,000.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. Price 2s. weekly. (Annual Subscription, post-free, Eleven Shillings.) The number published August 3 contains articles on The Extinction of Fires, Artisans' Dwellings in New York, A Plan for Rendering Salt Meat More Nutritious, The Drainage of the Borough of Bristol, The Manchester and Salford Sanitary Association, The Public Health of Switzerland, The Water-Bearing Strata of Bristol, Influence of Impure Air Upon Heart Disease, The Yorkshire Association of Medical Officers of Health, Official Medicine in Ancient Rome, Aids to Sanitation, Sanitary Science (by Mr. J. J. Mechi), Public Health Reports, Local Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, Editor's Table, Gleanings, &c. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—T. C. T.—W. A.—E. C. R.—A. J.—C. F. T.—C. P.—I. T. W.—R. I. P.—H. S.—I. K.—I. L.

ARCHITECTURAL SCIENCE CLASS (Received).—S. M. E. (Shall bear your request in mind.)—A. L. B. (refers to the great advantages he has derived from the Science Class, renders us his thanks, and hopes again to be able to contribute.)—Attneave.—Aubrey.

HONEST INDIGNATION (who is so lavish of epistles, should at least put his own name and address to his criticisms. Let him do so, and we will insert his letter). HISTORICAL (next week).

Correspondence.

"MANSIONS IN THE SKIES," STORY'S-GATE.

To the Editor of the BUILDING NEWS.

SIR,—This agglomeration of dwellings—story on story—has been certainly an appropriately-named locality. It must be a "straight gate," too, to reach the stories; but *chacun à son goût*.

It is impossible, Sir, to regard this wonderful pile of brickwork without grave considerations anent the Building Act and its operations, and in the interests of the public I beg to make a few remarks. I should like to know whether complete plans of these buildings were laid before the district surveyor; whether he took counsel in such an exceptional case; and whether the work has been carried out according to his instructions, and under his supervision. This, Sir, is important not only as regards the work done, but because I hear it is the intention of the proprietor to do much more of the like description. The Building Act requires that "separate sets of chambers tenanted by different persons be deemed to be separate buildings, and be divided accordingly, so far as they adjoin vertically by party walls, and so far as they adjoin horizontally by party arches or fireproof floors." The more recently erected portion of these buildings has, agreeably with the rule quoted, fireproof floors; but the first block of building, I believe, has not such. Why not? Simply, I suppose, because the proprietor did not see the necessity of it. Though the intention of the Building Act is plain, yet here are huge blocks of dwellings, part of which are fireproof, part not, and can any one look up at these monstrous structures, and consider the number of lives jeopardised in case of fire, and say there is not as much reason for fireproofing in one case as in the other? A grave responsibility rests somewhere. If the proprietor of such intended structure does not choose to declare the purpose of the building, I do not see that there is any way, so far as provision in the Building Act is concerned, of obliging him to use fireproof construction, but there ought to be. If the district surveyor, in this instance, knew the purpose of the structure, why are the terms of the Building Act not adhered to? As regards thickness of walls, the Act would require in these buildings "Two stories 2½in., three stories 17½in., remainder 13in."—the thickness of a cross wall being two-thirds of the foregoing. By a gross oversight, no distinction is made in thickness of walls between a fireproof building and others, yet the weight on the walls in the one case is immensely increased. Such dimensions as I have quoted in such a building as I am now noticing, with brick or concrete floors, are simply absurd. Consider, Sir, the weight of twelve solid floors in a building over a hundred feet high, being borne by 13in. walls in basement; and consider, too, what brickwork often is! Yet this is the Building Act. They ought to be twice the thickness. Of course, it may be said that it is the duty of the surveyor, when occasion requires, to oblige builders to increase the thickness. But does he, and should it be left to him? It appears to me there should be separate tables for fireproof buildings in the Act—as little left to the surveyor as possible; and as even, without fireproof floors, the thickness of walls named is not sufficient for buildings of this height, extra provision should be made accordingly.

In the first erected block of these buildings two or three of the top floors have no front wall. This I consider a gross infringement of the Building Act, which requires, "brick, stone, or other incombustible substances." Of course, it will be said that these floors are in the roof; but, in fact, they are not. If I wanted to build a three-story house, and should seek to erect from ground level a front thereto of wood covered with slate, just a shade out of the perpendicular so as to "cheat the devil," I should be stopped, and told the Act did not allow it. But if my proceedings are bad at ground level, would they be less so if these stories are lifted a hundred feet in the air, being called a roof? Are not, in the latter case, the conditions a

thousand times worse? Why, then, is it allowed?

From the opinions generally expressed, it is certainly a question, Sir, whether such excessive height of buildings, as here, should be allowed. If there are not powers in the Act, or its executive, to insure moderation, there should be. In a general way it may be difficult to specify the height of folly, or the height of imprudence, but I fancy they are reached here. What say you? This same question about fireproofing needs be answered in respect of the blocks of artisans' dwellings now erecting—the Building Act being impudently and openly set at naught. If a fire should take place in any of these conglomerate households (and sooner or later it may be expected), and lives are lost (which would pretty certainly be the case), would the surveyor, proprietors, architects, and builders, be hanged? They certainly ought to be. Is the law to be wilfully set at defiance, and life thus wantonly endangered for the sake of gain? That so many women and children should nightly seek their rest under such dangerous conditions, is to my mind a frightful consideration. Nor are circumstances much improved, I consider, when tanks and hydrants are provided. We know in the cases of the Crystal Palace and the Opera House "conflagrations," how useless such provision was proved to be.—I am, &c., M.

HOW NON-SURVEYING ARCHITECTS "PROTECT" THEIR CLIENTS.

SIR,—One of the contributors to your last number thus writes on the subject of "The Architect and the Employer":—"The recent controversy (about quantities) has been waged between those who believe the architect should primarily protect his client and be thoroughly independent and those who see no harm in making an additional 2½ per cent. on quantities supplied to the builder." I should be sorry to charge your contributor with having intentionally made a disingenuous statement; and I can, therefore, only conclude that he did not read the correspondence he writes about. Had he done so he would have seen that one great point in favour of the surveying architect is, that he can protect his client from the enormous overcharges which are caused by excessive quantities; whereas, the non-surveying architect cannot, and does not. A single fact is worth a great deal of theorising, and I will give you one which occurred in my own experience. The names and dates are omitted for obvious reasons; but I shall be happy to give them to you confidentially.

Some years ago a large public building was erected in London, and I happened to be so connected with some of the promoters that I had an intimate knowledge of the facts relating to it. The architect was a Fellow of the Institute, who prided himself upon conforming rigidly to its rules, so it is needless to say that he did not take out his own quantities. These were prepared—as your contributor recommends—by an independent surveyor, appointed with the concurrence of the employers. The tenders came in, high, of course; they generally do come in high with an independent surveyor. In the end, however, the lowest tender was accepted, and the place was built, though the architect never regained the confidence of his clients, which he had lost through the great excess of the outlay over his estimate. This was the end of Act I.

Act II. began a few years after. The large public building had got dingy, and wanted painting. The managers determined to have it repainted exactly as at first. They invited tenders, and supplied persons tendering with a copy of the painter's bill in the original quantities. A few trifling additions and deductions were made in this bill, to allow for the small deviations from the contract which had taken place during the erection of the building; but the bill, as a whole, was substantially the same as at first. The tenders came in—astonishingly high, as before. And another architect got into hot water because his estimate was alarmingly exceeded. The lowest tender was not very far short of a thousand pounds; but it was, after some hesitation, accepted. The work was done and paid for. This was the end of Act II.

Act III. opens after an interval of three months. An old friend of mine happened to meet with a confidential clerk of the firm that had done the painting; they got into conversation about business, and about the way in which contracts turned out. "I wish," said the clerk, "that they all turned out as well as the one we have just finished for painting _____," naming the building in question. "Why?" said my friend. "Well," said the clerk, "our firm ordered paint and varnish enough to do the work taken in the quantities; and, when the place was finished, they had nearly half of it left."

This story—for the truth of which I can vouch—may have some interest both for architects and clients. The clients in this case, by employing an independent surveyor, were clearly robbed of £400 in a contract of less than £1,000. How much they were robbed of in the first contract—that for building—we shall never know; but it would probably be a moderate estimate to say as many thousands. Their architect protected his clients' interests in the way that the Institute advocates, and that your last week's contributor recommends; and this is the sort of protection they got. Your contributor thinks it hard that a client should have to pay his architect 2½ per cent. for taking out the quantities and making sure that they are not excessive. Now, 2½ per cent. on the contract for painting which I have named would have come to about twenty guineas, and the actual dead loss in cash, through excessive quantities, was about four hundred.

As to the two architects who got into disgrace through the agency of this "independent surveyor" the second, perhaps, may be pitied; but the first only reaped the fruits of his own folly. His estimate was largely exceeded because the quantities were largely in excess; but they would not have been in excess if he had not allowed them to be turned over to a person in no way responsible to him. His clients suffered, and they blamed him; and, on the whole, he got what he deserved. It may throw some light on the cause of the outrageous excess, or, in plain English, of the barefaced robbery, to say that the surveyor who was originally appointed called in a second surveyor to help him to take out the quantities for the building, and that the second surveyor was closely connected with the builder whose tender for the original contract happened to be the lowest.—I am, &c., CLAMANS IN DESERTO.

WAITING FOR A DETAIL.

SIR,—In reply to the letter in your paper of last week, I am really puzzled to see what the writer is driving at, or what is the full nature of his complaint. Surely he has plans, and a specification to guide him—no doubt the power, if a detail supplied, to lay before the architect or his clerk of the works, at the same time pointing out where there is more work than contemplated, and ask to have the same altered. But I am afraid "Consider the End" is like a great many more—has taken a contract, and now wants to shirk half of his work, giving the architect and clerk of the works no end of trouble and uneasiness. This class of contractors, I am sorry to say, are too often to be found, and have not considered the end until it is too late.—I am, &c.,

A CLERK OF THE WORKS.

DISTRICT SURVEYOR AND PLANS.

SIR,—Might I ask through your pages how far and on what authority it is customary for the district surveyors to demand a copy of plans of public buildings to be deposited with them? I am building a school chapel in London, and on the builder calling to give the notice required by the Building Act he is asked to deposit a set of plans, on the ground that it is a public building, and that it is the custom. Never having been required to do so before, I wrote to the surveyor to that effect, and his reply says:—"The custom is without exception, so far as I know, for copies of drawing relating to the construction to be deposited with the district surveyor. . . . The question has been decided upon by a magistrate, and I therefore think it is unnecessary for me to say more."

Finding, on inquiry, that several of my friends, though they have executed many public works in London, have (with one exception) of a similar demand from the same surveyor to an architect of 30 years' practice, and who has never had a request to the same effect made before) not had any such demand made, I inquired at the Metropolitan Board of Works as to whether I ought to deposit plans, and am told that "the surveyor is quite right in asking for them," and is empowered by the Building Act to do so, as a record of the work, and to enable him to supervise the building. But, as I cannot see anything to that effect in the Act, and, so far as I can learn, it is not the custom, I should feel obliged if some of your readers would give me the benefit of their experience and better knowledge. I enclose my card.—I am, &c., AN OLD SUBSCRIBER.

EGYPTIAN ARCHITECTURE.

SIR,—Your art critic in a late discussion stated that in the works of Viollet-le-Duc and others were proofs that the Egyptian temple courts were covered with awnings. I cannot find such, and should be glad if he would point out such passages, the existence of which I am sceptical of.—I am, &c.,

ONE IN EGYPTIAN DARKNESS.

CHILDREN'S HOSPITAL, CARDIFF.

SIR,—Without entering into the merits of the design, which are striking, and I think apparent to all, I venture to say a word in favour of the drawing which you qualify as "hardly does it (design) simple justice." According to my judgment the drawing possesses artistic charm, colour, breadth, and suggestiveness or mystery, all which qualities are observable in the best pen-and-ink work notable in Mr. Street's perspectives, and some few others. It seems to me that this style of drawing is infinitely preferable to the ruled, mechanical, and soulless representations of current architecture we are too often accustomed to, and I think I remember Mr. Ruskin somewhere speaking of such work as mere diagrams.—I am, &c., ASBURY JACKSON.

Intercommunication.

QUESTIONS.

[5077].—Black Boards.—Will any reader say what is the best preparation for blackening these for school purposes?—NOVICE.

[5078].—Colouring Lithographs.—I wish to colour some of the lithographs in the BUILDING NEWS, but the paper on which they are printed will not take the colour, and it spreads over and beyond the parts intended. Will some of your readers kindly give directions how it can be done?—CONSTANT READER.

[5079].—Church Roof.—Would 4½ by ½ wrought, matched, and jointed pitch pine make a suitable boarding for a church roof, nailed to back of rafters one foot apart, to be covered with felt? What are the names and addresses of the best makers of inodorous felt for this purpose?—QUERIST.

[5080].—Frames for Mullioned Windows.—I wish to fill in a mullioned flat-headed window with plate glass, making some of the lights fixed and some to open outwards. Is it necessary to have iron frames for the fixed parts, or can the glass be inserted in the stone? And what is the best section of casement for the opening parts? Also state if stone head, supported by several mullions, requires arch above it?—PEN.

[5081].—Professional Charges.—Will some reader kindly inform me—1. What would be reasonable charges for preparing plans, sections, and specification for carrying out a new cemetery, which is about 2½ acres, and superintending the work of forming the parts, &c.? Also preparing a plan, which is to be kept for permanent use at the cemetery? This plan shows all the grave spaces numbered, with proper references. 2. What would be a proper charge for preparing plan, sections, and specification for forming, fencing, kerbing, and macadamising new roads, and superintending the work, the contract being £360?—INIGO.

REPLIES.

[5081].—Removing Putty.—American potash applied to old putty will soften it so that the glass can be easily removed.—M. HAWNEY.

[5083].—Ambulance.—"Hospital" desires to know the meaning of the above word applied thus: "Detached laundry, ambulance, stable, &c., to be

provided." The meaning of the word is a moving hospital. The manner in which it is applied will not change the meaning, but may make it greater or smaller; thus, if applied in connection with an army it would appear greater than coupled with a hunting expedition. The word is sometimes applied to a litter or portable bed to carry sick people, and also to a carriage used for the same purpose.—J. MORRISON.

[5061].—Iron Girders.—If the rust be carefully scraped off, particularly in the angles, and then the iron be painted three coats red lead and oil, it will effectually stop further corrosion.—M. HAWNEY.

[5065].—Main Sewers.—Allow me to thank "G." and "Assistant Borough Surveyor" for their replies to my queries on this subject, and to trouble them for their ideas on the following:—Supposing a town built on the coast is to be drained, or rather re-drained. The lowest point of the town is 9in. above high-watermark. For a distance of some 500 yards the town runs inland at a comparative level, and the surfaces of the streets are about 18in. or 2ft. above high-water spring tides. From this plateau the town—or by far the larger portion of it—rises in terraces and streets at an angle of about 30 degrees. Now, the drainage, as may be imagined, in the upper part of the town is efficient, but in the lower part is very defective, and to remedy this is a task. Will "G." or "Assistant Borough Surveyor," kindly state (1) what size drain is required for 3,000 population, at a fall of, say, 1 in 20? (2) What size drain is required for 2,000 population, at a fall of 1 in 200, including the discharge of the sewers No. 1? (3) How would you construct an outfall so as to prevent flooding at high tides? And (lastly) is the theory of "soil to the sewer, and rain to the river," a good one? Is it not wasting or refusing a valuable agent in cleansing sewers—I mean by diverting surface drains to the river?—OUTFALL.

[5088].—Felt in a Roof.—I do not think any advantage would be gained by putting felt on the wooden ceiling. Under slating it takes, in a measure, the place of rendering—that is, when slating is laid on wooden sheeting. The lap of slating varies with the pitch of roof, but for the slate mentioned from 3in. to 3½in. ought to be sufficient.—M. HAWNEY.

[5073].—Wall Decorations in Distemper.—I quite agree with the *Lancet* that this process of cheap wall decoration ought to commend itself to every one, but am surprised that this advocate of sanitary perfection should have recommended it being applied "over paper of almost any description," as a great temptation is thus offered to the landlords of small property to cover up dirt and filth, leaving undisturbed those hemipterous insects that are the trouble of London visitors at a sea-side boarding house. If the walls are properly prepared for painting (see "Architectural Science Class") before applying the distemper, then I do not think "Kappa" will find a better process of wall decoration at a moderate cost. I must remind "Kappa" that the appearance of the work depends specially on the workmanship. The distemper is prepared as follows:—The white colour or base generally used is the best whitening, dissolved in a little water, and when in a thick paste hot size is poured and mixed with it to render liquid. The tints are then added and allowed to set. The quantity of size or water is regulated according to the weather. Any dry colour may be used for tints, but must be ground fine in water to ensure the most minute division of particles. It will not require more than two coats to cover a properly prepared wall. I have seen patent preparations used, but I like the above better. I do not advise the use of distemper colour on flock paper, and recommend "flating" (see "Architectural Science Class," No. 55) as more lasting and more suitable to the class of room boasting a flock paper. "Flating" is very effective on a good pattern. Distemper colours should only be used for cottage property, but in new buildings it is as well to distemper the whole of the walls for the first year, as it does not show the damp as paint or paper.—J. A. HOWICK.

[5076].—Legal Fees.—If the "Architect's Assistant" is in the employ and pay of the architect, his master would be entitled to the fees which are earned while he is giving evidence during his employer's time in a lawsuit, supposing there were no agreement between them existing on the subject.—W. R.

[5082].—Warming Rooms with Hot Air.—Will some one be kind enough to give me some information on the above subject: I want a pipe to pass from the garden, behind the kitchen fire, into a room above. How many cube feet will a 3in. pipe warm? Also, who are the makers of the necessary pipes, saddles, &c.?—S. Y. D.

[5083].—Arch or Lintel.—Would any of your numerous correspondents inform me whether an arch or lintel will, with the same weight, be the more durable, and which will bear the greater weight?—PUPIL.

A large portion of the south side of the west tower of Lichfield Cathedral is now encased in scaffolding, and workmen are busily chiselling off the cement and the face of the old stonework. This is done to the depth of seven inches where necessary. The stone beneath the facing is in splendid condition. Mr. Tebbs is in charge on behalf of Mr. Thompson (of Peterborough), the contractor; and Mr. Barnsdale is responsible for the scaffolding and woodwork.

LAND AND BUILDING SOCIETIES.

NATIONAL BUILDING AND LAND INVESTMENT COMPANY OF IRELAND.—The 12th annual meeting of this company was held at Dublin on Saturday, when the report was read showing that the deposits had increased during the year by £15,000, and that the share capital has now reached nearly £32,000. A dividend of 6 per cent. per annum was declared for the half year, a similar *ad interim* dividend having been made during the previous half year; this will reduce the balance on profit and loss account from £3,118 to £2,240.

LEGAL INTELLIGENCE.

ACTION AGAINST A CORPORATION.—A SHABBY DEFENCE.—At the Cambridge Assizes, in the Nisi Prius Court, before Sir William Balloil Brett, an action was this week brought by Messrs. Neave and Co., contractors, of Sidcombe, Kent, to recover certain moneys from the Mayor and Corporation of Wisbech, the balance of a certain contract for extensive works. They claimed on two contracts, in the first a balance of £935, in the second of £837. For the defence it was urged that the plaintiffs had agreed to keep the works in repair for 12 months after completion, that defects had arisen that plaintiffs refused to repair, and the Corporation had repaired at an expense of £470. His lordship held that the defects were defects of engineering and did not arise from any fault of the contractors. They cost, too, only £470 on a contract of £20,000, and the defence was a shabby one. Verdict for the plaintiffs in both cases.

A LAND SOCIETY SECRETARY'S SALARY.—At Rotherham County Court on Saturday, Judge Ellison gave his decision in a case of some interest to land societies and their secretaries. John Walker, of Sheffield, had sued four persons as trustees of the Sandhills Freehold Land Society, Rawmarsh, to recover £41 for services rendered as secretary to the society, and also for damages for wrongful dismissal. Plaintiff said he acted on behalf of the society from October, 21st, 1874, until January, 1876, and had received from the society £4 for one year's services. A witness named Horner proved that, prior to his engagement as secretary to the society, plaintiff said he should be satisfied with whatever remuneration the society might think fit to award him. This agreement his Honour held was binding on plaintiff, but he considered that he was entitled to £4 for wrongful dismissal, as the rules of the society provided that the secretary should be appointed annually. Verdict accordingly.

BREACH OF BUILDING BYE-LAWS AT CARDIFF.—At Cardiff Police-court, on Monday, William Lane, of Gibbet-hill-road, was charged with allowing two houses to be occupied before they had been certified by the borough surveyor. Defendant admitted the offence, adding that he had previously built 30 houses on Corporation ground, and had never received certificates from the surveyor. Thomas James, of Morriston; William Dovie, Hafod, Morris Griffiths, Landore; William Lloyd, Morriston; David Williams, Plasmore; William Loosemore, Burrow-road; and William Pyle, were charged with similar offences. Mr. Cousin, the surveyor, said that in no one of the cases would a certificate have been granted if applied for, as the houses had not been completed in accordance with the plans deposited and approved of. The town clerk, who appeared for the prosecution, stated that the defendants had received notice to comply with bye-law 24, the one which dealt with the cases. He admitted that it had not been generally enforced. The cases were adjourned for a month to give defendants opportunity for compliance. At the same sessions John Edmunds was charged with building a house in Simmons-street not in compliance with the plans deposited. It was shown that defendant had encroached 9in. on the street, and that the house has been built up to the roof. The presiding magistrate said the bench felt bound to treat the offence as a very serious one, and to inflict a heavy penalty. The practice spoilt the appearance of the streets, and injured the health of the town. A fine of £5 would be imposed. Defendant said he knew of many cases where builders had encroached to a greater extent than he had, and had not been prosecuted.

The surveyor to the Ilfracombe Local Board of Health stated, at a meeting of the Board on Monday that there was only one mason in the town who could use a hammer and chisel. Good opening to banker-hands according to this statement.

The Aberdeen Harbour Commissioners have received a report from Mr. Dyce Cay, the resident engineer, in which he recommends that the jetties in the harbour channel should be extended this season at an estimated cost of £4,600, with the view of preventing storms from affecting the inner harbour, and that next session Parliamentary sanction be sought for the diversion of the river Dee out of the harbour and dredging, at a total outlay for the works of £103,000, besides the erection of a new quay and goods' shed on the south side upper dock, and other works, estimated at an additional £26,000.

Our Office Table.

A NEW and simple apparatus for facilitating the cleansing of both sides of a window from the inside of an apartment has been devised by a Perth man, and a sample has just been fitted up in the office of Messrs. Cruickshank and Fulton, consulting engineers, Glasgow. A portion of the rod at one side of the window is made removable, and the suspending cord at the same side is capable of detachment. At the other side of the window hinges are provided for each sash, on which they are swung inwards. In opening the window the movable portion of the rods are taken out. The sashes are alternately raised and lowered in the usual way into gear with their hinges, and, the suspending cords having been detached, the sashes are easily turned on their hinges inwards, and a person standing inside can comfortably reach the different panes.

An Artistic Congress is to be held at Antwerp on the occasion of the tercentenary celebration of the birth of Rubens, in order to consider various questions in relation to the development of art. The sections will be classed under the heads of "Æsthetic and Philosophic," "Artistic and Economic," "Architectural," and "Historic." The following subjects will be considered by the Architectural Section:—1. Ought not each country to respect in its buildings the traditions of its national architecture? Thus, in Belgium, would it not be better to return to the types of the thirteenth to seventeenth centuries, adapting them simply to modern necessities? 2. Is it not desirable that the State should have a right of control over its architecture, especially over modern constructions in the neighbourhood of old monuments?

In celebration of the jubilee of the General Union of Carpenters and Joiners a meeting was held last week in the Co-operative Hall, Downiu-g-street, Manchester. Delegates were present from about 40 towns in the United Kingdom, and they were hospitably received by local members of the union. Mr. Joseph Reay presided. A statement was made by Mr. R. Last, the general secretary, to the effect that the union now numbers 12,000 members, about 2,000 of whom are resident in Manchester, and that the organisation was never in a more flourishing condition than at present. Addresses were delivered by Mr. C. Matkin (London), Mr. J. Lindsay (Pendleton), and others. Mr. Lindsay, who stated that he had left three towns owing to strikes, referred to the present dispute between master joiners and the men in Manchester, and said that, though some persons might think they could have managed things better, he had the fullest confidence in the Strike Committee acting on behalf of the men. He hoped that in the course of a few more weeks the struggle would be over and forgotten, and that the men would be enjoying the advantages which they were so nobly fighting for.

A BUILDING has recently been erected in Derby, to be permanently devoted to the purposes of art-education, and its completion is now being fittingly celebrated by an exhibition within its walls of paintings, sculptures, and other forms of art, of unusual variety and attractiveness. Contributions have been successfully applied for from the art-collections in most of our leading towns, such as London, Birmingham, Manchester, &c., while many valuable cases of jewellery, electrotypes, Persian pottery, with examples of decorative art by Messrs. Poynter, Leighton, &c., have been lent by the South Kensington Museum. The Indian works of art and textile fabrics are the loan of the Secretary of State for India, and are numerous and interesting. The collection of paintings numbers over 700. The collection of bronzes is particularly good, as are those of Dresden china, Laubeth faience, terra-cotta wares, &c.

On Saturday a deputation, representing over 60 municipal corporations, waited on the trustees of the British Museum, for the purpose of submitting to that body that it had now become necessary that the collections contained in that and other national institutions,

and which were to a large extent provided and supported by public grants, should, as far as possible, be rendered available for the benefit of museums under the charge of provincial corporations. The deputation was headed by Mr. Joseph Chamberlain, M.P. The trustees present at the Museum to receive the deputation included the Duke of Somerset, who, replying to the deputation, pointed out that in order to enable the trustees to lend any of the objects in the various collections of the museum, special legislation would be necessary. He promised, however, that the matter, which he considered a very important one, should receive careful consideration.

The Shipley School Board inspected, at its last meeting, several school desks on the dual principle, the models of which had been made by Mr. Titus Salt (chairman of the Board). The desks consist of a pine incline, large enough to allow 2 scholars to work comfortably; this is mounted on a strong yet light framework of wrought and cast-iron. The seats are in chair forms, upon a stout pedestal of iron, which, like the desks, is screwed down. It was stated that the cost would be "moderate."

THE statistics as to the capital, dividends, receipts, working expenditure, rolling stock, mileage, &c., of the railways of the United Kingdom in 1876 are issued. They show that the total authorised capital in that year was £741,802,527, an increase of £24,026,829 on the preceding year; and the total paid-up capital £658,214,776, an increase of £27,991,282. The number of miles open for traffic at the end of the year was 9,169 double and 7,703 single, in all 16,872, or 214 more than in 1875. The number of passengers conveyed, exclusive of season ticket holders, was 538,287,295, or 31,312,061 more than in 1875. The gross receipts from passenger traffic were £26,163,551, and from goods traffic, £33,754,317; in all, £59,917,868, or £935,115 in excess of the gross receipts of the previous year. The miscellaneous receipts amounted to £2,297,907, or £43,660 more than in 1875. The aggregate receipts were thus £62,215,775, or £978,775 above those of the preceding year. The working expenses were £33,535,509, against £33,220,728 in 1875, leaving net receipts to the amount of £28,680,266. The working expenses were 54 per cent. of the gross receipts, the percentage being precisely the same as in 1875, but the net receipts were only 4.36 of the total paid-up capital, as against 4.45 per cent. in 1875, a proof that the calls on shareholders were more numerous last year.

At the last quarterly meeting of the Hants Diocesan Church Association the following building grants were made:—To Gatton, for parsonage, £110; Ashey, for mission chapel, £30; New Town, for enlargement and repairs, £20; Totland Bay, for parsonage, £50; Whitsbury, restoration, £50; Shipton Bellinger, restoration, £50.

Last week the Town Hall of Aberdeen was formally opened, after being altered and re-decorated. The roof of the hall has been heightened 4ft., and panelled with oak, divided into 84 compartments, in each of which has been inserted a shield in *carton-pierre*, bearing the emblazoned arms of those who have rendered service to the city.

A few days since, says the *East Anglian Daily Times*, the asphalt flooring of the Lowestoft Skating Rink appeared to be "blistered" in several places, and it was found that it was caused by the forcing up through seven inches of concrete of some asparagus plants, the roots of which had been left in the ground, which had formed part of a kitchen garden.

The Brighton and South Coast Railway are about to construct a second line from London to Eastbourne, and the Duke of Devonshire has guaranteed £200,000 towards the construction of a direct line between the same watering-place and the Hastings branch of the South Eastern Railway.

New schools were opened at Woodland, county Durham, on Monday. They have been built from plans by Mr. Richard Littlefair, of Copley, near Cockfield, by Messrs. W. and R. Blackett, of Bishop Auckland, at a cost of £800, including purchase of land, and accommodate 205 children. The school furniture will cost about £60 more, and will be supplied by the School Furnishing Company, of Darlington.

Lord Waverley is about to have erected, in the People's Park, Todd's-hill, Ballymena, a statue representing Armed Science. The pedestal, a cube of Dungannon sandstone, weighing three tons, was set in its place last Thursday.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 10, 1877.

VIOUET-LE-DUC ON ARCHITECTURAL DESIGN.

SOME time ago we noticed one of the earlier parts of Mr. Benjamin Bucknall's translation of Viollet-le-Duc's Lectures: we now take up another part of the work in which the causes of the decline of architecture, and certain abstract principles are discussed. Here, again, we may remark, Mr. Bucknall's rendering is as clear and as idiomatic as a translation can be. Lecture VIII. opens with an inquiry into the position of the architect—why it is the training he receives has not realised the demands of our day. Viollet-le-Duc asks, "Have we reached such an incurable stage of decline that we cannot hope to see architecture free itself from the rut in which it has been dragged along? Are we reduced to the necessity of copying the Romans very badly—the Greeks after a fashion which to those acquainted with Greek architecture must seem puerile—the Middle Ages, the Renaissance, the age of Louis XIV., and even the poor buildings of the close of the last century, and to return once more—because we can do nothing better—to the Romans, and recommence the cycle of imitation?" Such a question, forsooth, has been asked again and again within the present generation of architects among ourselves, and here is the greatest French architect asking it among his own countrymen. The answer he gives is significant, and points to a solution we have constantly maintained in this journal. "No," he says, "decline is not absolutely inevitable; the evil is not without remedy; but it is high time to consider the state of things, to make use of all the vital elements that are still at our command, to quit the mere interests of the schools, and to devote our attention entirely to the great interests of an art which has always been considered, in the case of every people, the most striking expression of its civilisation." He goes on to say the whole field "must be subjected to intelligent scrutiny," and that we ought not to ignore the popular judgment—that we should be wise to accept that judgment as sovereign, for the sufficient reason that we build for the public, which makes use of the buildings, and pays for them. We are to enlighten that judgment, not to conceal the art we practise, as many among us would do, making it a kind of freemasonry, an incomprehensible language, an inscrutable dogma. The author, undoubtedly, here strikes a great stumbling-block to progress, and exposes one of the narrow and selfish ideas of professional class bias. Some architects go even so far as to avoid the enlightenment of their own ranks and the public, by refusing the publication of their works. The author observes: "In an age such as ours, when new ideas are daily brought to light, and when all things—even the very foundations of society—are subjected to discussion, one thing alone remains unshaken—the inscrutable dogma of architecture, guarded by a mysterious Arcopagus." The clamours outside for an architecture conformable to the age are unheeded, and the areopagus exacts from its adepts a "submission blinder as the multitude without are noisier." In France, the Government, who care not for art, are willing to give their allegiance to the guardians of these art mysteries, just the same as in England, the leaders of fashionable society adopt the taste and sentiments of Mr. So-and-So's style—be it Queen Anne, Dutch William, or anything else. It is not difficult to assign a cause for this state of things. In France, as Le-Duc

observes, the State provides a system of education for the architect which only enables him to design according to a programme, and holds out to the young aspirant of art, as a reward to his slavish submission to precept, a journey to Rome or Athens to enable him for the hundredth time to copy a Colosseum or a Partheon. In England, we may add, the young architect's training is quite as submissive to academic rules. Our own Institute's best reward is a travelling studentship, circumscribed to the study of mediæval buildings. Thus, between academical oligarchy, and the confusion of unmethodic training, the architect and the public vainly look for what they want. We have often, in these pages, pointed out the only paths by which architecture can be learnt. Every day we find the acknowledgment becoming more unhesitating that, if the art is to be learnt as it was of old, it must be imparted as a science by a method in which principles and not mere growths or results are inculcated. The *modus operandi* of the old workman has been completely ignored in the results of his labours. Viollet-le-Duc argues, "Since architecture belongs almost as much to science as to art properly so called, and as its conceptions are very largely dependent on reasoning and calculation, it must be allowed that design is not the result of a mere process of imagination, but is subject to *rules* methodically applied, and that it must take account of the means of execution, which are limited." Quatremère de Quincy, another authority, says, "The study of design should be something more than a mere imagining on paper of the several parts of a plan commending themselves to the eye on account of their variety and symmetry, or of elevations that seem to promise effective combinations or novel outlines and aspects." The architect's attention, he observes, should be "constantly directed to the means by which his designs are to be realised." The elements that affect his design must be taken into the architect's account, and the conditions of requirement, site, materials, and expenditure must be complied with. We are told that, in the domains of letters, painting, and sculpture, the appeal to the public is *bonâ fide*—there is no intermediate authority, no monopoly or ostracism; but with the architect the Villa Medici is all paramount, and woe to him who designs without its walls. Viollet-le-Duc is one of our ablest denouncers of the art *coterie*; he shows what would be the effect if the French Academy had the power to hinder the publication of certain new ideas, if it could compel the world of letters to express only a restricted number of authorised conceptions. Would such an espionage be favourable to independent thought? Certainly not. A current opinion is combatted that artists have not a practical mind; and the author shows that a genuine school should derive all its influence from "discussion; exchange of ideas and the emulation arising from rival principles freely manifest themselves under public opinion." It is fair to observe here that the author speaks rather flatteringly of the English school as prompted by more liberal principles—that, while the French architects are restricted by academic rule, the architects here and in Germany are gleaned everywhere, studying the methods of France, Italy, and Greece. This opinion, though generous, is scarcely correct. We are certainly less trammelled by academic teaching than our French brethren; it is true we glean from all sources, but it is also true that art cliques or coteries hold a monopoly. In France the tendency is undoubtedly towards mediocrity; in England it is towards individualism.

The object of the lecture before us is to interpret the architectural programmes of

different epochs. Though the main features change but little, climate, custom, tastes, and other conditions impose variations. Thus, in a theatre, the auditorium, the stage and orchestra, entrance and exit, are as necessary now as they were in the Athenian civilisation, but manners and customs have imposed an essential difference in the arrangements. In the ancient playhouse scenic representations took place in daylight—with us at night. Modern appliances for stage effects, stalls and boxes, and other details of modern histrionic art have also caused the programme in the latter case to be differently interpreted from the former. Hence the two buildings are different. There is a basis that varies but little, and a form prescribed by the habits of the time; the latter has to be expressed and not made to fit certain architectural models. The usages of society are variable, and the arrangements made should be the outcome of them. Thus the author shows architectural design should be suggested, first, by the requirements of the case; and, second, by the habits of the time; and, this being so, it is a necessary inference that, as the first change but little, and the second are continually being modified, architectural forms must vary indefinitely. The author applies this principle to the Roman and modern hall. In both the window would be necessary, though the mode of lighting, the glazing, and whether it was to give light simply or to be an outlook as well, would suggest designs of different character. This theory in the main agrees with one we lately advanced in these pages, though we rather prefer the statement then made, that the change or variation arises, or should arise, from the modifiable action of modern requirements upon certain types or forms that have survived to our time. We believe this proposition contains the whole phenomena of architectural style, and to explain every illustration of Viollet-le-Duc. It is at least gratifying to know so eminent an authority, so thoroughly versed in all the epochs of architecture, and so critical an observer, has adopted a theory which we venture to predict the architectural historian of the future must unreservedly accept if he attempts to keep pace with those who can trace a law in the progress of nations. Conforming to the conditions laid down, it is shown that the architecture of the Egyptians and Greeks, Romans and Mediævalists, have left indelible traces in history. The Egyptian temple or palace is exceedingly simple, composed of a continuous range of departments with never more than one axis. Each part forms an approach to the next, and we have in succession a series of apartments, beginning with a court and ending with a sanctuary or terminal hall, which is always the smallest. The Greeks, although their temples were simple, displayed their art, instead of reserving the richest ornamentation for the interior. The Greek building is characteristic of a republic, not a theocracy. There are no palaces, but temples and public buildings. Again, the Romans, in their amphitheatres, thermæ, and basilicæ, which were essentially their own, adopt special arrangements. It is also pointed out that the Greek and the Roman systems of design were very different. The former paid little regard to the plan: with the latter it is the leading principle, and the architecture is subordinated to it. Viollet-le-Duc observes the Romans were not artists, but complied with the material requirements of their programme. This method is a sound one, and if we have departed from it, says the author, "it is because we are rather more of artists than the Romans were, and are ready to sacrifice our material requirements to satisfactions of a higher order." But, he observes, we wish to be

Greeks and Romans at the same time. We hesitate between the two principles, each commendable in itself, and we fall into the strangest contradictions. There is only one right method of design for us Western peoples of the nineteenth century, says Le Duc, that is, "to comply with the conditions of the given programme, and then to make use of what we know to find a form for all the requirements imposed by the habits of our time—a form beautiful and durable." That form must be the simple expression of a necessity. As each part of a building should have its *raison d'être*, so these parts should be intimately related, and the author justly recalls the difficulty of subordinating from the thousand forms presented to view—in fact the *embarrasement de richesse* which the architect has to contend against. This embarrassment compromises the work, and it loses character; hence the value of fixed principles and method. In fact, the greater the number of heterogeneous elements the stricter the method should be. The author describes the absurd mode of French design in resuming Roman forms in utter defiance of the principles adopted by the Greeks, Romans, and Mediævalists, who varied their programmes; and he asks significantly what Frenchman of modern times would wish to inhabit a Roman house of the time of the Emperors? The academic prescription leads to all conceivable absurdities, and the question of adapting a building so designed is the *crux*. To fit a classic exterior, windows are cut through floors and partitions, stairs must be in the dark, galleries have to be lighted by gas at midday, closets are flooded with sunshine, and small apartments have to be "entresoled," that they may not look like wells. As for the exterior, we are told the architect does not take into account the effect of perspective, or has depended too much on the shadows cast on his drawing at an angle of 45°. The ancients, the Mediævalists, and the Renaissance architects were less skilful as draughtsmen, yet they studied the architectural effects in more practical ways than we do. Geometrical elevations were not relied upon, but their authors compared effects, and applied their knowledge.

Having shown that an architect should have a definite idea that he requires principles and a form to express it, Viollet-le-Duc enters into an interesting *résumé* of the subject of design, illustrating his remarks by reference to works of the Renaissance in France. We can only here briefly touch upon one or two of the leading positions of the author. Speaking of one class of designers, he says, very truly, they have taken a formula applicable to one style, regarded it as comprising the laws of architecture, and universal principles have been tortured to fit this form; eclectics belonging to a more liberal order have taken a wider range, but the preference leads to exclusion. On the other hand, the old architects worked from invariable principles; they had also a form, more or less pliable, appropriate to those principles. They thus had a single language, not several, as we have. The chateaux and palaces, such as Chambord, Madrid, Ecouen, and parts of the Louvre, show, our author maintains, a distinct art, though it grew up under Roman influence. This art was in perfect harmony with the time, because the old principles were followed out, and modern forms subjected to them, instead of contrariwise. The plans of the sixteenth century differ but little from those of the fifteenth, which, again, were but slight modifications of the thirteenth and fourteenth century arrangements. The idea was always accommodated to the time, and the architect seized a form, but always adapted it to the idea. As early as Louis XIV. this method was abandoned, and the

colonnade of the Louvre attests the change. Since this epoch architects reversed the order: they gave precedence to the form before the idea or the requirements of the day. It is thus the art is being led to its ruin, says M. Le-Duc, and an Academic precept has been substituted for a principle. It brings architects to a blind submission—a protective patent—or leads them into extravagant vagaries; it gives a handle to the advocates of the "practical," who thus see in works of art a useless and ruinous luxury, having interest for only a small section of society. We cannot too strongly enforce this latter view. The mediæval architecture of France in chateaux, hotels de ville, and palaces, show us an adherence to the principle we have mentioned. Thus, symmetry is approved of in churches, where unity of purpose preponderates; it is not regarded in a chateau, which is an agglomeration of dissimilar parts, each having a suitable form. By imposing a form this principle is sacrificed. In England, it is true, we have not reached this abject submission to outward formalism.

The common idea that the French Renaissance architects drew their inspiration from the Italian Renaissance, and that Italians largely constructed the French buildings of the sixteenth century, is refuted. These structures are not Italian in their plans, or in style or construction; the French Renaissance, in fact, it is shown, began as early as 1450, and in a form entirely French. It is contended, in fact, that the Renaissance was rather a continuation of the Roman organisation than a return to a forgotten system; and this view is explained by a reference to historical and ethnological facts, into which we shall not enter here; suffice it to remark that the great revolution of the twelfth century in France, the result of which was that the arts passed out of the clerical party into the hands of the laity (the Gallo-Roman races modified by the white races of the North), assisted in a return to the Latin arts.

Speaking of the requirements of architects, the author cites the treatise of Philibert de l'Orme, which enters into question of good aspect, &c. Some excellent illustrations are given—the Chateau of Boulogne as a primitive type of all the fine *maisons de plaisance* of the sixteenth and seventeenth centuries, and as showing no Italian influence. Here we have a central hall, or place of gathering, with its dais, suites of apartments, with wardrobes or boudoirs, and many of the traces of a feudal habitation. The chateaux de Chambord, of La Muette, Chantilly, de Charleval, and others, are instances inculcating the principles laid down; but we may return to them, as embodying one of the most interesting chapters of domestic architecture to be found anywhere.

THE RIGHT OF WAY.

THE law of easements is so intimately connected with building that any simplification of the subject will be hailed by architects and surveyors. Nice points of law and the decisions of judges upon them have tended to make obscure the general principles which should be borne in mind as the foundation of all easements of light, right of way, &c. We lately referred to the right of light, and in a recent number our "Legal Intelligence" (p. 67) contained an abstract of a nice point of law with reference to the effect of alterations in ancient lights in extinguishing the rights of the dominant over a servient tenement. In this instance, the National and Provincial Plate Glass Company v. the Prudential Insurance Company, Mr. Justice Fry explained the law, and decided that the mere enlargement

of a window did not operate as an abandonment, but that the principle of the decision in the well-known case of *Taplin v. Jones* held with regard to windows which had been put back. Mr. James Ball, in his "Monthly Law Tract" for the present month, treats of another very important easement, known popularly as the right of way, or the right which gives the person the liberty of passing to and from his own land over the adjoining land of another. This right may be a general road for all purposes, or it may be restricted to the user, for foot passengers, or for persons on horseback, for waggons, or for some special class of conveyance only. When a right of way exists without reservation, it is intended as a right for all purposes. This right, as that of other easements, is obtained (1) by express grant, (2) by prescription or undisturbed enjoyment, or (3) by implication, meaning an implied grant. An implied grant is generally obtained when one grants a piece of land to another which is surrounded by other lands of the grantor, it being presumed that a right of way over some part of those lands is granted at the same time. It must be remembered, however, that unity of possession of the dominant tenement and that over which the right passes or the servient tenement destroys the right; but a way of necessity is not extinguished, but only merged, by unity of possession, and on a subsequent severance the dominant and servient tenements would revive. A right by express grant means by deed which defines the extent of the right, or which is generally supposed to do so, though it is necessary to point out that a general conveyance sometimes makes it doubtful whether, on the sale of one property, a purchaser can claim a right the owner had made over his own property. In a case referred to, *Thompson v. Waterlow*, a way had been made by the owner of two properties to and from one over the other; on the sale of one of these properties the purchaser claimed this way, although he had another way to the land purchased. The claim was not granted. The "right," in fact, is merely the user by the owner of his own property. If the way was one of necessity which existed before the unity of possession, the purchaser would have been entitled to the revived right. A right by prescription is a right founded upon usage or an uninterrupted period of years. By sec. 2 of 2 and 3 Will. IV., cap. 71, forty years' enjoyment gives an absolute right, while twenty years' establishes a right, if there be "nothing to rebut it other than the fact of its having first been enjoyed within remembrance before the twenty years." Previous to this Act it was necessary to show uninterrupted enjoyment during the time of legal memory—a rather difficult thing to establish, considering that it went as far back as the accession of Richard I., 1189. Of course, in rights of this kind, the user of the right is the only evidence required. The third kind of easement, as we have said, generally arises from a "way of necessity." Thus, if the owner of two pieces of land having no way to one but over the other, should grant one of them, without reserving to himself the right of way, it will by the operation of this law be granted to him. Where land is granted that is surrounded by other land, the grantee, since he must have a way to his close, has an implied grant over the grantor's land.

Speaking of public rights of way, the author points out that they may be, general or special, entirely dedicated to public use as a public highway, or with certain limitations or restrictions. There are one or two important cases of operation to be remembered. Thus, an owner of land, by permitting the passage of persons over his land, without any visible mark, is presumed to have dedicated it to the public; but any

obstruction in the manner of posts or chains, even though persons might easily pass over or under, or the stationing of any one to warn the public off, is sufficient to rebut such presumption of the intention of owner. In the case of *Poole v. Huskinson* the law was stated thus:—"In order to constitute a valid dedication to the public of a highway by the owner of the soil, it is clearly settled that there must be an intention to dedicate; there must be an *animus dedicandi*, of which the user by the public is evidence, and no more; and a single act of interruption by the owner is of much more weight upon a question of intention than many acts of enjoyment." To establish a public right by prescription three or four years' enjoyment has been held sufficient. When a person or owner allows a way over his ground, but does not wish to dedicate the right of way to the public, it is customary for him to close or stop the way once a year either by a gate or hoarding; this indicates the intention. Obstruction is a frequent source of litigation, and the principle upon which the law acts is, that whenever the servient owner obstructs a way the dominant owner has a right of action against him for the obstruction; but no capricious objection on the part of the dominant owner to an alteration of the way by the servient owner by building upon it is entertained. It would be manifestly unjust to give the dominant owner an arbitrary power, such as would entitle him to make his easement a burden on the servient owner. After all, an easement is a convenience the dominant owner has over the land of the servient owner. Other points are found clearly stated in Mr. Ball's little treatise, such as that the owner of a way has a remedy against several persons collectively when their united operation amounts to obstruction, though he may not be able to define how far each is liable; that the servient owner cannot diminish the way so much as to interfere with the dominant owner's enjoyment; the right of the dominant owner to deviate from the way in case of obstruction by the servient owner; the repair of way, way over level crossings, injuries to ways, &c., and we recommend Mr. Ball's elucidations on these important points to the attention and study of our readers generally. The cases cited are ample and sufficient, and the author follows the law as laid down in the leading decisions.

LEAVES FROM A SKETCH BOOK, A. A. EXCURSION, 1876.—II.

CONTINUING our jottings of last year's excursion with the Architectural Association into Hampshire, we publish to-day four sketches selected from those made on the two days of the excursion week, which were devoted to visits by carriages to some rather remote villages whose chief points of interest architecturally were their usually small but nevertheless interesting parish churches, such as those which we illustrate to-day, and which may be taken as fair examples of the district. Generally speaking the excursion as a whole, and the week's arrangements in particular, have already been recorded both here and elsewhere as successful throughout, but probably no part of the programme was more thoroughly enjoyed than the Tuesday's and Thursday's outings on the top of two four-horse drags. Nothing, certainly, transpired worthy of special remark; neither was anything seen save Romsey Abbey which can be recorded as of particular architectural importance, and further it cannot be said that any extraordinary work in the way of sketching or study was effected. Notwithstanding, and perhaps in consequence of, these circumstances, every one seemed thoroughly to enjoy himself, and voted the days spent on the coaches "the best of all the seven," while the weather during the whole excursion was everything that could be desired, not forgetting the showers of the concluding day, which served

to temper the "sweet sorrow" of parting. The trip of Tuesday included Ashley, King Sombourn, Romsey, and Hursley, all of which lie to the west of Winchester. Leaving the "Royal" rather before nine, with a fresh team, at a sharp pace, skirting the old Roman road to Salisbury on the left, and past Weeke and Lainston, Ashley was reached by ten. Here the church (St. Mary) is of no considerable size; it is covered almost with thickly-grown ivy, and occupies a most secluded site, surrounded with trees. Inside, the chief feature of interest is the small chancel arch of Norman character. It is of only 4ft. span, with a height of but 6ft. 6in. to the top of the impost cap. At a later date two openings were made on either side of the central opening. A quaint alms-box, cut out of a solid post, still remains at the end of one of the pews. It is of seventeenth-century date, and has an opening far too small for the charitable dole of a modern copper. The belfry is inhabited by a colony of owls, whose long acquaintance with the bells has rendered their noise no longer an inconvenience. The vicar of the church here, as in most parishes, received the party, and, after describing the points of interest, very kindly introduced his guests to some welcome refreshers from his cool and doubtless well-stocked cellar. With three cheers for this hospitality the horn announced a start for King Sombourn, which was reached as the bells in the tower struck eleven. King Sombourn, or Somborne, or Somborne Regis, is a pleasant village on the east side of the Test Valley, and is seven miles north of Romsey. The parish was part of the ancient demesne belonging to the Crown previous to the Conquest. John of Gaunt, the celebrated Duke of Lancaster, had a palace here, and tradition is supported by the remains of a large mansion at Place Farm, where there are many yew trees, which were assiduously cultivated at that period for the use of archery; and about 100 yards from the church is a bank of earth, supposed to have been an archery butt, while at about half a mile distance the remains of a fishpond are to be seen. The park is still held by the Duchy of Lancaster. The Roman road already mentioned crosses the parish. The church, of which we give a sketch from the S.W., is dedicated to SS. Peter and Paul. The sacred building is in a greatly dilapidated condition, full of weather stains, whitewash, plaster, and high-backed pews, at once forming a fitting subject for the protective arm of the new Anti-Restoration Society, and well worthy of a graphic description, *à la Stevenson*. To an architect there is not much of interest in the church, save its severe picturesqueness and the few points of detail. The nave has Trans. Norman work, and there is a good Decorated window in the chancel; while a sepulchral recess in the sanctuary under an ornamental ogee arch demands a line as the founder's tomb, of fourteenth-century date. The picturesque tower is of wood, and contains four bells. The living is worth about £700. The churchyard was enlarged in 1852, and the parish schools were built in 1842, and enlarged in 1857. Several poplar trees enrich the landscape, and some are seen in our view. Following the valley of the Test, under the chalk hills on a high road commanding a fine view of the country to the right, a drive of some seven miles brought the Abbey Church of St. Mary, at Romsey, into sight. The church alone remains of the monastery, which was founded in the tenth century for Benedictine nuns by Edward the Elder, whose daughter Elfelda was the first abbess. The Abbey Church of "Romesy," as it is called in "Domesday," was described in our article of last year, and as the sketches made here are not included in our list to-day, we will pass the building for the present, simply recording the hospitable welcome of the vicar, Mr. Berthon, whose garden was the rendezvous for luncheon, as well as a 4 o'clock tea. It must also be mentioned that Mr. Fowler, F.R.I.B.A., Mayor of Louth, and who also formed one of the party, described the church at Romsey at some length, with the kind co-operation of the vicar, who himself is a hard worker in the work of restoration, which has been going on for some time under his direction. At half-past four a start was made for the return journey, when, after a six miles

ride, a flying visit was made to Hursley. The church (All Saints) is a modern structure from the designs of Mr. Butterfield, who rebuilt it in 1848, excepting the tower, at a cost of £6,030. The interior is described as being "neatly fitted up and enriched." The chief interest of the place, of course, is found in the visit one makes to the grave of the saintly John Keble, who was for many years the vicar of the parish. His well-kept graveyard and church formed a striking contrast to some which we had not many hours before visited, and thus concluded our Tuesday's work by reaching Winchester in time for a seven o'clock dinner.

On Thursday the duties of the day carried us to the east of the Mother City, along the Valley of the Meon, and over the highlands on the way home. The programme included the parishes of Cheriton, East Meon, Warnford, Corhampton, and Meon Stoke. Cheriton is a large village well situated on one of the branches of the Itchen, seven miles east of Winchester. The church, which is dedicated to St. Michael, is an interesting building, containing some good Early English work. The arcade and chancel arch are fine examples of their kind, though the western end of the church was destroyed by fire and rebuilt about the middle of the last century, including the tower, which is finished in brickwork. The chancel has been restored partly, and contains some curious old encaustic tiles in the pavement of the sacarium. We cannot refrain from remarking the mean character of the altar table of this church, by far the least worthy of any we have seen for many a long day, not excepting Warnford, to be mentioned farther on. The chancel here has a priest's door, and an interesting window of rather late character adjoining, and shown in our view. The souls in the parish are about 700, and the living is worth about £1,192 per annum, and is one of the most valuable in Hants. The Battle of Cheriton Down was fought in the parish during the civil wars of the seventeenth century, and relics of this fight are now and then discovered even to this day, while traces of the entrenchments are still visible. Adjoining is the small village of Tichborne, the occasion if not the site of a more recent and equally notorious though rather different battle, culminating in "the atrocity which vanquished the heir of 'De Itchen Bourn' to languish on the plains of Dartmoor." Tichborne House, which stands on the east side of the valley, in a beautiful park, is a commonplace brick structure, erected in 1803, when the ancient house was pulled down. The "Tichborne Dole" is still continued to the better villagers of the neighbourhood. East Meon was next reached. The church (All Saints) is an exceedingly fine example of Early work, chiefly Norman, though it has been restored. Mr. Christian was the architect. It was built by Bishop Walkelyn in the 11th century. The structure is worthy of a detailed account, and a larger sketch than we can at present give, so that we must leave it with the hope to return. The country here is exceedingly beautiful. Warnford Church is situated in Warnford Park, where a rather rural lunch was obtained under the trees, which abound. In the park are the ruins of St. John's House, commonly called King John's. The ruins are 80ft. long and 54ft. wide; the walls are 4ft. thick, and are constructed of flint set in "grout." The ruins are marked on maps dated as early as 1610, and in writings of a much earlier date are noticed as the "Old House." Close thence the remains of the original church. The present building stands some twenty yards from these ruins, and for all that has been said to the contrary seems to occupy the ancient site. The church is very mixed in character, and has a seventeenth-century tower of brick, Jacobean fittings inside, and a large sculptured tomb in the sanctuary. The chancel screen is a curious mixture of post-Reformation date, but has good balusters. The interior of the church is squalid, and savours of anything but cleanliness, which, they say, is usually attendant upon godliness. The heating apparatus would disgrace the common greenhouse of a poor vicarage; to say nothing of those to the mansion in the park adjoining, where everything at once establishes a conspicuous contrast. The living is worth not less than £500 a year, and the

rectory house, which is said to be "large and handsome," was built in 1810 at a cost of £4,000. The parishioners enjoy the dole of £2 a year out of Amery Farm at Alton, left by one John Knight in 1617. Corhampton was next visited. The parish church, whose dedication is unknown, is one of the earliest in England, and is among the finest examples of Saxon work extant. Our view is taken from the N.E., and a sketch of the impost of the doorway on the N. side is given. The same view was made by Owen B. Carter, and is engraved in Rickman's "Attempt," where, owing probably to the engraver, the work is barely shown correctly. The church stands on a mound, sloping rapidly away on each side, except to the south, where the churchyard lies. The east end is of modern brickwork, date 1837 and '44, else the building remains with its Saxon work undisturbed. The long and short work on the exterior is in excellent preservation (see our sketches of Sompthing Church, Sussex, published in the BUILDING NEWS, Jan. 26, 1872), and the north entrance, now blocked up, with its moulded impost and bases, are worthy of special remark. A square base course is carried round the church, and the south porch, though covered with ivy, is rather modern. The vestry is the effort of a local workman in brick and Portland cement. Inside the cleanliness and appropriate treatment of the building was refreshing after what we had seen. The chancel arch is very narrow, with a projecting key-stone and square arch mould. The font is a plain bowl, with twisted wreath around. A fine yew tree flourishes in the churchyard, and is probably 1,000 years old. St. Wilfrid, who converted the "Meonware" in the seventh century, most likely built the original church here, as it is known he did at Warnford. The living, a perpetual curacy, is named as being valued below £50 per annum. Within a stone's throw almost from Corhampton is the church of Meon Stoke (St. Andrew). The manor is called "Menes," or Mene-stoches in Domesday Book, and is recorded as having a church, two mills, and a wood of 40 pigs. The village stands at the mouth of the Meon, which gives the names of East and West Meon, the hamlet of Meon, as well as Meon Stoke, and shows the locality or country of the "Meonware"—the Jutish settlers mentioned by Bede. The church has been recently restored, and is well kept. The east window and niches in the church are probably the work of Wykeham. The clerestory is now hidden by the roof. The nave arcade is of good Early English work, and the font is curious. Two ancient coffins remain—one is of Purbeck marble. The vestry is a mean and debased structure, as will be seen by our sketch herewith; but it must not be forgotten that we were refreshed with some rare good sherry within its sacred walls. In the lower part of the churchyard is a curious sort of stalactite formation, specimens of which are preserved at the rectory. A similar process continues in the neighbouring stream—the water of which encrusts things lying in it with a coarse stony deposit. But our space has already been overreached, and we conclude our brief account of the day's trip with the most pleasant of memories. Winchester was reached again by six o'clock. M. B. A.

THE KENT ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the above Society was held on Wednesday and Thursday in last week, the visitors assembling at Ramsgate at 11 o'clock on Wednesday, when, after the transaction of the usual business, a move was made to the carriages, which were quickly filled, and the excursion commenced. The first halt was made at St. Lawrence Church, the architecture of which was explained by Mr. J. P. Seddon. Several interesting features were pointed out by the vicar and rural dean, and the Rev. Canon Scott Robertson, especial reference being made to the brasses and memorials, and the stained glass windows, one of which, of Irish manufacture, was stated to be of a remarkably good light and colour. After a very brief stay the drive was resumed, Minster being the next place visited. Here the company assembled in the parish church, and listened to a paper read by Canon Jenkins, who dealt

mainly with the uses to which that building, with others, was formerly devoted. The various styles of architecture contained in the sacred edifice were subsequently pointed out. From the church the party proceeded to Minster Abbey, which had been thrown open by the owner, and here also some interesting relics of early architecture were examined. After a shower the explorers passed on to Nash Court, where a subterranean passage was entered by a large number and examined. From Nash Court the route lay by Salmeston Grange, where Mr. Potter had made hospitable provision for the entertainment of his visitors. Here were found the remains of a small but very complete set of monastic buildings, probably an offshoot of the great college of St. Augustine at Minster, the site of which was pointed out earlier in the day, and a history of which was included by Canon Jenkins in his paper read at the church. The chapel at the Grange, now used as a barn, having been looked over, and its salient features explained, the party passed on to St. John's Church, Margate, which was restored about two years since, but which still retains many relics of bygone ages. The miscellaneous character of the windows, and the numerous and interesting brasses and monuments, especially that of St. Imar, the founder of the church, were pointed out by the vicar, the Rev. W. Benham.

Shortly after five o'clock nearly two hundred ladies and gentlemen dined at the Foresters' Hall, Margate, under the presidency of the Earl of Darnley, who, in proposing the toast of the evening, "The Kent Archæological Society," observed that the society was now in its twentieth year; it was just passing out of its teens and would soon attain its majority, and during the time of its existence most places of interest in the county had been visited, an opportunity being thus afforded to the members to examine interesting spots under the best possible guidance and advice. Various investigations had also been made under its auspices—for instance, at Sarre, in the Isle of Thanet, the society had discovered no less than 272 Saxon graves; and investigations of a similar nature had been carried on at Byfleet, Richborough, and Reculvers, while near Canterbury they had found, and brought under the notice of the Ordnance Department, traces of an old British entrenchment. The company then adjourned to the Church Institute Rooms, where a temporary museum had been formed. Here were exhibited numerous relics of the past, the contributions including a very interesting collection of curiosities—viz., Minster old church clock, a spinning-wheel, a Roman urn, a man-trap, books, a number of old coins, &c., sent by Mr. R. Bubb, of Minster; a number of tracings of brasses by Mrs. Edwards; an assortment of old china, by Mr. H. J. Cotton; books and deeds by the vicar, Messrs. K. W. Wilkie and C. J. Richardson, and the Revs. G. W. Sicklemore and J. H. Carr, and others; pictures and views by Dr. Richardson and Mr. E. White; needlework by Miss Williams and Mrs. Goodson; and embroidery by Mr. D. Swinford, of Minster Abbey. Numerous other articles were also on view, and the collection was a highly attractive one. In the course of the evening, papers were read by Mr. R. Hicks, on "Margate and its Records;" the Rev. Mr. MacLaehlan, on "Monkton and its Monks;" and by the Rev. Canon Jenkins, on "An Amusing Mediæval Pilgrimage from Laon into Kent, A.D. 1114;" and the day's proceedings terminated shortly after ten o'clock.

The assembly on the second day was at Cecil-square, Margate, at the hour of ten, and the start taking place thence shortly after the time appointed, a call was made at the two railway trains to pick up archæologists arriving by train. A fair commencement of the voyage of examination and discovery took place at eleven o'clock, and a string of carriages, whose occupants altogether numbered about two hundred, quickly defiled along the road in the direction of Dandelion Gate, the only traces left of an ancient baronial hall. The date of which is put at the reign of Henry IV., is in an excellent state of preservation—indeed the structure is so firm that the interior has been converted into a species of agricultural

store. After staying but a few minutes, the party was again in motion, and passing Garginge and Westgate-on-Sea a halt was made for the examination of Birchington parish church. The edifice, it was explained by the vicar, originally stood nearer the sea, but the fall of a cliff partially demolished it, and the remaining portion was removed to the present site. The earliest record is a brass put up to the memory of John Quex, and bearing the date 1449. From this village the party journeyed onwards to St. Nicholas-at-Wade, in the church of which may be seen some early English and Norman work, which has been faithfully preserved. Next a move was made to Chislett, and here at the vicarage the party were entertained by the vicar.

The final halting place was the coastguard station at Reculvers. Here are the remains of a Roman castrum, the history attaching to which is most interesting. The massiveness of the structure was pointed out and explanatory details were given by Mr. Dowker, under whose supervision the work of exploration at this spot has been carried on. Upon the site of the church, the two towers of which still remain, the party were assembled to receive further information as to the excavations which have been carried out, and also some facts forwarded by Mr. Roach Smith for their delectation. As the day was by this time far advanced the carriages were again called up, and the return journey was commenced.

THE PROPOSED FINE ART GALLERY SCHOOL OF ART, YORK.

THERE appears to be a little art dissension at York. About a year and a half ago a scheme was set on foot for the erection of a fine art gallery and school of art in that ancient city. An influential meeting was convened at the Guildhall, when a pen-and-ink sketch of an Elizabethan structure was exhibited and generally approved. This style was considered especially suitable, on account, we are informed, of the contiguous building being of that character—namely, the old palace of Charles I. Subsequently, a new idea was adopted by the executive committee, and its secretary, also the architect (Mr. Edward Taylor), prepared another design in the Italian style, which does not appear to have been publicly exhibited or approved by the guarantors. A lithograph, however, was prepared of the design. It has been submitted to tender, and the contract exceeds the estimated cost by about £6,000, the original estimate having been £13,000. At this juncture the committee called the guarantors together to ask what was to be done, and as this meeting was the only one convened since the previous and preliminary one, more than a year ago, the guarantors now, under a sense of indignity at the change, protest against the action of the committee, and will not sanction the expenditure for a plan they pronounce to be a poor one. We may well believe the guarantors felt aggrieved by the conduct of the executive, but the greatest point for consideration is the change of style. Having seen the last design proposed, we certainly consider there is some ground for complaint. The site selected is between St. Mary's Abbey wall and one of the city bars—a gate associated with historical incident—the same passed through by King Charles, and also by Cromwell—and we must at once protest, in the name of architectural concordance, to say nothing of historical association, against the introduction in such a locality of a building conceived in so opposite a spirit of design. We find the distance between the abbey wall and the intended building will be only 20ft., and the height of the wall is about the same. The front elevation towards St. Leonard's-place shows a centre with an arched porch and two projecting wings crowned by four meaningless turrets, having high pavilion roofs. To us these appear of rather nondescript proportions, being something larger than decorative features, and too small for any useful purpose. The centre or recessed part of the façade is relieved by a pediment and pilasters, though too superficial and decorative to give solidity to the front. The design certainly has more of the terpsichorean character about it; the panels

and niches in the front have a tawdry and flimsy appearance unsuited to the purpose for which the building is intended, and we advise the committee to pause before committing themselves to a design that appears quite unsuited to the locality. The plan seems to be tolerably commodious, but could be equally adapted to a style more in accord with the surroundings. On the ground floor there is a vestibule, central hall, and staircase (38ft. wide), and a hall for sculpture behind, on each side being the committee-rooms, the technical museum being on the left, and the school of art on the right side, these forming the side wings. A large exhibition hall, surrounded by a gallery with orchestra, occupies the rear of the site. The rooms above the museum and school of art are devoted to picture galleries, lighted from the roof, and a lecture theatre is placed over the hall for sculpture below. We trust the promoters will remodel their external design; by so doing they will be not only conceding an architectural point, but are likely to obtain more donations and subscriptions. We are also informed that Mr. Taylor, the architect, would not object to return to the Elizabethan design, and we understand the abandonment of that design is mainly due to the influence of some of the members of the committee.

MR. RUSKIN AND THE PROPOSED RESTORATION OF RIBBESFORD CHURCH.

AN adjourned vestry meeting was held at the Town Hall, Bewdley, on Thursday last, when the chairman referred to Mr. Ruskin's letter, which we reproduced last week from the *Kidderminster Times*, on the subject of the interesting traceries in the church, traceries which "no modern architect, no mason, either can, or would if they could, copy," and in a draft appeal to the public for subscriptions for the restoration it was remarked that "the greatest care will be taken to preserve these traceries as far as possible." The chairman said it was very good of Mr. Ruskin to take an interest in the church, and when the letter appeared in the *Kidderminster Times* he wrote to thank him, and asked if he could give them any advice as to retaining the old features he spoke of as so interesting. Mr. Ruskin wrote a very kind letter in reply—he did not know that he meant it to be published—and in it he said if he could be of any use in advocating the preservation of what was not hopelessly decayed he would very gladly help, and if the architect would consult him he would heartily support him. As his (Mr. Ruskin's) visits to Bewdley were not unfrequent, he would call on him (the chairman) when he was next there. The chairman said they must keep in mind that Mr. Ruskin had not before him the same end that they had. He was an enthusiast in church architecture, and the one object he had before him was to retain what might be very interesting in the old architecture, and he did not look so much as the committee should and must to the great necessity of providing a church suitable for public worship, and which would stand for future ages. He thought it would be very well if Mr. Preedy would consult with Mr. Ruskin as to preserving the old traceries, for, although they wanted a good and substantial church, they were anxious to keep what was old and interesting in the old building. Mr. Gardiner thought the committee ought to have a meeting and go to look at these old traceries. He did not know what they were. Mr. Bury said the traceries were the upper part of the windows—the moulding of the stonework. The peculiarity of them was that they were uneven. The sculptor had worked them without any rule but the rule of thumb, and they showed the cleverness of a man working without a precedent. Mr. Ruskin said no one could put them up again, and of course no one could, because if any one copied them he would go all wrong. The chairman said, if the stone was not too hopelessly gone, he did not see that there should be any difficulty in preserving them. The Rev. J. R. Burton moved that the thanks of the meeting be given to Mr. Ruskin for so kindly taking an interest in Ribbesford Church, and that Mr. Preedy be requested to consult with him as to the best means of preserving the traceries mentioned in Mr. Ruskin's letter, so

far as may be possible, without losing sight of the fundamental object of providing a suitable and substantial church. Mr. Landon seconded the resolution, which was carried. The provisional committee was re-appointed to carry out the restoration of the church, and some additions were made to the list of names. The estimated cost of restoration is £3,000, of which £1,000 has been already promised.

ARCHITECTURAL ASSOCIATION EXCURSION, 1877.

THE eighth annual excursion of the Architectural Association will take place from Monday next and throughout the week, concluding on Saturday, 18th inst. The following is the programme:—

Monday.—Warwick: St. Mary's Church and Warwick Castle.

Tuesday.—Snitterfield, Stratford-on-Avon, and Charlcote.

Wednesday.—Coventry: St. Michael's and Holy Trinity churches are to be visited under the guidance of James Fowler, Esq., F.R.I.B.A., of Louth. St. John's Church will also be visited, as well as Biblake's and Ford's* Hospitals, with St. Mary's Hall. The remainder of the time will be spent in examining the old houses and other interesting domestic buildings of the town.

Thursday.—Wroxhall Abbey, Knowle, Temple Balsall, and Kenilworth.

Friday.—Whitnash, Bishop's Tachbrook, Chesterton, Harbury, Southam, and Stoney Thorp.

Saturday.—Warwick: Leicester's Hospital and College School, with other examples of domestic work will occupy the day.

MEXICAN ARCHÆOLOGY.

MR. W. H. JACKSON, of Professor Hayden's Survey Corps, sends from Santa Fé, New Mexico, an account of the completion, in May, of the work assigned to him among the ancient ruins of that country. A number of ruined pueblos were visited in May in the parts between the Tunecha and the Jenarz mountains; the largest of them was 540ft. by 310ft. They are mostly built around three sides of a rectangle, with open court facing south, and enclosed by a semicircular wall; and three or four stories can be traced with rooms sometimes as large as 14ft. by 25ft., and 12ft. in height. In all the rooms there is a notable neatness of finish. A prominent feature is observed in the circular rooms, or "estufas," the council halls, or secret places for religious uses. One is over 60ft. in diameter. In speaking of the ruined pueblos, Mr. Jackson notices the remarkable skill with which the stone walls were built. This has enabled them to withstand for hundreds of years the ravages of human hands and the slower work of the elements. Commencing at the foundation, with a width of 32in., each succeeding story was built a little less in thickness, until the walls of the fourth floor are but 18in. through, giving them a pyramidal shape, and of such solidity that in some cases, although the floor has been crushed down and the cross-walls fallen, yet they remain firm and plumb nearly 40ft. in height. The builders had their methods of laying the stone—by regular sandstone blocks of the size of two bricks, cut and ground to a uniformity, by alternate layers of these blocks with layers of very small and thin pieces of sandstone, generally three courses of the thin to one of the thick, and last by laying the entire wall of these excessively small pieces of thin sandstone. Mr. Jackson measured off a square yard on the northern wall of the pueblo of Chetto-Kethe, and counted the number of stones forming the surface. There were 450, laid so close together that a knife-blade could not be pushed between them, and not a particle of mortar of any kind appearing at the surface. This entire wall was 490ft. long, and originally fully 40ft. high, and averaged 2in. thick. The interiors of these walls were laid in with rougher stone, and with abundant clay mortar. Binding courses of pine sticks were laid in the

* Ford's Hospital will be fully illustrated in an early number of the BUILDING NEWS.

wall both transversely and longitudinally. Every doorway and window was framed with scrupulous exactness, and it would appear as if the plumb and square had been faithfully used in all their work. Other things are noticed, the stairway shown in the rock, the great water pockets and cisterns, the human skull and bones found buried 14ft. beneath the level of the valley, and exposed only by the encroaching arroya. Photographs have been taken, and Mr. Jackson says he has brought away materials for 500 pictures, including groups of Indians in various occupations, and in their religious masked dances. He found scratched on a wall the name of Lieutenant Simpson, whose report in 1849 first brought some of these ruins before the world; and it is thought that, being far from all common routes, they had never since been critically examined.

AN ECONOMICAL BOARD.

IF it be an approved canon, in the matter of purchasing either services or commodities, to "get as much as you can for your money," the Hartlepool Port and Harbour Commissioners are fully entitled to whatever credit may attach to their acting fully up to the rule. The commissioners are in want of a chief engineer, and candidates are, on application to them, informed that the following, *inter alia*, are among his duties and qualifications: He will be the "chief engineer" of the commissioners; their "mechanical engineer" in so far as maintenance of their dredging plant is concerned; their marine surveyor, architect, builder, harbour master, general contractor, secretary, and accountant. He must be superintendent dredger, "accustomed to diving," and capable of taking charge of the light-houses, ferry, piers, &c. Whatever the etcetera may mean, he must have had experience in the construction of harbour and sea works, and in the manufacture of concrete blocks; and must be ready to design and carry out such new works, sea-walls, roads or what not, as the commissioners may from time to time require. His nominal salary is to be £350 per annum, and he is to find security for £500. If this security is in cash, it will be £25 in the pockets of the commissioners at 5 per cent., and £25 out of the pocket of their officer. Assuming that the security costs him nothing, the commissioners will have, in the wonder of the engineering world of whom they are in quest, a chief engineer at, say, £75 per annum, a marine surveyor at £50, a harbour master at £50; an architect and builder at £40, general contractor at £40, dredging master and concrete block manufacturer at £30, secretary at £50, and accountant at £25. These amounts make up the £350. Nothing is said in the conditions as to discounts and commission on materials purchased for the works, out of which the chief engineer, acting as contractor, may possibly be able to supplement his salary. On the face of the thing the commissioners are expecting a lot for their money.

New Board schools in St. Peter's-square, Leeds were opened last week. Accommodation is provided for 769 children. Mr. R. L. Adams (of the firm of Adams and Kelly) is the architect.

A notice appears on the doors of St. Dunstan's, Fleet-street, stating that a faculty has been asked for permission to make a road through the disused parochial cemetery so as to connect Chancery-lane and Fetter-lane.

The Town Council of Bootle have unanimously resolved to increase the salary of their surveyor, Mr. Buddle, from £160 to £200 per year. At the same meeting a special committee was appointed to consider the provision of a public recreation ground for the townspeople.

The Saffron Walden Town Council contemplate the erection of a new town hall, police station, and other buildings.

The St. Helen's Town Council received last week plans and estimates from their surveyor for the extension of the market, at an estimated cost, exclusive of land, of £12,170. This was considered too high, and the surveyor was requested to draw up amended plans.

The foundation stone of a new Roman Catholic church has been laid at Ancoats, Manchester. The building will be 70ft. long by 30ft. wide, and will seat 400 persons. Mr. J. L. Ward, of Manchester, is the contractor.

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ILLUSTRATIONS.

CORHAMPTON CHURCH, MEON STOKE CHURCH, CHERITON CHURCH, AND KING SOMBOURNE CHURCH, HANTS—"BUILDING NEWS" CLUB DESIGNS FOR FONTS AND BOOKCASES—COTTAGES AT KILLERTON—ST. MARY'S CHURCH, MIDDLESBROUGH.

OUR LITHOGRAPHIC ILLUSTRATIONS.

COTTAGES FOR SIR T. D. ACLAND, BART.

THE illustration shows a plan of double cottages, now in course of erection on the east side of Killerton-park, Devon, the seat of Sir T. D. Acland, Bart., M.P. The walls of the cottages are of hollow construction of red brick, and the roofs, as well as the gables, are covered with dark brown tile. The whole of the first floor accommodation is provided in the roof. The design is by W. E. H. Harbottle, A.R.I.B.A., architect, Exeter, but the general arrangement of the plan is taken from Sir Thomas's own sketch designs. The cost will be about £400.

ST. MARY'S CHURCH, MIDDLESBORO', YORKS.

OUR illustrations this week include a large and important church, with extensive sacristies, &c., now in course of erection from the designs of Messrs. Goldie and Child, of Kensington-square, W. The presbytery adjoining has just been completed from designs prepared by the same architects, and with the church will form a striking and handsome group of buildings, occupying a commanding site in the principal thoroughfare of this large and important town. The design has been studied principally for the adaptation of bricks, which compose some of the principal features, and they also form the jambs and outer order of the five tracery windows which are in stone. The plan consists of nave, choir, and sanctuary, with aisles and outer aisles, terminated with chapels, baptistery, &c. The east end is flanked by sacristies and working sacristies, with a tribune, and rooms for the sacristan over, respectively. The organ-chamber, occupies space on the choir level, and the heating chamber arched over is beneath the working sacristy. The total length internally is 145ft., and the width across the double aisles 88ft., the length to the ridge being 67ft. The work is being well carried out by Craggs and Benson, of Stockton-on-Tees, contractors, under the superintendence of Mr. W. Watson, an able clerk of the works.

BUILDING NEWS DESIGNING CLUB—BOOKCASE, &c.

WE give this week a selection of the designs for these subjects, and refer our readers to our critical remarks thereon, p. 63.

CORHAMPTON CHURCH, MEON STOKE CHURCH, CHERITON CHURCH, AND KING SOMBOURNE CHURCH.

FOR descriptions of these illustrations see "Leaves from a Sketch-Book," page 121.

After vainly remonstrating with the local gas company, in reference to the price and quality of the gas supplied to the street lamps, the Romford Board of Health have resolved to invite tenders for lighting the lamps in future with either petroleum or gas. Petroleum has been substituted for gas at the neighbouring town of Barking.

COMPETITIONS.

BIRMINGHAM.—It will be remembered that the directors of the Midland Land Corporation, Birmingham, offered three premiums for the best designs for laying out the West Combe Park Estate, Blackheath, recently purchased by them. There were 52 competitors, and the plans, with sections of roads and drainage, specifications and estimates of costs, were exhibited at the Masonic Hall, Birmingham, last week, and the premiums were awarded as follows:—1st premium, 150 guineas, to "Invicta," Mr. John Ashdown; 2nd premium, 100 guineas, "Duo," Messrs. Isaacs and Florence; 3rd premium, 50 guineas, "Hic Labor," Mr. Robt. Keirle. Considerable labour and thought has been bestowed upon the subject, and the development of this beautifully wooded and undulating estate has been treated with an amount of skill and taste that reflects the highest credit upon the competitors. We are pleased to find the directors of the Midland Land Corporation fully appreciated this, and in making their award voted as an honorarium ten guineas to each of the ten competitors whose designs were considered to possess the most merit after the first three—a compliment which will no doubt be gratifying to those gentlemen in favour of whom this voluntary recognition of ability has been made. Their names are as follows:—"Respice Finem," Mr. A. C. Bean; "Model," Messrs. Bell and Roper; "Finis Coronat Opus," Mr. H. M. Cummings; "Civis," Mr. J. D. Matthews; "Quis," Messrs. Medland and Sons; "Supero," Mr. T. M. Nelson; "A Man of Kent," Mr. P. S. Punnett; "Finem Respice," Mr. H. W. Spratt; "South-Eastern," Mr. R. Walker; "Finem Respice," Mr. H. Webb.

LIVERPOOL.—The Committee of the Liverpool Eye and Ear Infirmary recently invited most of the well-known Liverpool architects to send in competitive plans for a new hospital. Eight architects responded. The general committee, having secured the assistance of Messrs. Paley and Austin, the plans sent in by Mr. C. O. Ellison were adopted, the premium being awarded to that gentleman. The plans provide accommodation for eighty-two beds, and six extra beds for private cases. The cubic space provided for each ordinary contagious case will be 960ft., and for ordinary cases 800ft. The cost will be £11,000. The elevations are effective, although ornamentation has been dispensed with. The tower, which forms the principal external feature, will be utilised as an air-shaft, and will mask the flues from the kitchens, and afford space for the necessary cisterns.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.—The Cambrian Archæological Association has this week held its 32nd annual session at Carnarvon. The inaugural meeting was held in Carnarvon Castle at 9 o'clock on Monday night; Prof. Babington, chairman of the committee, presiding. The excursions, which were limited chiefly to South Carnarvonshire, have been continued during the week. They commenced on Tuesday under most unfavourable circumstances. The original arrangement was for a division into three sections, the first to go by train to Llangybi and visit Llanarmon and Llangybi churches and the circular mound near Alfon Wen, the other sections going to Pwllheli to view Treiceirid, an old Roman camp on the seaside near Aberdaron, the cromlech on Cromlech Farm, Penyaer, and the Llanor inscribed stones—about three miles from Pwllheli. The heavy rain that fell continuously all day necessitated a complete change in the programme, and a party, barely over a dozen, including a number of ladies, started from Carnarvon for Pwllheli, the arrangements for visiting the Llangybi and Llanarmon districts being abandoned. On Wednesday, Dinas, Dinorben, Gadlys (a circular camp near Llanwnda station), Dinas y Pryn, Dinas Dinlle, Llandwrog Church, the manoir in Glynllifon Park, Lord Newborough's seat, Craig y Dinas (a strong post on the Llyfni), the cromlech near Tenbyedw, Clyrnog Church, St. Beuno's chapel and holy well were visited.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.—On Tuesday the annual meeting of this society was opened at Bridgwater, under the presidency of Bishop Clifford. After luncheon the visitors proceeded to visit the monuments of the town. A commencement was made at the Church of St. Mary, where special admiration was expressed at the splendid painting over the altar. The site of the castle and Blake's house were next visited; and then, amidst drenching rain, the party set off in open breaks for an excursion to Chisley Mount. On their way back to Bridgwater they stopped at Chedzey Church, the interesting features of which were explained by Bishop Clifford, the Rev. W. Hunt, and the Rev. F. Brown (Nailsea). The marks in the wall where weapons were sharpened during Monmouth's rebellion claimed some attention, and as the weather had cleared, the archæologists did not care to hurry back to their head-quarters. In the evening there was an ordinary at the Royal Clarence Hotel, and afterwards a meeting was held at the Town Hall, papers of local interest being read and discussed. On Wednesday there was an excursion to Athelney (North Petherton Church, in passing), Borough Bridge, Othery, Middlezey, and Weston Zoyland. Yesterday the members visited Cannington, the Park Quarries, Stoke Courcy Church and Castle, and Brymore House.

PARLIAMENTARY NOTES.

THE METROPOLITAN STREET IMPROVEMENTS BILL.—On Monday, in the Commons, on the order for the consideration of the Lords' amendments to the Metropolitan Street Improvements Bill, Mr. Fawcett moved to disagree to the amendment on Clause 4 relating to the proposed new street from Tottenham-court-road to Charing-cross. The objection to the amendment was that it placed the Marquis of Salisbury in an exceptionally favourable position in regard to that portion of his property which the bill affected, by enabling him to purchase back the frontages along the new line of street upon his own terms. Mr. Forster contended that the amendment was rendered necessary for the protection of Lord Salisbury's interests, but after an hour and a half's discussion the motion of Mr. Fawcett was put and carried without a division.

CHIPS.

The parish church of Conover is being restored under the care of Mr. Fairfax Wade, architect, of London, at a cost of £1,200.

The Masonic Hall, Birmingham, has just been decorated in colour by Mr. John Taylor, of that town, whose designs were selected in competition.

On Saturday, the postal business of Hull was transferred to a new building in the Market-place. The building is substantially erected, the walls averaging 2ft. 6in. in thickness, the front wall being 3ft. 6in. The area of the building is about 10,000ft. The architect is Mr. James Williams, architect and surveyor to her Majesty's Office of Works, London, and the builders are Messrs. W. and J. Hall, of Hull.

Messrs. J. L. Bacon and Co. supplied the heating apparatus, by high pressure pipes, of Holy Trinity Church, Wentworth, and not Mr. Barton, as stated by us last week.

Preparations are being made for the erection of Cleopatra's Needle on the open space near the Houses of Parliament; but before its erection the Board of Works are putting up a wood model, so as to get an idea how it will look.

Mrs. A. T. Stewart, the widow of the rich merchant of New York, is about to erect a cathedral at Garden City, Long Island, in memory of her husband, which is to be 150ft. in length, and 96ft. wide. The spire will be 197ft. high, and below the organ and robing-room a mortuary chapel and crypt will be prepared for Mr. Stewart's remains. There will be 13 bells.

Claridge's asphalt has been adopted throughout in the roof of the new Roman Catholic College of St. Francis Xavier, Liverpool, now being erected from the designs of Mr. Clutton.

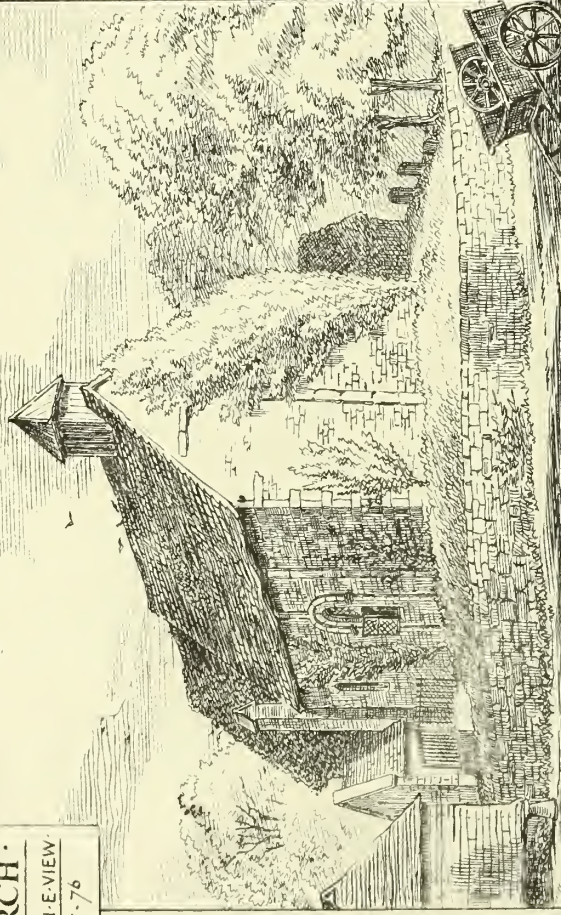
The erection of the new Hotel de Ville at Paris was to cost, according to the first estimate of the architects, 16,209,521f. But since then important modifications have been decided on, such as constructing an exterior gallery to the Salle des Fêtes, improving the system of warming and ventilation, &c. These various works will cause an additional expense of 5,238,655f., so that the total cost will be nearly 21,500,000f., and that does not include the furnishing or interior decoration.

Mr. J. L. Pearson, of Harley-street, writes us to say that he is in no way connected with the restoration of Ross Church, as mentioned by us last week.

The new park recently given to the town of Barisley, by Miss McCreery, is to be opened by Lord Halifax on Tuesday next.

CORHAMPTON
• CHURCH •

HANTS: N.E. VIEW
aug. 17. 76



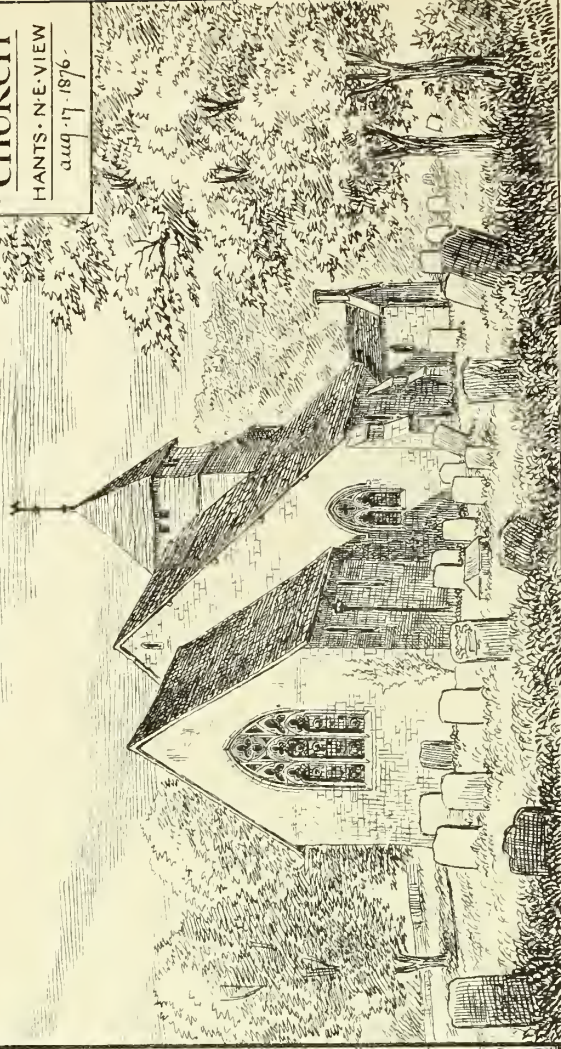
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PARIS: E. ADAMS

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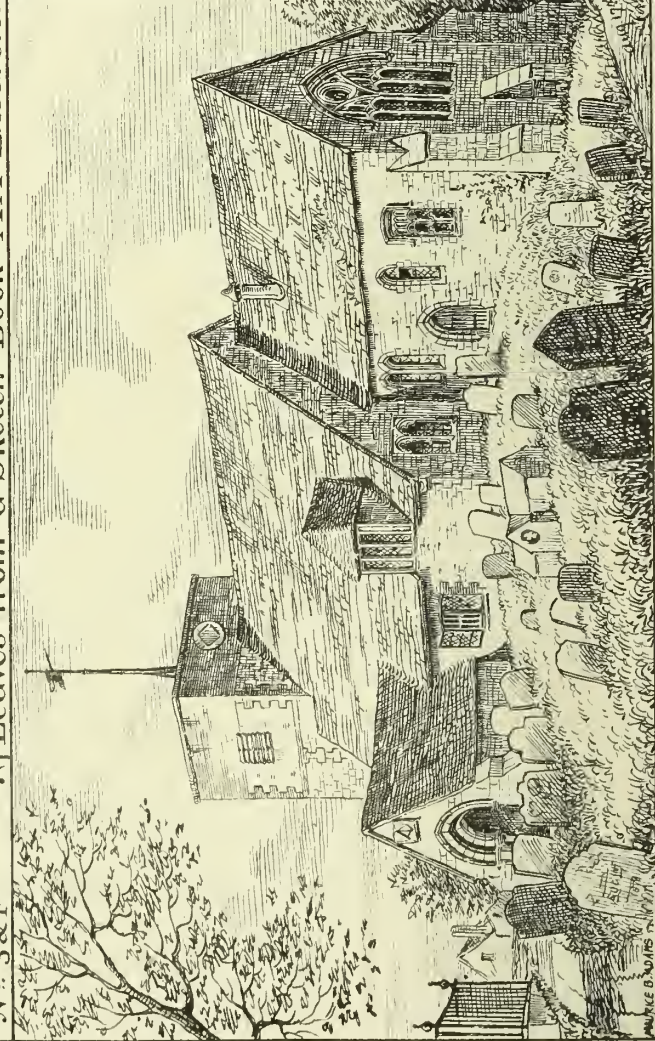
MeonStoke
• CHURCH •

HANTS: N.E. VIEW
aug. 17. 1876

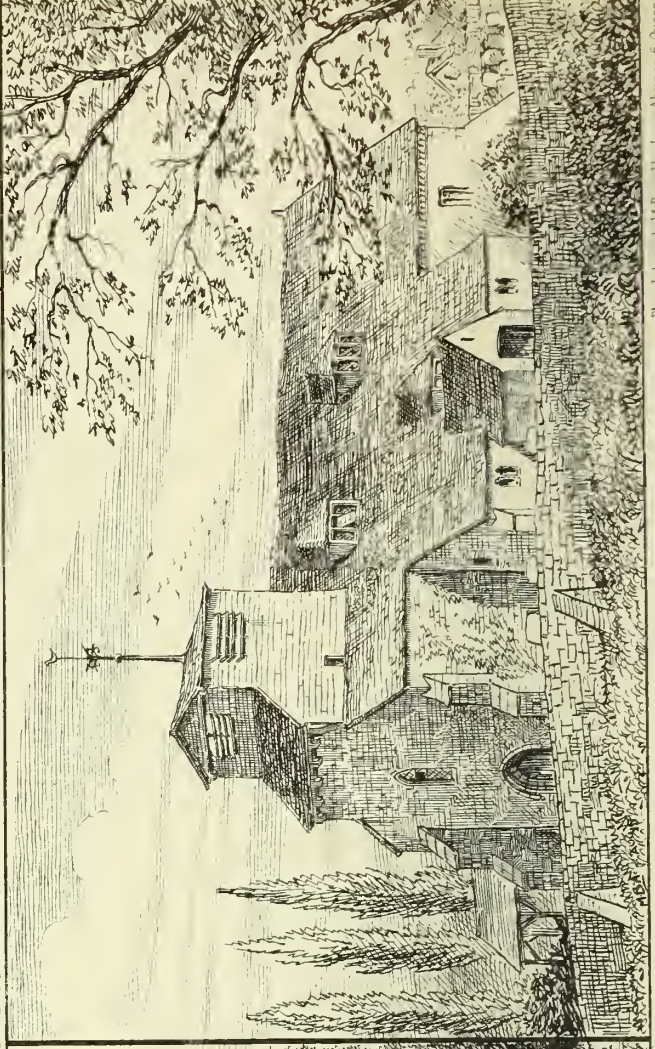


Leaves from a Sketch Book: A.C.A. Excursion • Aug. 1876 • * Four • Parish • Churches • Hants

5 & 6.



CHERITON CH. S.E. VIEW



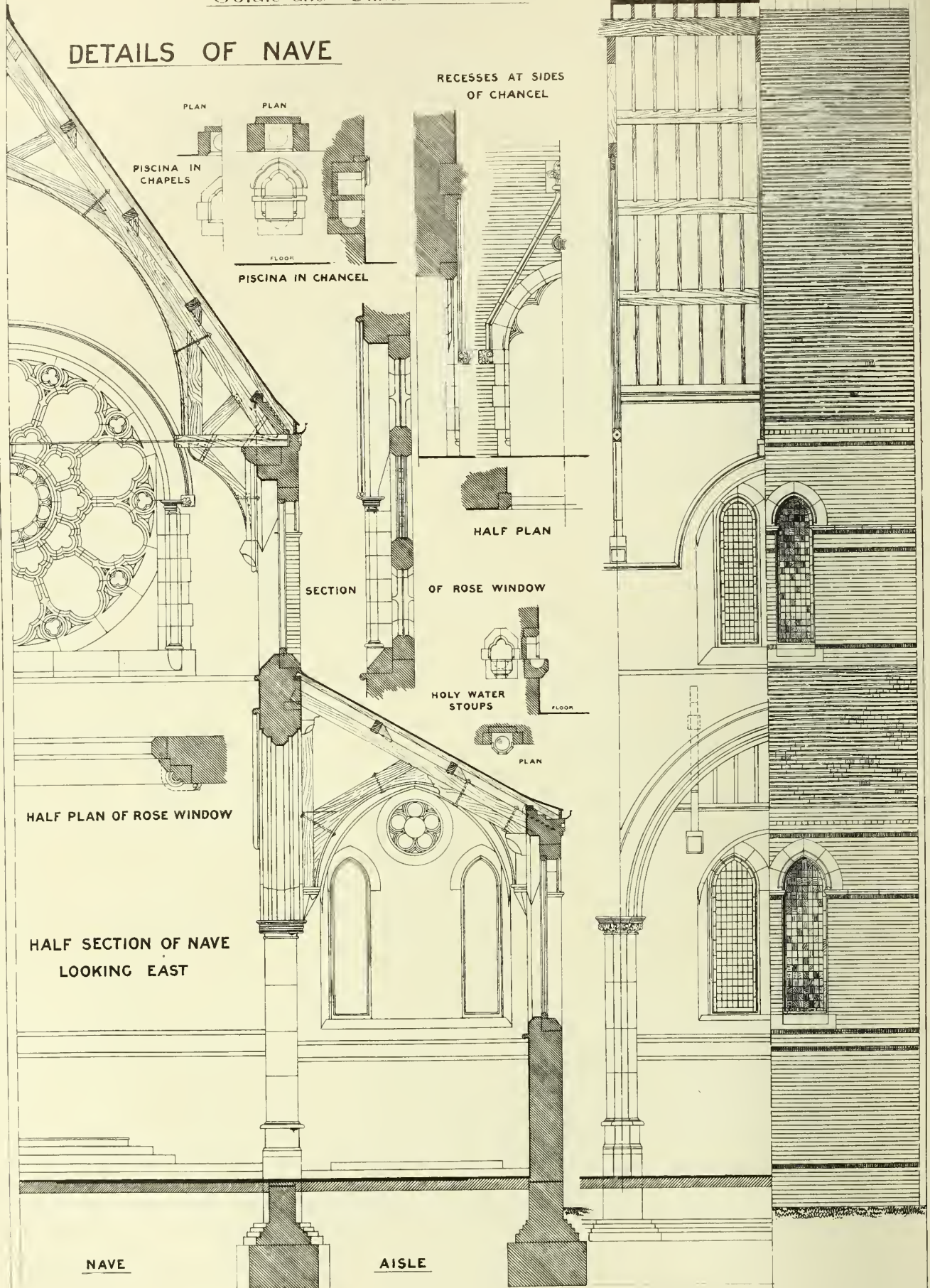
KING SOMBOURNE CH. S.W. VIEW

Phot. Lithographed & Printed by James Alcock, 6, Queen St.

CHURCH OF S. MARY MIDDLESBOROUGH YORKS

Goldie and Child Architects

DETAILS OF NAVE



HALF PLAN OF ROSE WINDOW

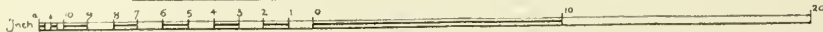
HALF SECTION OF NAVE
LOOKING EAST

NAVE

AISLE

ONE BAY OF NAVE ARCADE
INTERIOR EXTERIOR

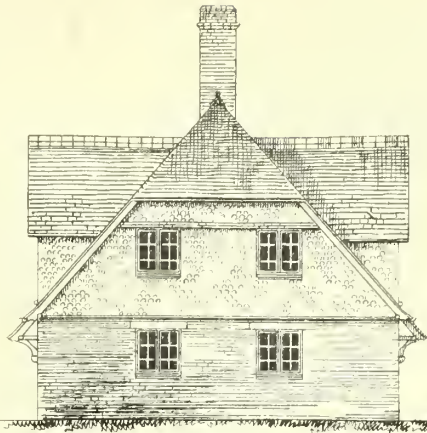
Scale of Feet



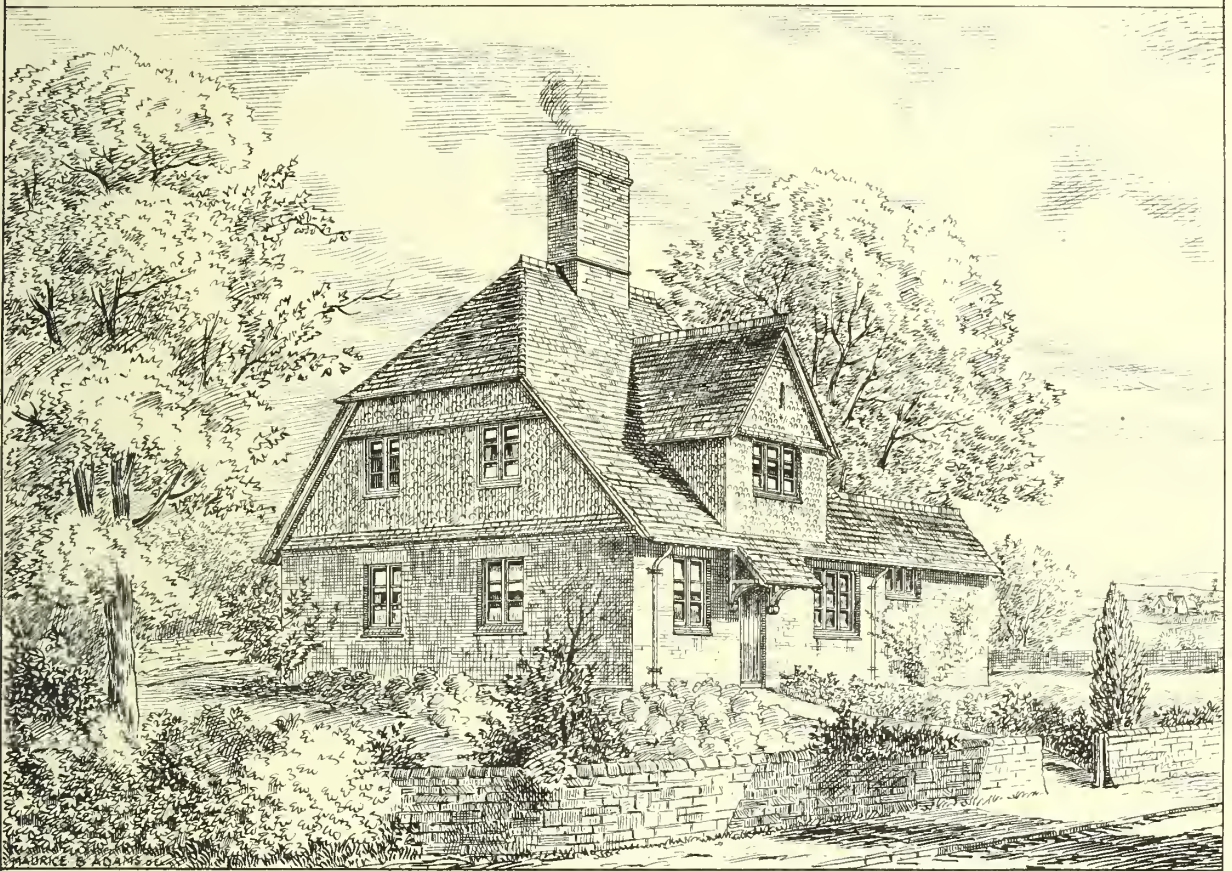
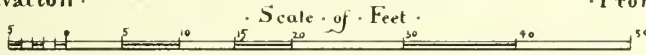
MAURICE B ADAMS DEL.



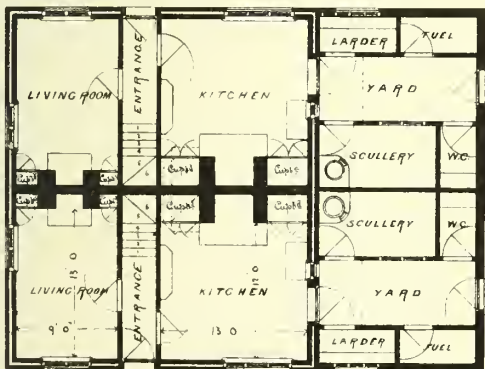
· Side · Elevation ·



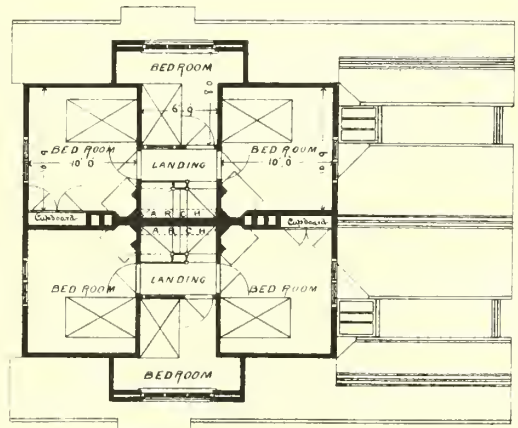
· Front ·



Pair of Cottages at KILLERTON for Sir T. D. Acland Bart M.P. E. H. Harbottle ARCHT



Ground Plan.

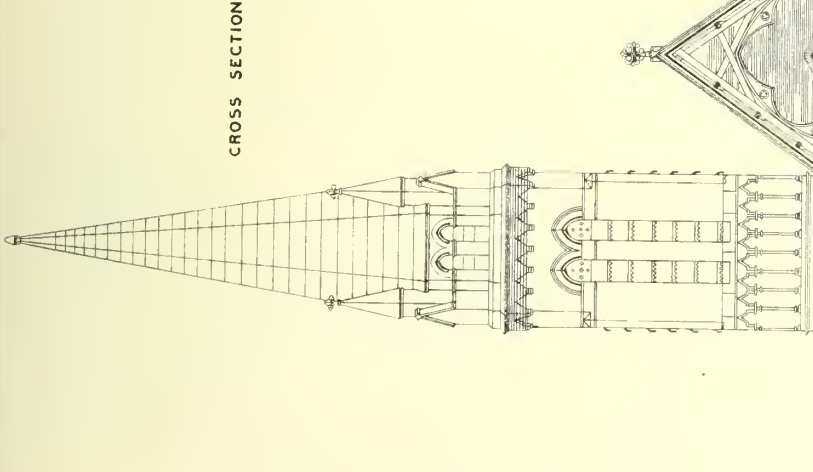
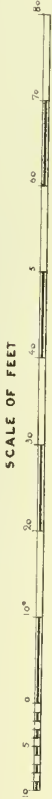


First Floor Plan.

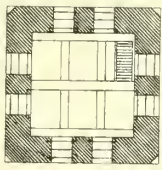
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CHURCH OF S. MARY MIDDLESBOROUGH YORKS

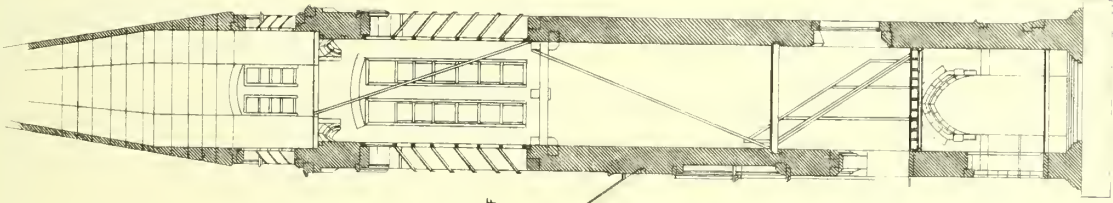
Goldie and Child Architects



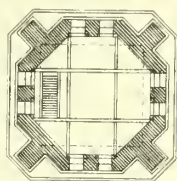
CROSS SECTION



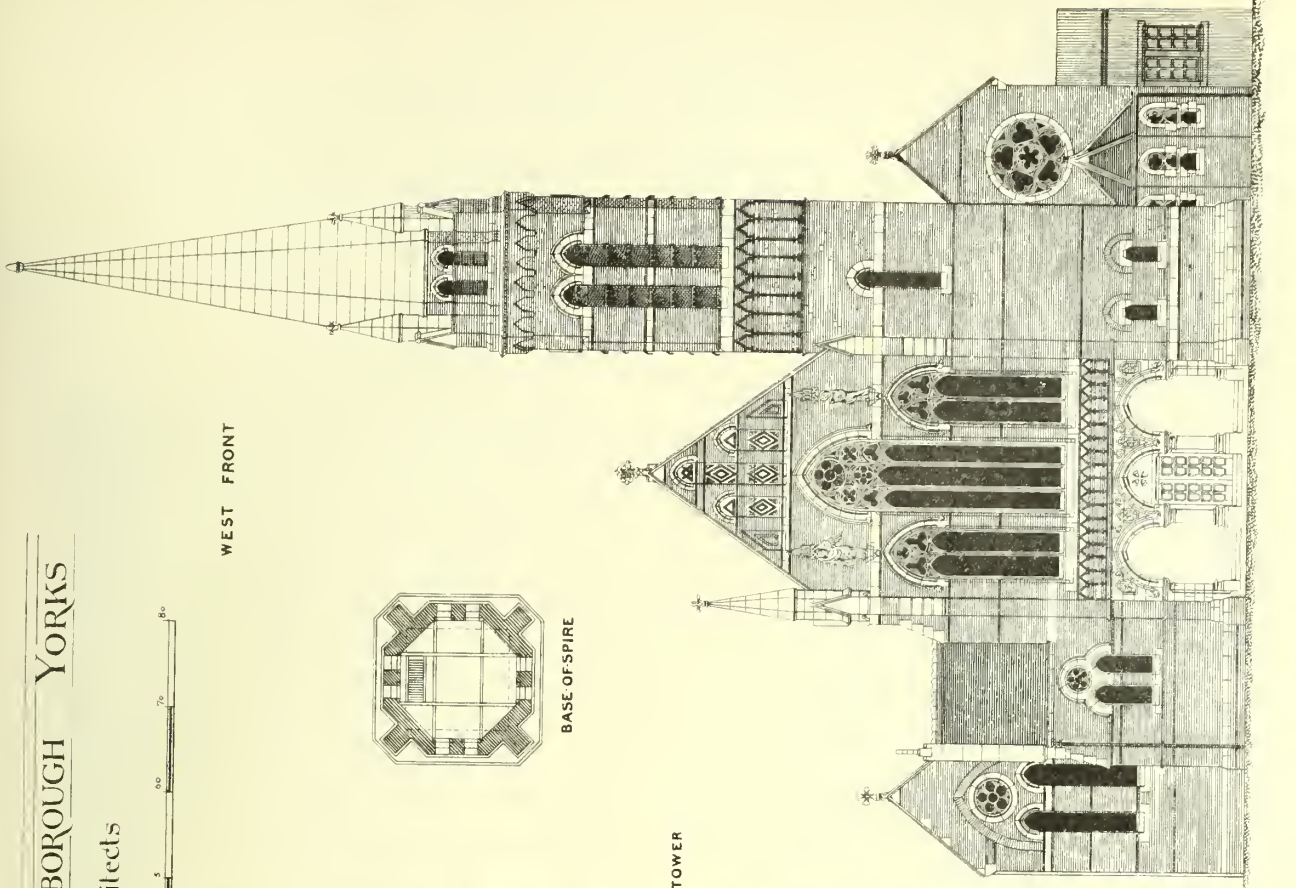
PLAN THRO BELFRY



SECTION OF TOWER



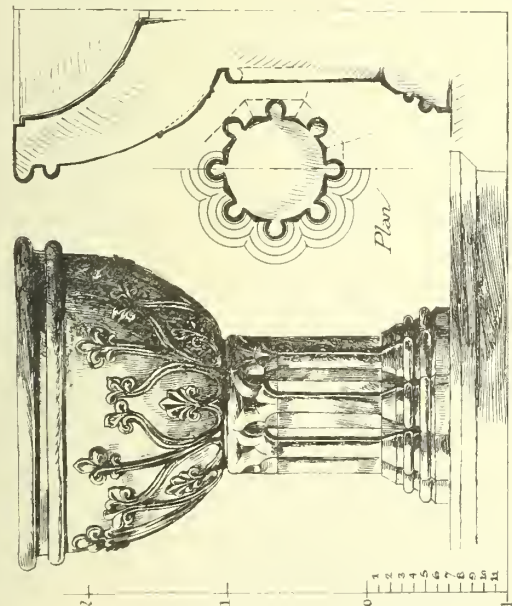
BASE OF SPIRE



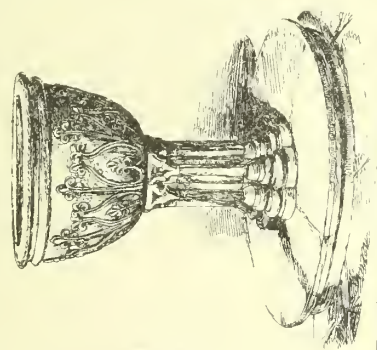
WEST FRONT



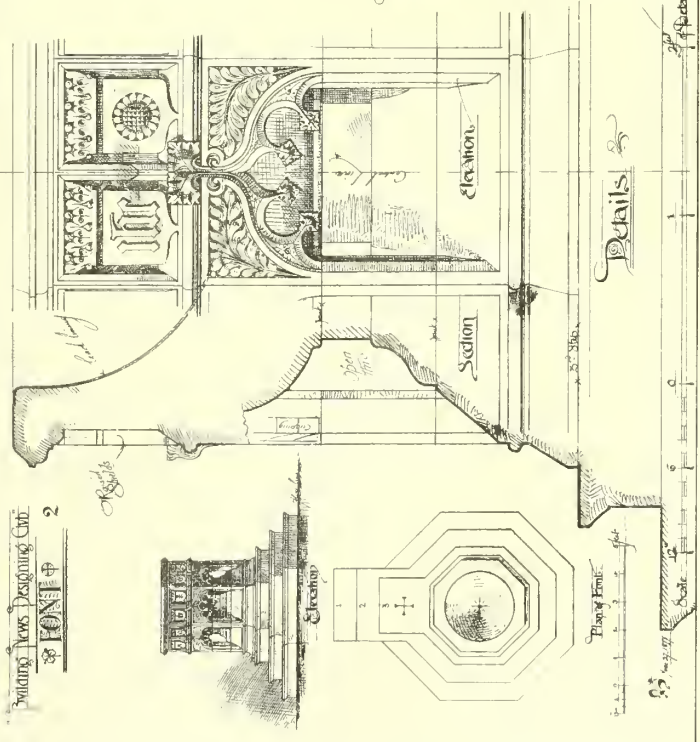
Building News' Designing Club
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Elevation. Section.

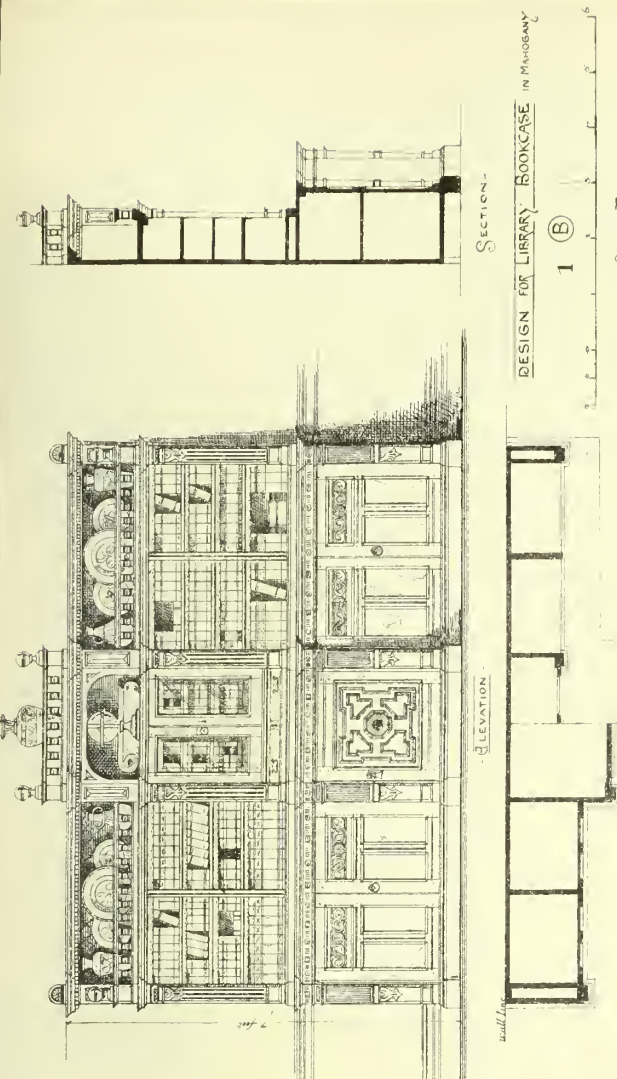


Building News' Designing Club
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Plan of Font.

Details



SECTION.

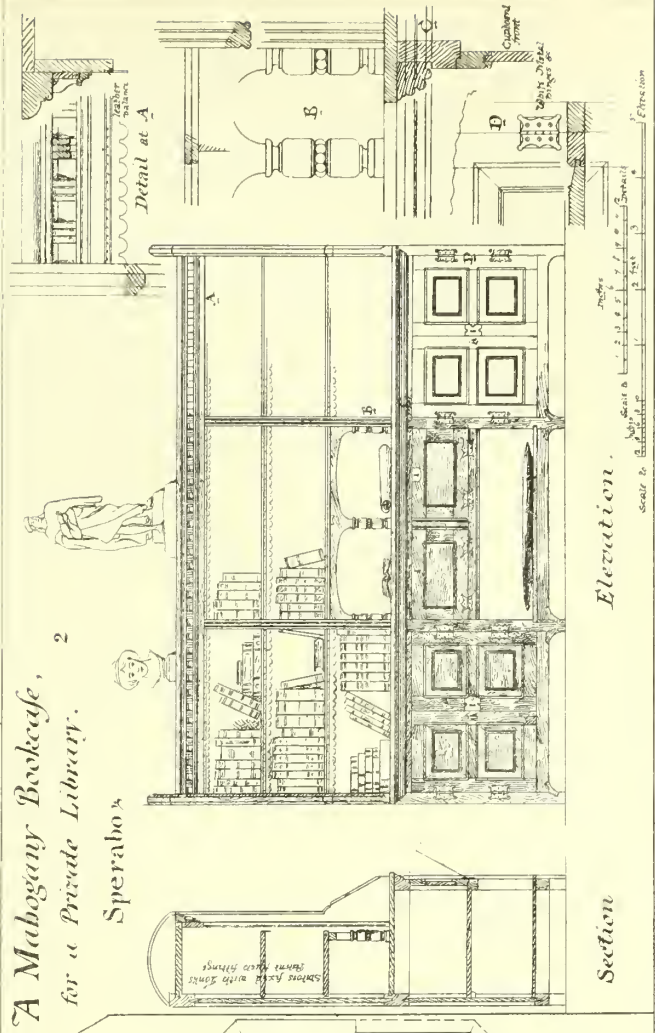
DESIGN FOR LIBRARY BOOKCASE IN MARBURY

I (B)

SCALE OF FEET

A Mabogany Bookcase,
for a Private Library.

PLAN OF WORK OVER. PLAN OF UPPER PART.



SECTION

ELEVATION.

SCALE OF FEET

1875

ROYAL ARCHÆOLOGICAL INSTITUTE.

VISIT TO HEREFORD.

[FROM OUR OWN REPORTER.]

IT was a happy selection of the Council of the Royal Archæological Institute of Great Britain and Ireland to fix on Hereford as the centre from which to work in the year following their very interesting visit to North-East Essex, for a thorough contrast is thus afforded the members between the areas consecutively explored. Each, it is true, is an agricultural district; each possesses much of the charm which attaches in the archæologist's mind to a neighbourhood that was once more populous and has seen "better days" than these; each neighbourhood is rich in fine churches, often too spacious for the present requirements of worshippers, in "choice bits" of castles, moated granges, and half-timbered houses; but from east to west in England is a longer stride geologically than geographically. In the centre of an upheaval of the old red sandstone, the ancient capital of Mercia, and the other towns about to be visited are built from the friable ruddy brown irregular fragments of rock quarried from or near their sites, whereas in East Anglia brick and flint affording the chief building material and detail, assumed a higher place in the conception of the designer than where larger masses have been available for working up. The scenery of the two districts exhibits in an equally striking manner the nature of the subsoil, the gentle, highly-cultivated, but very tame undulations of the banks of the Colne as clearly denoting the alluvial character of the county as the boldly picturesque forest-clad hills and vales, stretching away on either hand from the Wye, speak of the early period in the earth's history at which their strata were upheaved. Hereford opens out new ground to the Institute, although the city has been twice visited in recent years by similar societies—in 1868 by the Cambrian Association, and five years later by the British Archæological Association, and one or two of the excursions are planned on the lines laid down by those who arranged those meetings. To some of the visitors, therefore, the present meeting partakes of the character of a revival of pleasant memories of past excursions; still, much fresh information of interest to the archæological world has been ascertained since the last of those meetings, and to many members, of course, the district presents an entirely fresh field. With the many attractions of minster, abbeys, churches, and castles which the neighbourhood contains, the meeting at Hereford promises to be one of much interest to the members.

We gave last week the programme of proceedings, and further introductory reference is therefore unnecessary, except to repeat that the Bishop of Hereford (Dr. Attlay) occupies the office of president during the Congress, and that the sections are presided over by the following gentlemen:—*Antiquities*.—President: Sir William Guise, Bart., President of the Bristol and Gloucestershire Archæological Society. Vice-President: Rev. H. M. Scarth, M.A., Hon. Canon of Wells. *History*.—President: A. J. Beresford-Hope, Esq., M.P., D.C.L., L.L.D. Vice-President: Rev. John Jebb, D.D., Canon of Hereford. *Architecture*.—President: T. Gambier-Parry, Esq. Vice-President: J. H. Parker, Esq., C.B.

A FLYING PEEP AT GLOUCESTER CATHEDRAL.

Many of those coming from London, we believe, took advantage of the opportunity afforded them for visiting or re-visiting Gloucester, and for again inspecting its many and handsome churches, and of noting the variety in the treatment of their generally-fine towers of fourteenth and fifteenth century workmanship. The cathedral was naturally the centre of attraction, and the noble proportions of the central tower, which, together with the delicacy of its pierced pinnacles and open parapet, give character to the exterior, attracting attention directly the city bursts upon our view as we approached by the Great Western line. On entering, the massive Roman nave-pillars and the heavy triforium above, at once attracted the observer's eye; the effect of the two per-

pendicular bays, by which the nave has been extended westward, adds markedly to the solidity and vigour of effect of the earlier circular columns. The roof, we note, is of fourteenth century work, has been lowered in pitch, and the groining is now plastered. Giving a cursory glance to the Decorated aisle-windows, profusely adorned with the characteristic ball-flower ornament, we pass through one of the doors on either side of the heavy screen (which, by the bye, are vigilantly guarded by vergers on sixpences intent) into the choir and presbytery, and examine the richly-groined roof, striving to decipher the significance of the stories pictured on the bosses, now lavishly gilt and coloured, our necks suffering in the service of our eyes. Having looked at the great east window, and mentally compared its ancient stained glass with that with which the west window has been fitted since 1862, as a memorial of an ancient bishop, we pass through into the long Lady Chapel. The north and south transepts are Norman, recased in the fourteenth century, the former being much later in style and more elaborate in treatment. The works of restoration, we note, appear to be drawing, under Sir Gilbert Scott's supervision, towards completion; the contractor (Mr. Wallace) has now for some time been engaged merely on repairs; the great window of the north transept has just been rendered safe, defective stones in vousoirs and tracery being replaced by sound ones, and the west window at right angles is now enveloped in scaffolding for the same purpose. Before taking the Minster we pace the cloisters, which lie on the north of the nave—the most perfect in England: and here again the richness of the treatment of groined roof deserves more careful study than we can afford it, the fan tracery being not alone interesting on the ground of its intrinsic beauty and the skill apparent in the disposition of spaces and groining, but from the fact that it is the earliest example of its kind (commenced by Abbot Horton, 1351-77, completed by Abbot Froucester, 1383-1412). After a pleasant run by rail through the valley of the Wye, we reach the headquarters of the Institute Congress, feeling that a Bank Holiday has been pleasantly spent in gaining mental tone for a week of archæology.

TUESDAY.

INAUGURAL MEETING.

The business proceedings of the Institute's Thirty-third Annual Congress commenced at ten o'clock on Tuesday, when the Corporation assembled in the Woolhope Club-room, at the Free Library, to officially receive the members. The Mayor (Mr. Philip Ralph), who appeared arrayed in all the glory of scarlet and fur-trimmed robe, and chain of office, took the chair, and was supported by the aldermen and town councillors of the borough; the dean and many members of the clergy and magistracy were also present, in a representative capacity. The TOWN CLERK (Mr. Joseph Carless) read an address of welcome, in which reference was made to the facts that Hereford has a history dating back to the time of the ancient kingdom of Mercia, and that the see, of which it is the cathedral city, is now upwards of 1,000 years old, that its proximity to the marshes of Wales rendered it a place of importance during the troublous scenes through which England, in its earlier history, passed. The district included in the excursions offers, it was remarked, a large and varied field of research, and the Corporation looked forward to the Congress of 1877 as not the least successful and important in its results of the many annual meetings held by the Institute. Thanks to recent legislation, the address continued, the citizens of Hereford have practical proof of the connection between a municipal corporation and archæology in the existence of the Public Free Museum. To archæology are they indebted for a large and interesting portion of the collection, and to the archæologists must they look for further enrichment. In conclusion, congratulatory reference was made to the manner in which the ministers of all denominations identify themselves with literary and scientific societies, and to the fact that the bishop has accepted the office of President for the year.

The MAYOR having briefly welcomed the Institute to the city, and Mr. RICHARD HEREFORD, J.P., of Sufton Court, having expressed the pleasure which the county gentlemen felt at the visit of the Institute, Lord TALBOT DE MALAHIDE, F.S.A., as President, replied in the name of the Institute, thanking the Corporation for their hearty reception, and remarking that this was the first occasion on which they had, as a society, visited Hereford. He believed that they would gain much information from the visit to the county, and hearing papers read by the local gentlemen; at the same time the members hoped they might be able to aid them in interpreting their monuments by experience derived from wider fields. He trusted such gatherings as these would act as an incentive to all to resist any vandalistic attempts to injure or destroy the ancient buildings which are now coming to be esteemed with greater pride than was formerly the case. In concluding, he introduced the Bishop of the diocese as President for the year.

The BISHOP OF HEREFORD delivered an inaugural address, avowing at the outset his want of any special knowledge of archæology. Many of the clergy—and he might add Prebendary Scarth and Canon Jebb—were, however, ardent archæologists, as would be seen in the course of the week's excursions, during which, he could assure the members, they would find that the county of Hereford was not at all deficient in valuable architectural remains. As to their cathedral, they would that afternoon have the privilege of hearing one of the first archæologists and architects upon its history and character, and after visiting the building itself, under Sir Gilbert Scott's guidance, he hoped they would feel that there was in this county at least one building worthy of careful and diligent study. The Bishop then gave a running epitome of the principal places to be visited during the week, referring to the excursion fixed for to-day (Friday) as singularly interesting. Moas church and two others near by, again, were edifices of about Norman date, whether præ or post he should leave for the members to decide after an examination. The remarkable two-naved church at Leominster was one which needed and ought to be restored. Sir Gilbert Scott had already restored the Norman one, the other had been also entrusted to the same architect, and he trusted that one result of this Congress would be to stimulate the inhabitants of the county to resolve not only that the second nave be restored (perhaps as a memorial of the visit), but that a chancel should be projected once more from the east, so that Leominster may again have a complete church for worship. On behalf of the Dean and Chapter, he would say that the cathedral authorities would that afternoon and throughout the week cordially throw open their cathedral, and hoped it would exhibit points interesting those who devoted so much time, trouble, and money to the study of ancient buildings.

Lord TALBOT DE MALAHIDE thanked the Bishop for his address, and the members dispersed, meeting again at the *déjeuner* given by the Mayor at the Green Dragon Hotel, to which most of the members sat down. In the course of the postprandial speechmaking, the DEAN OF HEREFORD (the Hon. and Rev. George Herbert, M.A.) in proposing the health of Lord Talbot de Malahide said he hoped the members of the Institute would be able to assist the county clergymen by their advice not only in preserving their churches, but also in the more critical operation of restoring them.

The MAYOR, in closing the meeting, alluded to the great loss they had sustained in the sudden death last Friday of Mr. G. Townshend Smith, a leading member of the local committee for receiving the Institute.

Architectural Section.

SIR GILBERT SCOTT ON HEREFORD CATHEDRAL.

The architectural section was opened at the Woolhope Club-room at half-past 2, under the presidency of Mr. T. Gambier-Parry.

SIR GILBERT SCOTT, R.A., read a paper on "Hereford Cathedral," supplementing it by a peripatetic lecture delivered whilst accompanying the members round the building itself. In most cathedrals the difficulty in telling its architectural history arises from the plenitude

of information; at Hereford there is almost a nullity of information, and one has to search in every direction for excuses for guesses and theories, which in the majority one can neither prove nor test. Mr. Gordon Hills had, however, collected a nearly exhaustive summary of the documentary evidence for the British Archaeological Association; to it Sir Gilbert freely expressed his indebtedness, although he had not always been able to agree with Mr. Hills in his conclusions. There was probably a church of some importance at Hereford (then known as Fernleigh) as early as the days of King Offa, the great King of Mercia, for here in 793 the body of the murdered Ethelbert, King of East Anglia, was buried, and in 830 the church was rebuilt in stone; and again rebuilt in Edward the Confessor's time. This last cathedral was but short lived, being burnt in 1056 by Griffin, the Welsh Prince, who slew Leofgan, the bishop. To Leofgan succeeded, in turn, two natives of Lorraine, Walter and Robert. The latter, commonly called Lozing, was consecrated in 1079, and held the see 16 years. He undertook the reconstruction of the cathedral, and is said by William of Malmesbury to have built it of round form like the basilica of Charlemagne at Aix-la-Chapelle. The basilica exists, and is round (or rather polygonal) in plan like the Templar churches, being imitated from the church of the Holy Sepulchre at Jerusalem. Unfortunately no suggestion of a rounded building can be traced at Hereford, and, if so constructed, it must have been obliterated by Bishop Reynelm, who held the see from 1107 to 1115, whose reputed effigy holds in its hand a model of a church. Since there is no trace of a circular building, but merely of a church on a very straightforward Norman type of an advanced period, the presumption is that Reynelm commenced the rebuilding of the cathedral in the style of Normandy. All that is certainly known, however, is, that the Norman cathedral was finished not by Reynelm, but by his third successor, Robert de Bethun, who held the see from 1131 to 1148. The Norman design, which occupied about 40 years in execution (and of which Sir Gilbert Scott exhibited a conjectural plan), was a nave of eight bays, supported by massive round pillars, to which double shafts are attached both north and south, a triforium of moderate height and good design, and a somewhat lofty clerestory. The choir was beneath the central tower, and the presbytery beyond was of three bays, supported by piers, and are rather masses of wall than columns. It was probably vaulted — then rather an unusual feature in churches of so great a span — and terminated eastward in an apse, which was a separate and narrower structure opening into the presbytery by an arch of moderate dimensions, over which the eastern wall terminated in square form. Each aisle ended in a smaller apse, each having a separate roof. The transepts, of which one (the southern) remains, were of ordinary type. The nave was not conceived on so original a plan as its three neighbours, Gloucester, Tewkesbury, and Pershore, but he was not sure whether it was not more beautiful in internal effect. The details of the principal parts are decidedly rich in ornamental character, and of advanced type. The great glory of the cathedral was the west front, of which Sir Gilbert exhibited a restored elevation based on an ancient view. The east end seems to have been built by William de Vere, a great building bishop, between 1186-99. This work is very fine Transitional, with the rich semi-Norman decoration characterising the churches at Glastonbury and St. David's, but with other features derived from France. This eastern alteration consisted in the entire removal of the three apses, and the substitution of an eastern aisle, so affording a continuous ambulatory round the apse, with the addition of a range of chapels eastward. De Vere's scheme did not, I think, intend that these should take the form of eastern transepts, as they now do; one wide central, or two central, and four side chapels were aimed at, and this is confirmed, both by the base of a corner shaft on the south side, and by the remains of a Transitional doorway at the extreme end of the ambulatory. The fault in these alterations was the blocking up of the fine eastern arch of the presbytery; the re-opening of this arch is

a work of our own day, and has added much to the beauty of the choir. In the grand work of part of the thirteenth century the cathedral is rich, but every part has to tell its tale without the suggestion of a date. First in importance comes the noble Lady Chapel; a well-defined break in the internal work and the later character of the moulding and vaulting ribs, and the fact that the details are well-developed Early English militate against the idea that the chapel was commenced by De Vere and carried steadily forward to completion. It seems to be fine work of the earlier period of Early English. The presbytery clerestory is very advanced Early English, with windows filled with plate tracery. This suggested the probability that the original clerestory and vaulting had become damaged by the settlement of the central tower, again raising the question when the tower was first built. The style and details of the clerestory are very elegant, and it affords a perfect specimen of the later form of Early English. A second transition, from Early English to Decorated, is afforded in the north transept, the windows of which are adorned with bar-tracery of similar character to that at Westminster Abbey (which was begun in 1245), but rather later in date. The see was held from 1240-68 by Peter de Aquablanca, a turbulent prelate, who travelled for six years in the Holy Land, and was reprimanded by the king for his neglect of his duties. Though at first sight it seems unlikely that he could have built the transept, it is certain that he had a hand in it, for his exquisite tomb, which no one would erect to such a man but himself, is identical with the architecture around it, except in scale. Sir Gilbert suggested that the lower part of this transept was carried out by the chapter in Aquablanca's time, but that it was completed during the two succeeding episcopates, extending to A.D. 1288. Although the remarkable straight-sided arches are faulty, yet the transept as a whole is an exquisite architectural design, not surpassed by any of its period. The work here was probably continued by Thomas de Cantilupe, who, however, produced greater impression in his cathedral after his death than during his life, for, dying in Italy in 1282, Swinfield, his successor, pronounced him a saint, and his heart and bones were brought over to England—the former being buried at Ashbridge, and the latter in the Lady Chapel at Hereford; they were in 1350 removed to St. John the Baptist's aisle in this transept, but some sixty years later the shrine was removed to the Lady Chapel; there Leland saw it in Henry VIII.'s time, but in Elizabeth's reign Godwin saw it back in its present position in the north transept. There was in his mind no doubt that the singular canopied tomb, having on its upper slab of marble the matrix of a brass, was the base of Cantilupe's shrine. Sir Gilbert went elaborately into the reasons for this belief, adding that when Dean Mereweather removed the library from the Lady Chapel to the chamber above this transept, in 1842, he found the traces of where Cantilupe's shrine had rested, and the encaustic tiles, worn away by the knees of pilgrims; these are still preserved in the library. Bishop Swinfield himself appears to have finished off the top of the buttresses of the great north transept, the north porch, and the whole of the north aisle; these were executed in his earlier years, about 1288 or 1290. The south aisle is of the same date as the north, but less ornate, and both are much loftier than the Norman aisles they replaced. Swinfield seems at a later date to have rebuilt the presbytery aisles and the north-east transept. His own monument is in this transept, which first shows the profusion of the ball flower. About this period, or a little later, some bishop saw fit to commemorate all his predecessors by a series of recessed monuments and effigies arranged along the aisles of the presbytery. In 1320 the dean and chapter obtained from the Pope the appropriation of the titles of two Berkshire churches, on the ground that many superstructures had been built on ancient foundations, reputed to be firm and good, but which, in the judgment of expert masons and architects, were so weak as to threaten ruin, if not entirely renewed. These superstructures could only have been

the central tower and north transept. That a tower had formerly existed there can be no doubt, for there is evidence in the masonry that its weight caused the latter to give way. The present tower is of middle Decorated style, of singular beauty of design, and surcharged with ball flowers. From the style, it appears to have been rebuilt soon after the receipt of the Pope's bull, but entirely of fresh material. The stallwork and throne are somewhat later, but still of very fine work. Late in the 14th century, when the style had deteriorated, the south-eastern chapels were transformed into a transept. Not long afterwards, before 1375, were built the chapter-house and vestibule, in which a great revival of artistic taste is apparent. These were almost entirely removed during the Commonwealth, and several remaining fragments in 1841. Later works are rather those of deterioration than of improvement. Bishop Bisce clothed the interior of the east end with work, of which, judging from prints, even the Anti-Restoration Society cannot regret the loss. On Easter Monday, 1786, the western tower, an addition of the 14th century, fell, bringing ruin on the adjacent parts of the nave. James Watt was called in and designed the present western facade, probably the dullest piece of work to be found in any English cathedral, except perhaps the southern transept at Chester. He shortened the nave by one bay, and substituted for the triforium and clerestory of the nave a wretched design of his own. In 1840 Mr. Cottingham elaborately reconstructed the failing piers of the central tower, as well as the east end of the Lady Chapel; the nave arcades were also dealt with, and many unsuccessful decorations applied to the vaulting of nave and aisles. It would thus be seen that few cathedrals contain a more perfect series of specimens of the different styles of English architecture. Of the work executed since Sir Gilbert Scott would say nothing, except that he was himself responsible for it. When he refitted up the choir great stress was being laid by writers on the suiting cathedral arrangements to modern requirements, and he therefore limited the choir to the eastern limb, introducing an open instead of a close screen. He was not sure that he should do so were his time to come over again, but he believed that the uses of the cathedral had gained by it.

During the examination of the cathedral, under Sir G. Scott's guidance, a close inspection was made of the reputed shrine of St. Thomas of Hereford (Bishop Cantilupe), now for the second time placed in the north transept. It was suggested that the upper portion—a marble incised slab, supported canopy-wise on grouped columns—was of later date than that below, and as some of the details seemed coarser, it was suggested that this was an imitation made in consequence of the breaking of the original in one of its removals between the Lady Chapel and transept. The fact that certain fragments, apparently of the same tomb, are preserved, supported the theory, but a yet closer inspection showed that a small portion of one side of the upper part was of distinctly baser work, and was let into the main part. The problem yet remains at what date, if not a modern one, would Early English work have been so servilely copied? That the monument is the shrine there could be little doubt after an examination of the Templars' figures on its lower side, and the marks of the iron shrine above. The Rev. F. T. Havergal, canon and hon. librarian, at the request of Sir G. Scott, stated that when Bishop Swinfield's monument was restored some years since the side was broken in, and something shining was apparent. It was feared that the workmen might be tempted to rife it, so he had the coffin opened, and found the bishop's body in excellent preservation. By its side were the head of the pastoral staff, a chalice, and patten. These were removed. The staff forms the head of that now borne before the bishop, while the chalice and patten are preserved in a glass case in the vestry. Another bishop, Dr. Ironside, died in London in 1701, and his body was buried in the church of St. Mary Somerset. When that building was condemned a few years since, he thought the

bishop ought to be reinterred at Hereford rather than in the cemetery at Manor Park, Essex. On making application to the Board of Works for power to take the body, the parish clerk suggested that they wanted to get the silver coffin in which, tradition said, the bishop was buried. He obtained the sanction of the Board of Works to the removal, and with the pecuniary aid of friends, had the body brought to Hereford, and buried it under the old monumental stone. On opening the coffin (which was of wood, not silver), they found the skin unbroken, and the arms crossed. He had had many of the ancient monuments repaired, but there were yet two cartloads of tombstones buried altogether near the Bishop's palace. He had also copied all the tombstone inscriptions outside the cathedral, which must by degrees become illegible.

Acting on Mr. Havergal's invitation, many of the visitors ascended the narrow staircase to a room over the north transept, now used as the library. Here a rich treat rewarded "bookworms," for in narrow tiers and open shelves is arranged a fine collection of illuminated manuscripts and early printed works in an excellent state of preservation. Many of the volumes have still attached the chains by which they were originally chained to the desk; these are about 7ft. 4in. long, with the slender links of fine charcoal-tempered Forest of Dean iron, as tough as steel. Many of the manuscripts are richly illuminated on vellum, some dating in style from the earlier part of the thirteenth century, and even antecedent to that period. Amongst the printed works is a fine copy of Caxton's "Golden Legend," printed 1483, but we noted an earlier work—"De Proprietate Sermonis," imprinted 1476. A "chained Bible," a vulgate of the twelfth century, exquisitely written in red and blue, attracted much interest as a historical no less than antiquarian relic. Mr. Havergal stated that he should be glad to afford every facility to members to inspect the library throughout the Congress.

In the evening the members were received at the palace by the Bishop and Mrs. Attlay. During the evening a paper was read by Dr. BULL upon the "Herefordshire Apple and Cider." About 150 guests were present.

WEDNESDAY.

The first excursion of the Congress was arranged for Wednesday, the ancient boroughs of Ludlow and Leominster being selected for a visit by rail. The weather was so showery as to detract much from the enjoyment of the visitors, who mustered in great numbers, but the town presented so many features of interest that the inconvenience was but lightly regarded by the working archaeologists.

LUDLOW.

The hill of Ludlow, crowded by houses, above which rose the lofty square tower of the noble parish church, burst into sight on rounding a sharp railway curve about 40 minutes after leaving Hereford. When toiling up the steep ascent towards the Bull Ring, a performing bear suggested reminiscences of the days when the bull and bear were really baited on this spot, the quaint half-timbered houses, with overhanging gables and glaring white plaster and black quartering, making a fitting background to the mental scene of the Middle Ages. Churchyard's eulogistic description of Ludlow is fairly correct at the present day:—

The town doth stand most part upon a hill,
Built well and fayre with streetes both long and wide;
The houses such where strangers lodge at will,
As long as there the counsell listes abide.
Both fine and cleane the streetes are all throughout,
With condits cleere and wholesome water springes;
And who that listes to walk the town about
Shall find therein some rare and pleasant things;
But chiefly there the ayre so swete you have,
As in no place ye can no better crave.

The rain did not invite long lingerings by the way, and the members pressed on through the town to the great castle by which Ludlow has been most widely known. The widely-scattered ruins of old red sandstone buildings, the details and sharper outlines veiled in places by a mantle of ivy, creepers, wallflowers, and grasses, looked very imposing as we entered the Tudor gateway, and followed Mr. G. T. Clark, of Dowlais, as he escorted the party in a perambulation of its walls and pointed out the

places where the Norman work has been restored and raised and altered during later periods. The path, a very narrow one, along which the members followed their *cicerone*, lay on the outer side of the walls, and from it a steep bank sloped down towards the town and river Teme, more than a hundred feet below. On the face of the watch-tower Mr. Clark pointed out how a good Norman squinch window in the basement had been degraded in later days by passing a sewer pipe from the baronial hall through it, discharging on to the rocks below, and thus into the river—a mediæval example of sewer ventilation and disconnection by no means worthy of imitation. Having completed the town grounds, returning by the curtain to the principal entrance to the outer valley, Mr. Clark showed that this, together with the stabling to the left of it, was a Tudor addition to a Norman base. The plane of the ancient drainage between the outer and inner ward has been supplied by a modern arch of masonry across the fosse, but the line of the depending curtains to those sallying forth can be distinctly traced. The ditch appears to have been revetted in Elizabethan times. Having glanced at the arms of Sir Henry Sydney and the inscription, 1581, over the inner gateway, the members ascended a circular staircase to the principal floor of the keep, a T-shaped room, having a passage running north and south from the end of a rectangular passage. Some of the more active visitors ascended to the top, from whence, between the showers, fine glimpses were beheld of the surrounding hills and the intervening valleys. The principal entrance to the keep (now closed) is on the ground level, and turns abruptly to the left, passing up in the thickness of the walls, but a second, a circular staircase, was also provided at the other end, there not being the usual care displayed to prevent access. The roof Mr. Clark also showed, by the corbels and other traces, was so far below the level of the walls that its ridge presented no object to marksmen, but, on the other hand, the inmates could not plant military engines upon it. The bakehouse and capacious oven were viewed, and on the other side of the ward the baronial hall—an apartment of noble proportions, but, like all the others in the castle, now roofless and dismantled—and the buttery and retiring rooms on either side. In the inner side a Decorated window has been blocked up by a large Elizabethan fire-place. Between the hall and retiring room are the traces of a gallery, from whence the ladies of the household could look down upon the feasts or plays below. Most of the windows are a very early type of Decorated, and have what is very unusual in windows of that period, except in a few castellated buildings—transoms. The members then adjourned to the little circular Norman chapel in the centre of the inner ward. This is the nave of one of the "round churches," erected on the model of the Holy Sepulchre, and is roofless; the only features are the arches to the east and west sides, which are richly ornamented with the billet and zig-zag mouldings, and the blind arcading with which the inner wall is surrounded. Traces of the chancel are discernible on the sward, and it was suggested that its excavation would amply reward the explorer by showing whether it ended in a square or apsidal form. Having completed the examination of the castle, Mr. Clark delivered an address. Ludlow was, he said, a castle-palace, in which the idea of defence predominated over that of comfort or display in its arrangement. Its plan was admirably suited to its site on a steep promontory overhanging a ravine, being a quadrant, with its acute front on the face of rock next the river Teme. It formed one and perhaps the principal of the series of nearly 200 defences of the Marches, erected by the English for protection against the Welsh. Here there is no trace of earthworks or other remains of earlier than Norman date, although it is satisfactory to find that the Norman castle up to 1086 displayed the same lines as when reconstructed in the thirteenth and fourteenth centuries. The keep (which is that built by the Normans) was rectangular—a shape only adopted when no previous artificial mound was availed of, and one which has stood better than those of the more usual cir-

cular form. The prolongation of two passages into a T form seen here was a very unusual form. He had not shown the members the lower story because it was only used as a receptacle for filth, as in other castles, and was from time to time covered with sand to deodorise it. The bakehouse tower, near by, was open at the rear—a method of building paralleled in Cologne, Avignon, and other Continental walled cities, as well as Porchester, with the object of preventing a hostile force from holding the place against the denizens of the castle. The gate-houses were all Tudor, for the Norman architects rarely made more pronounced entrances than an opening in the curtain wall, and in most cases, as here, they had been beautified since. Those who were acquainted with the topography of the Marches of Wales would see that Ludlow was most advantageously situated as a dominating castle, being supported on either flank as well as occupying a very secure position. It was, therefore, a fitting seat for the Lords of the Marches, who once governed the Principality. The extraordinary legal powers and positions of these Lords of the Marches remained still to be explained. William the Conqueror found the Marches too much to manage, and though unwilling to part with any personal power, he was obliged to put Montague in possession of Ludlow, and other nobles were dispersed throughout the border-land of Wales, permission being given them to conquer and hold as tenants of the Crown. As a matter of fact, they acted each as sovereigns, and upheld the privileges of marrying, issuing writs and injunctions, &c., and even managing the affairs of the see of Llandaff during the interval between the death of one bishop and the appointment of another by the King. Their rule, although rough, was probably the best at that time for the lawless districts, but afterwards these Lords of the Marches became exceedingly difficult to the English Kings to manage, as they sided with Welsh or English as they served their own purposes. Edward I., in pursuance of a larger scheme, strove to get possession of the Marches, but the Castle of Ludlow, although besieged by Stephen, did not pass into the hands of the Crown till Edward VI.'s time, when it passed from the Mortimers to the heads of the York family. Till the time of their suppression the meetings of the Council of Wales were always held in the castle as the seat of the Lord President. An attempt was made to seize the castle during the Commonwealth, but it was not finally dismantled till the close of the last century. It is now in the possession of the Powis family, who offer every facility for its inspection, with as few restrictions as possible. Perhaps those who most appreciate this and the other noble castles of the Marches are, said Mr. Clark, the members of the great English-speaking nation across the Atlantic. They are, as a rule, well versed in the details of English history, which they claim as their own also. They read of the spots where those events transpired, and cross the ocean to see them for themselves, and not only do they visit Ludlow on account of the part her castle played in the government of the Marches, but also because they have read that in the room over the gate-house, through which we entered this place, Samuel Butler wrote the first part of "Hudibras;" that the greater Richard Baxter visited the castle, and had recorded his testimony as to the manners of its occupants, and that a greater even than Baxter, John Milton, stayed as an honoured guest, and here his masque of "Comus" first saw the light; that at an age when the English language seemed to have reached its perfection, Milton, rich in the glories of that tongue which had been enlarged by the writings of Shakespeare, Spenser, and Jonson, although himself only six-and-twenty, produced here his poem unequalled in the language—exemplifying

How charming is divine philosophy!
Not harsh and rugged, as dull fools suppose;
But musical as is Apollo's lute,
And a perpetual feast of nectar's sweets,
Where no crude surfeit reigns.

The BISHOP of HEREFORD proposed a cordial vote of thanks to Mr. Clark for his eloquent address on Ludlow Castle, a motion which was warmly accorded.

The members then proceeded to visit the

parish church of St. Lawrence, a noble cruciform edifice, cathedral-like in its proportions. It consists of a nave of six bays, with north and south aisles separated from the nave by a series of lofty clustered columns and arcades; a central lantern and pinnacled tower above; transepts, chancel, south chancel aisle, and a chapel of St. John the Evangelist on the north side of chancel. The internal dimensions are 205ft. in length, by 80ft. across nave and aisles, and 135ft. at transepts; the central tower, which is of good proportions, is 166ft. high to pinnacles. Sir Gilbert Scott drew attention to the slight traces of Norman work in the jambs and bases of the west door, and of Transitional or Early English substructure to within one bay of the east end of chancel. The south aisle windows are Early English, but those of the north aisle are exactly similar in pattern—two cinquefoil lancets under a cinquefoil head—to those in the middle tower of Hereford Cathedral, and many Herefordshire churches, although unfortunately no date can at present be ascertained in any instance. In early Perpendicular days, the piers were rebuilt, and the lofty central tower erected, support being obtained by the device of flinging half arches as flying buttresses to the tower-piers across each aisle-end from the transepts, which themselves have flamboyant windows. There were evidences that the reconstruction of the nave preceded that of the tower. The members then proceeded to examine the church. The rood loft still exists (as well as the stairs), and has panelled imitation of groining on its soffits. The stalls are fine specimens of fifteenth century wood-carving, and are ornamented beneath with grotesque carving. The church was redecorated by Sir G. G. Scott in 1860, when the lantern—previously concealed by a ceiling—was opened out, and the piers straightened. We noted, however, some cracks in the upper story of the eastern face, suggesting that further tying may be desirable for safety sake. In the chapel of St. John the Evangelist are three fine north windows, filled with stained glass, which have been carefully repaired and refitted by Mr. Powell (of the firm of Hardman and Co., Birmingham). Two of the windows, which appear to be fifteenth century in date, represent in several compartments the twelve Apostles, each with appropriate symbols, and composing part of the Apostles' creed, the rays of inspiration being shed from the Dove on the head of each; the tones are quiet and severe, and more pleasing in effect than the somewhat earlier third window, which is to the west of these. Mr. Bloxam called attention to the exquisite arrangement of the drapery and sculpturing of the effigies on the tomb of Dr. John Brydgetman, who died 1637, and his wife. They were the work of Fonelli, an Italian sculptor, also employed at Gloucester Cathedral. To many of the members the need for reverential cleansing was as patent as the beauty of the carving of these recumbent figures, and suggestions were expressed to this effect to the rector. The church is rich in monuments of the Lords of the Marches, and the stained glass east window representing the martyrdom of St. Lawrence, and the series of figures in the 15th century reredos beneath are worthy of more detailed study than could be given in a flying visit. Some discussion took place with reference to a singular cavity in the east wall, which was lighted by a lancet trefoiled opening, with grated bars, of 14th century design. On the exterior of the church, and below the great east window, Mr. Bloxam expressed the opinion that it was a treasury or store for plate. Luncheon was provided in the Feathers Hotel, a half-timbered edifice in itself worthy of study. The very handsome street frontage has been recently additionally beautified, and restored in very creditable manner, and in keeping with the older work. A visit was afterwards paid by invitation of the mayor to the town museum, a well-arranged and cared-for but rather small establishment, containing a series of charters granted the borough by Edward IV. (1461), Henry VIII. (1509), Edward VI. (1552), Mary (1553), Elizabeth (1596), James I. (1604), Charles I. (1628), Charles II. (1665), and James II. (1685), some of the

earlier ones being admirably illuminated—flint weapons, natural history, and geological collections, the last being very complete. The members then returned by train to Leominster, proceeding at once to the Priory Church (of which the Rev. Mackenzie E. C. Walcott gave an account, illustrated by a ground plan in the BUILDING NEWS for September 8th, 1876 (p. 226, Vol. XXXI.). It consists of three naves of equal length and nearly equal breadth, a north aisle and tower of the Decorative style on the west end of north nave. The last nave has been restored by Sir G. G. Scott, and is the only one at present used for service. The central one is under repair; in course of reconstruction is the very singular west window, which has outside florid Perpendicular tracery, two engaged mullions running the whole height of the window on a level with the wall. The south nave is in a deplorable state of ruin, the glass has fallen from many of the windows, which are traceried with a geometrical fourteenth-century pattern, and closely studded with the ornament, the applied decoration being overdone in effect. Some of this tracery has fallen out of its place, and was supplied at the beginning of the century with intersecting wooden tracery of makeshift character. Appeals were made to the members to assist in the restoration of this aisle, which, it is hoped, will eventually be refitted for worship.

Sir GILBERT SCOTT delivered a lecture on and in the church, stating that it was the priory church of a nunnery founded in the 11th century, and annexed by Henry I. to Reading Abbey. It consisted of nave, north and south aisles, and choir—the capitals of the pillars, arcade, triforium, and clerestory being, as the visitors could see, of the severest description; thus showing, as this was known to have been built in the latter part of the 11th century, that paucity of means was sometimes a reason for plain architecture. Some dispute probably arose in the 13th century with the townspeople, which resulted in their pulling down the south aisle, and building a second nave of equal size to the Norman one; this proved insufficient in size, and a third was accordingly added a hundred years later, still further to the east. The original choir has been destroyed, but traces exist showing that it ended in apsidal chapels, and a processional path. The visitors then visited the site of the choir, the foundations of which were laid bare some years since, but have now nearly disappeared from view. Sir Gilbert Scott stated that it was proposed to rebuild a chancel, as well as restore the naves, if funds allow. Special attention was directed to the west door of the Norman nave, which is deeply recessed, and consists of a series of six mouldings, the outer one adorned with zig-zag, and the centre one with deeply waved axe-head ornaments; the capitals and abaci of the six supporting columns are grotesquely carved, but in a vigorous style, each being differently treated.

The members also visited the Town Hall, where light refreshments, offered by the Mayor, were partaken of, and the maces inspected. In the Corn Exchange below stood the ancient ducking-stool for scolds, said to have been used during the last generation—an unwieldy appliance for silencing a woman's tongue, consisting of a wooden arm-chair balanced on a beam some 2ft. in length, the whole being supported on a stout frame and massive wheels, or rather circular discs of wood. The ancient Town Hall was also visited; it is a fine half-timbered building of great solidity of construction, and formerly stood in the centre of the town; some years since it was moved to an open space near the church, and is now occupied under the title of the Grange House, as a residence, by Mr. Moore.

Antiquarian Section.

The opening meeting of this section was held in the Woolhope Club-room in the evening, when Sir Wm. Guise, Bart., as its president, read a paper upon

THE ARCHEOLOGICAL RESULTS OF THE PAST YEAR.

No such year of success in all branches of archaeological research as this had occurred previously within the lecturer's remembrance. Referring first to the excavations made at Olympia, where the site of the great Temple

of Zeus, described by Pausanias, has been discovered under the superintendence of Prof. Von Curtius, of Berlin, both the discoveries of Dr. Schliemann were alluded to, regret being expressed that the learned doctor has done but scant justice to his precursors in the field of Troy—notably to that of Charles Maclaren—in his published work and in his addresses before the learned societies of London. Whether Dr. Schliemann's finds are really those of the treasures and tomb of Agamemnon and his companions must still remain a doubtful question. The discovery of an ancient Etruscan sepulchre, rich in jewels and gold, in a field at Palestrina during last year, has more than passing interest in the controversy as to the origin of the Etruscan language. Amongst the contents of the tomb is a silver tazza, exhibiting in its ornamentation the same mixture of Egyptian and Assyrian styles as that upon a tazza from Cyprus and another from Salerno. It is interesting to observe that all the archaic remains found in Cyprus, Salyns, Ilium Novum or Hissarlack, Olympia, Mycenæ, and perhaps the tombstones of the second period at Bologna, have a general resemblance in style and ornamentation. Antiquarian and linguistic science has sustained an irreparable loss by the removal from amongst us of Mr. George Smith, of the British Museum. He seems to have discovered the site of Carchemish, a chief place of the once powerful Hittite people, who have been claimed by Mr. Hyde Clarke as the ancestors of the Etruscans.

The PRESIDENT suggested that each member of the Institute might do something to aid in the onward march of archaic science by accurate observation in his own neighbourhood, and most of all by aiding in the conservation of ancient monuments. For this latter object he hoped that Sir John Lubbock's bill would soon become law, and that the Institute would share in the honour by using all its influence to overcome the private and territorial scruples to the bill.

The Rev. Prebendary SCORTH, M.A., read a paper on

THE ROMAN MILLIARIES OF BRITAIN.

The number of the milestones of Roman military roads yet discovered in this island has been 45, the periods embracing extending over 200 years—from the time of Hadrian, A.D. 120, to Constantine, junior, A.D. 336—thus affording proof of the time at which the roads were kept in good repair. Most of the stones have probably been re-used for building purposes or destroyed in the course of centuries. Special reference was made in the paper to the Roman roads through Wales and the West of England.

The PRESIDENT remarked that a great work remained to be done by the local societies in tracing out the course of the ancient Roman roads.

THURSDAY.

Yesterday (Thursday) morning was assigned for the annual meeting of the Institute, after which a perambulation of the city was made, the principal antiquities being examined with as much care and attention as time permitted. In the afternoon an excursion was made by carriages to Sutton Walls and Marden Church, and other objects of interest north of the city, the day's proceedings closing with a conversazione in the temporary museum at the Free Library. The principal objects in this collection, which had been arranged by the Rev. F. T. Havergal, M.A., and Mr. J. T. Owen Fowler, assisted by Mr. R. Ready, from the British Museum, are celts and Roman pottery found in the country, bronze gilt mediæval reliquaries, and monstres, fine silk embroidery of late seventeenth century workmanship, from Foye, near Ross, Worcester and other china, antique cider jugs, and illuminated MSS., books and engravings, and charters lent by the dean and chapter and the corporation—the gem of the collection being a fragment of a grant from Cuthwulf, dated 840. The civic maces, sword, and plate, excellent specimens of solid silversmith's work of Charles II.'s time, were also exhibited.

The programme for to-day (Friday) includes an excursion through Haywood Forest to Kilpeck and Ewyas Harold Castles, Abbey Dore

and Belmont Priory; that for Saturday a visit to Ross; on Monday Kenchester and Brewardine are to be visited; and on Tuesday the Congress is to be closed by a visit by boats from Worcester to Tewkesbury Abbey. We shall continue our special report in our next issue.

LEGAL INTELLIGENCE.

INTIMIDATION BY UNIONISTS.—Five men named Keal, Morgan, Flintoff, Marsland, and Garth, cabinetmakers, were indicted at Preston Quarter Sessions on Thursday in last week, charged with persistently following Frederick Webster for the purpose of compelling him not to work for Bell and Coupland. Defendants are all members of a trades union, and at the end of April left the employ of Bell and Coupland because of a trade dispute, and their places were filled by Webster and other non-society men. From the 1st to the 8th May Webster was persistently followed by the defendants, who collected large crowds of people in the streets, and he and another were greatly annoyed because they refused to leave work at Messrs. B. and C.'s establishment. It was proved that Keal said to Webster that if he did not leave work his name should be published in the paper, and he would never be able to get work elsewhere; that on one occasion the protection of the police was necessary, that Flintoff told Snowdon, another non-society man, that they should be followed about morning, noon, and night, and that the foreman was informed the shop should be picketed and made too hot to hold him. The case occupied the court 5½ hours, and at its close defendants were convicted and fined £10 each and the costs.

WATER SUPPLY AND SANITARY MATTERS.

SOUTHPORT SEWAGE WORKS.—EXCEEDING THE ENGINEER'S ESTIMATES.—Colonel Cox, inspector to the Local Government Board, held an inquiry on Wednesday, the 1st inst., at Southport, on an application from the Corporation for sanction to borrow an additional £30,000 to carry out the sewage works, from plans by Mr. Mansergh, C.E. £50,000 had, it was stated, already been borrowed under the Local Improvement Act, and this was the original estimate for the cost of the sewage works, but when the borough was extended the works were enlarged, and the estimate then made by Mr. Mansergh was £70,000, the contract being eventually let for £72,663. The contractors, however, got into liquidation with the Corporation, and the works were relet for £88,000. This application would exhaust the present borrowing powers of the Corporation, but they would borrow under the Public Health Act for the rest. It was intended to carry out still further sewer construction, but to spread it over 10 or 15 years. Mr. Mansergh, C.E., was examined by the inspector and said that up to the end of July £52,818 7s. had been spent on the measured-up work, and £4,937 on extras. The work to be done, according to the estimate, amounted to £35,570, and extras on that being £1,334, made a total of £94,840. The difference in the contract arose partly from an additional quantity of timber being absolutely required to be put into the work, partly as the inevitable result of a change of contractors, together with the gradually increasing price of work. The estimate was originally advanced from £50,000 to £70,000, owing to the enlargement of the main sewer on plan from 5ft. 3in. to 6ft. 4in. It has been all lined with blue bricks, and altogether said Mr. Mansergh, the job has been a very costly one. No opposition was manifested by ratepayers, and at the close of the inquiry the Local Government Board inspector visited the works in progress.

WEST LOOE, CORNWALL, is about to be supplied with water by gravitation from a stream flowing into the Looe river. Mr. E. Appleton, of Torquay, is the engine and Mr. Stoney, of Looe, the contractor.

The Kilmarnock Town Council have agreed to the erection of a model lodging-house under the supervision of the Board at an estimated cost of £2,000.

The memorial stone of a new Roman Catholic church has been laid at Washington, Durham. Messrs. Dunn and Hansom, architects, of Newcastle, have prepared the plans of the building, which is in the Decorated style, is to be built entirely of stone, and will accommodate about 500 people.

The foundation stone of the new workhouse at Middlesborough, about to be erected at a cost of £40,000, was laid on Thursday, the 2nd inst. The style of the building is Gothic; it is planned on the pavilion system, with a corridor running across the main front. Accommodation is provided for 226 inmates, besides 138 patients in the hospital, to be erected in connection with the union in Ayresome-lane and the schools, which will accommodate 220 children.

Building Intelligence.

ALTRINCHAM.—The directors of Parr's Banking Company have erected new offices at Altrincham. The banking-room, in addition to an open fire-place, is also warmed with Constantine's convoluted hot-air apparatus. The building, the ground floor of which is wholly of stone, is designed in the Italian style, and comprises on the ground story entrance to the bank as well as to offices above, with three sets of intermediate windows to light the bank, divided into double lights by red Aberdeen granite columns with carved floriated capitals, moulded label moulds, and bold stone cornice. The whole of the work has been carried out according to designs prepared by Mr. Pons, architect, Altrincham and Manchester; and the decoration of the interior has been entrusted to the care of Mr. J. L. Owen, of Bowden. Mr. Martin Stone, of Altrincham, was the general contractor.

BLACKMORE.—This interesting parish church has at length, after centuries of ruinous neglect, been restored and beautified, and was reopened by the Bishop of St. Alban's on Saturday week. The now decayed village of Blackmore, near Ongar, was once a flourishing town; the church was an adjunct to the Priory of St. Lawrence, of which a few traces remain; and Jericho House, close by, was a favourite hunting-seat of Bluff King Hal. Under the direction of Mr. Barton, of Ongar, who has acted as architect and builder, the church has been carefully restored. The ancient wooden steeple, which stands on a massive Norman base of piers and columns, has been reshingled, the west gallery and vestry beneath have been cleared away; for unsightly high pews open benches of pitch pine substituted; all the church furniture, and pulpit, and reading-desk being the same wood, with the exception of the communion chairs, rails, and standards, which are of oak. The stonework has been renewed where necessary, and the plaster has been removed from the walls, while the church has been paved throughout with Staffordshire tiles in three colours. The wainscotted roof, in which occur amongst other arms those of Richard II. and those noble families connected with the Priory and neighbourhood, has been carefully repaired, as has also the window in the north wall, representing the martyrdom of St. Lawrence, to whom the church is dedicated. This priceless remnant of the ancient stained glass has been injured within recent years by gunshot through the saint's head. The numerous monuments of the Smyth family, notably a large 16th century one in alabaster in the chancel, with recumbent figures of man and wife upon it, have been restored. The cost has been about £1,000.

CRIEFF.—The new church for the Episcopal congregation at Crieff was opened last week. The church consists of porch, nave, south aisle, chancel, organ chamber, and vestry, with heating vault under. It is built externally in rustic coursed work, with local sandstone of a warm brown tint, and white stone dressings from Bannockburn. The style is Early Decorated, with open timber roofs. The nave is 74ft. long, 35ft. wide, and 45ft. high to apex of roof, and is seated for 470. The south aisle is 50ft. long, 12ft. 6in. wide, and 20ft. high, and contains seats for 106. The chancel is 28ft. long, 28ft. wide, and 37ft. high, and is seated for a choir of 28. The organ chamber is 27ft. long, 11ft. 6in. wide, and 30ft. high, and will be furnished with a powerful organ. The tower, which is 18ft. square, has a moulded entrance and massive buttresses, and is at present 40ft. high, but other 20ft. has yet to be added to its height, as well as a fine spire rising to the elevation of 140ft., built with Bannockburn stone, interspaced with bands of local stone. The total cost of the church (inclusive of the old material of the former building) will be about £6,200, or with spire, &c., all complete, about £7,000.

EXMOUTH.—The schools erected by the Exmouth School Board, on a site in the Exeter-road, have just been completed. The accommodation is for boys and girls only, each department having a school-room, with one

class-room. The residence for master is rather larger than usual, and on the ground floor is a spacious board-room, with book-store adjoining, entered from a separate porch. The walls are of brick, built hollow, faced with red bricks, relieved by a few black bands. The roofs are tiled, and above the main gable rises a fêche for bell. The works have been carried out by Messrs. H. and F. Burridge, of Exmouth, from plans prepared by Mr. H. Lovegrove, of 30, Budge-row, Cannon-street, London. Mr. F. E. Carter has acted as clerk of works.

JARROW.—The foundation stone of a new Primitive Methodist church was laid last week at Jarrow. The buildings will be of stone, in the Italian style. The church will accommodate about 800 persons. The schoolroom is behind the back gable of the church, and is 52ft. by 32ft. 6in. A large infants' class-room, three vestries, and a care-taker's house are to be provided. The total cost of the church and schools will not exceed £4,000. Mr. Thomas Southron, of South Shields, is the architect for the buildings, and the contractors are Messrs. Shields and Cruickshanks, of Gateshead.

LEEDS.—Three new Board schools were opened at Leeds on Saturday. The Park-lane Schools are designed in the Italian style of architecture, and will accommodate about 700 children. The building is of brick, with stone dressings. The Prince's-field School is in the Gothic style, and will accommodate about 450 children. The building is of brick, with stone dressings, the windows having stone mullions and jambs sprayed with trefoiled head. The Bramley School, which is also in the Gothic style, accommodates 400 children. All three schools are from the designs of Mr. K. L. Adams, the architect to the Leeds School Board. Shillito and Shorland's Manchester School Grate has been adopted for heating each building.

LOWER SAPEY.—The new church at Lower Sapey, Herefordshire, was consecrated last week, and consists of a nave 36ft. 9in. by 19ft. 6in.; a chancel, 24ft. by 14ft. 6in.; an organ chamber and vestry on the north side of the chancel, and a porch on the south side of the nave. The style is latter thirteenth century. The detail of the work in the nave is simple and effective, all the windows being treated with chamfered jambs and arches. In the chancel, especially in the interior, the work is much more elaborate, the interior arches being richly moulded, and a number of columns of coloured stone, with carved caps and moulded bases, introduced. The floors of the chancel, passages, and nave are laid with Godwin's encaustic tiles; the remainder of the flooring is of board. Native stone has been used as far as possible, but the windows and arches are executed in Bath stone. The church is covered with Brosely tiles, and the west end carries a double bell turret. The architect is Mr. Kempson, Hereford; Mr. Collins, Tewkesbury, was the builder; and Mr. Williams, Hereford, foreman of the works; the carving was executed by Mr. Clarke, Hereford. The total cost of the new church amounts to about £2,000.

METROPOLITAN BOARD OF WORKS.—Deputations from the vestries of St. George, Hanover-square and Chelsea waited on this Board on Friday to request that a fire-brigade station should be established in the vicinity of Sloane-square, which is the centre of a densely populated district, and about a mile from the two nearest stations. The memorial was referred to the fire-brigade committee. Subject to the passing of the Loans Bill of the Board, a cheque for £4,250 was ordered to be paid over to the Lewisham District Board for the completion of the purchase of land to be set apart for a recreation ground at Sydenham and Forest Hill. Upon the same condition, the following applications for permission to borrow sums for improvements were granted local authorities of the metropolis, the loans being repayable by equal annual instalments, with the addition of £3 15s. per cent. interest, except in the case of Lewisham, in which 5 per cent. is to be charged:—Chelsea vestry, for excavation of sewage works, £8,000; St. Pancras vestry, asphalt and wood paving works, £10,200; Greenwich District Board, purchase of freehold wharf at Deptford, £4,150; Lewisham District Board, paving works, £3,375;

Marylebone vestry, sewerage works, £11,000; Fulham, ditto, £4,125; Metropolitan Asylums Board (further loan), £46,575; Guardians of Strand Union, for paying off old loans, £32,000; and Lee Burial Board, ditto, £2,200. The Works Committee reported that they have decided to serve notice under the Metropolitan Toll Bridges Act on the Lambeth Bridge Company in the month of September next, and to consider, immediately after the recess, as to serving the notices upon the Waterloo Bridge Company, and in respect of the foot-bridges at Charing Cross and Cannon-street. The Sanitary Committee reported with regret that an infringement of the provisions of the Petroleum Act was being committed at a wharf and premises on the river Lea, below the bridge, at Three Mills-lane, Bronley-by-Bow, where a large quantity of petroleum is so stored as to be dangerous. It was decided to address the Home Secretary, calling attention to the fact, and pointing out the desirability of an amendment of the law with regard to petroleum.

PUBLIC HEALTH.

The Leading Journal of Sanitary Science and Progress. Price 2d. (Annual Subscription, Eleven Shillings, post-free). The number published August 10 contains articles on Model Bye-laws for Sanitary Authorities, Bristol and its Sewers, The British Medical Association at Manchester, Newcastle-on-Tyne and the Artisans' Dwellings Act, The River's Pollution and Prevention Act, Skin Cleanliness, The Heavy Infantile Mortality at Maclesfield, Mr. Gladstone on the Sanitary Evils of Large Towns, Poisonous Gases in Dwelling Houses, The Quarterly Report of the Registrar-General, Parliamentary Notes, Legal Intelligence, Public Health Reports, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c. Price 2d.—31, Tavistock-street, Covent-garden, and all News-vendors.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Cases for binding the half-yearly volumes, 2s. each.

WISHPUL TO LEARN. (The die is used with a stamping press. It is altogether a trade process, and not likely to be executed by an amateur. The press would cost you at least ten pounds. The colour is carefully brushed into the sunk letters, and then wiped off the flat surface before each stroke.)—W. G. THOMAS sends to correct the motto "Onward" we assigned to the bronze medal pattern of the Westminster School—it should have been "Ou."

ARCHITECTURAL SCIENCE CLASS.—Received: A. L. B. (The initials, referring to question 56, were a misprint; they should have been yours instead of T. N. In reference to your second query, your reply to No. 57 was the published one, and as a rule we notice only the other replies in the summary; this is the reason yours was not mentioned.) We shall publish our award next week, and those correspondents who have not yet forwarded us their names, addresses, and ages, with *noms de plume*, are requested to do so.—J. S. A. M. (Thanks for your appreciative letter in relation to the Architectural Science Class.)

BUILDING NEWS DESIGNING CLUB.—Received: Thos. C. Fowler, Jacobus, Torpedo, Isola. (Continue by all means. Although your designs have not been yet published, they show a marked improvement.)—JACOBUS IN CIRCLE. (Yes.)—R. KENDRICK.

Correspondence.

THE QUANTITY QUESTION.

To the Editor of the BUILDING NEWS.

SIR,—I should be sorry to suggest that the statement of your correspondent, "Clamans in Deserto," is incorrect, but it is absurd to suppose that a surveyor would increase the quantity of painting by forty per cent. My own experience, with my own quantities and those prepared by other surveyors, is, that they are rarely excessive; generally very close. Your correspondent would have the world believe that those gentlemen who follow the surveying branch of the profession are little better than thieves, who prepare "fat" quantities that they may receive a commission on a larger sum and be free from blame through errors in certain items. Quantity taking—like any other special branch of the profession—requires practice and experience, and if an architect thoroughly works out his design he will have very little time to take out quantities, but will have no difficulty in finding a surveyor who will render him great assistance in keeping his design within reasonable limits of cost.—I am, &c., A CLOSE MEASURER.

ARCHITECTS AND QUANTITIES.

SIR,—My experience as an architect widely differs from "Clamans in Deserto," and my interpretation of the general drift of the controversy on "quantities" in these pages is certainly opposed to his. I will not occupy your valuable space with more than one reference to the letter of "Clamans in Deserto." The writer remarks, "one point in favour of the surveying architect is that he can protect his client from enormous overcharges, which are caused by excessive quantities, whereas the non-surveying architect cannot and does not." Now I would merely ask if the "enormous overcharges" are not as frequently found to exist when the architect prepares his own quantities as otherwise. Does he not often take them full to protect himself? My experience in "quantity" taking has at least assured me that the excess is quite as often on one side as the other; I am inclined to think rather more so. The case mentioned under three acts does not confirm anything: it shows only that in that particular instance the independent surveyor either blundered or wanted to protect himself, neither of which things he would have been likely to do if the independent surveyor knew he was protected and recognised.—I am, &c., CONTRIBUTOR.

EGYPTIAN ARCHITECTURE.

SIR.—In reply to "One in Egyptian Darkness," I may say that he need be no longer in doubt on the question of awnings. Speaking of the Egyptian palace in "The Habitations of Man of all Ages," "Viollet-le Duc" says: "In front of the great hall stood an enclosure upon which was stretched an azure veil. . . . All the central part open to the sky could be covered by awnings hung between poles fixed in the terrace," &c. I have not the time to hunt up other allusions to the subject in this author's voluminous works, which your correspondent could easily find. All I need repeat is that the awning is frequently mentioned in connection with both Egyptian and Assyrian architecture, and screens of this kind are spoken of by Fergusson and other writers. I may simply ask how the glare of an Eastern sun could have been kept off but by such means? If "One in Darkness" is sceptical on any point, he certainly need not be so on this one.—I am, &c., THE CRITIC.

LOUGHBOROUGH ENDOWED SCHOOL.

SIR.—The governors have received 23 designs in response to their advertisement. It is said that, having excluded the greater number, they intend to take professional advice as to the comparative merits of the remainder. Whatever reasons may have induced them thus to limit the range of their adviser's investigations, the result of such a course is certain, as far as competitors and the public are concerned—namely, to destroy all confidence in the justice of the award. It is to be hoped they will reconsider their decision, and allow their adviser to tell them "the whole truth," even if the truth should not be pleasant.—I am, &c., VERAX.

Intercommunication.

QUESTIONS.

[5082.]—Party Wall.—Could some one kindly answer the following question?—A and B are adjoining owners of some building land. A builds and makes his ground level lower than B, who, by agreement, is to build a party wall 6ft. high; from which level is the 6ft. to be measured—A's or B's?—ONE IN DOUBT.

[5083.]—Board Schools.—What is a fair average cost per head, including teacher's residence, boundary walls, school-fittings, and making of play-yards? Also, is it more economical to build with a first-floor, or all on ground-floor, space being no object?—E. C.

[5084.]—Quantities for Joiner and Carpenter.—In taking the quantities for the above how are floors, roofs, and ceilings measured and described? In the "Manchester Method" (as given in the BUILDING NEWS of 1874, clause 2) it says, "Labour, framing, and nails to be measured super in square yards for floors, roofs, and ceiling-joists." This is very plain; but in clause 9 we find deals, planks, and battens used for joists, &c., to be taken lineal. Again, clause 11 says, "All timbers to be measured nett lengths as fixed," &c. How are these to be read? Should the measurement be taken in super yards—i.e., contents of each floor, roof, or ceiling super yards, and the builders to find what lengths of timber will be required to complete the same; or should the lengths of joists, spars, or ceiling joists be given in feet lineal? An answer will oblige greatly.—ONE PUZZLED.

[5085.]—Plumbers' Quantities.—In giving quantities of piping (for either gas or water) for this trade is it understood to take the quantity required to reach the mains in the street or only the quantity required in the building, leaving the company that supplies either the gas or the water to come up to the houses or buildings?—ONE IN DOUBT.

[5086.]—Glass.—How is plate-glass distinguished from sheet-glass, and what are the principal features to observe in guiding one as to their different merits for different uses?—ONE IN DOUBT.

REPLIES.

[5075.]—Tar Pavement.—I lay down tar pavement as follows:—The bottom bed, 2in. in thickness, is composed of broken stone, or gravel, not larger than will pass through a 2in. sieve; the top bed, clean gravel, or, for good work, granite chips, run through a $\frac{3}{8}$ sieve. The gravel is well dried by being heaped over a fire, the tar is well boiled and used whilst in that state, and care is taken that too much tar is not used, or the asphalt will not set; about half a pint of ground unslaked lime is mixed with every barrowful of the top stuff—this makes it set quickly. The beds are put on separately, and well rolled, covered with fine dry sand, and again rolled. The pavements are tarred and sanded over every summer at very little cost, and often last for seven or eight years.—J. W. W.

[5075.]—Tar Pavement.—If "Surveyor" will refer to your issue of June 8th, he will find in the report of the meeting of the Association of Municipal and Sanitary Engineers, held at Ipswich, a general answer to his questions. In practice, it will be found extremely simple, and for suburban paths especially. Tar paths, if properly prepared and laid, will be found to answer well. As a rule, surveyors will have some particular way of preparing their materials, and while some prefer pit shingles others will use burnt ballast or furnace slag. For some time past I have laid tar paths in various parts of my borough, and they have given great satisfaction to the inhabitants generally. I generally use furnace slag, and sometimes a little gravel mixed with it. I always burn it and pass it through a screen $\frac{1}{2}$ in. mesh, and mix it as hot as possible with boiling tar. To an ordinary barrow load of coarse stuff I use about three gallons tar, and to a barrow load of fine stuff 5 gallons. It must be thoroughly mixed and laid in a heap for at least a month before using. I often let it lie 4 or even 6 months, and find that the longer it lies the harder the path will become. In laying the path, be careful to get a good solid bottom. Lay your coarse stuff about 2 $\frac{1}{2}$ in. thick, with a fall of 1in. in a foot to the curb. Pass a heavy roller over it twice, then lay on your fine stuff about 1 $\frac{1}{2}$ in. thick. Spread it evenly over the coarse stuff, and roll it well. I use one of Barford's water ballast rollers, weighing when full 12wt. I always roll the paths well with an empty roller, then let them lie a day or two and then roll them with a filled roller. Coal tar will be found to answer very well, but refined tar is better. If Derbyshire spar is rolled well into the paths, it will give them a pleasing appearance. My paths cost about 10d. per square yard.—PECKSNIFF.

[5078.]—Arch or Lintel.—"Pupil" does not say what position his arch or lintel is to occupy. Assuming there is a good abutment, I should prefer the arch; if there is not, the lintel is best. The arch, if properly built, will bear the greatest weight; but supposing the arch abuts against a narrow pier I should certainly prefer a good stone or timber lintel. For narrow openings lintels are very often to be preferred, but in proportion to the extent of opening the arch becomes desirable.—G. H.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 17, 1877.

TOURISTS AND ARCHÆOLOGISTS.

IT may be fairly asked what the great annual exodus contributes to our art—whether the holiday Rambler brings back with him any useful impressions? In the course of a few days, the artistic, archaeological, and architectural professions will be far from the “populous city pent,” some climbing Alpine precipices, some strolling leisurely by the sea-beach, others engaged in antiquarian explorations. Each votary is, no doubt, bent on change and pleasure, and, on the principle that there is a time for everything, will be disposed to take his fill of those things he has little chance of enjoying during the rest of the year. As in every other thing, there is a conventional and fashionable way of taking these excursions. For the Londoner, of course, the sea-side has, and always will have its charms, despite its monotony. Brighton and Scarborough, Great Yarmouth and Ramsgate, will receive their usual votaries of fashion, or pleasure, or health, while many a small and less-known watering-place on the south and west coasts will be deluged with admirers of the marine landscape. Tours are, nowadays, cut out for the annual excursionist; he selects a programme, takes a certain district or route, and pays a fare—a mode of pleasuring that pleases some people and distracts others. This cut-and-dried sort of tour has certainly its drawbacks. It may suit very well the man of social proclivities, who likes gossip and chit-chat, and who does not mind a scamper, but it certainly does not recommend itself to the student, the artist, or the archaeologist. To these an object or a pursuit becomes one of the main sources of pleasure, and the less hackneyed it is the better. Last week our columns contained, and again this week they contain, a full account from our special reporter of the doings of the Royal Archaeological Institute, at Hereford, and probably a more interesting field for research could not have been selected. Rich in soil, and luxuriant in vegetation, the architecture of this district is set off to advantage, and is enhanced by the warm reddish sandstone of the geological formation; here and there the half-timbered structures indicate the abundance of oak the old builders found ready to their hands, while the natural scenery through which the Wye meanders possesses all the captivating features of landscape. The scenery along the banks of the Wye, edged by poplar and willow, is, perhaps, equal to any of our English rivers—at least, we know of only one or two to compare with it in this respect. Rising at the southern side of the Plinlimmon Hills, in North Wales, it marks the division of Radnor and Brecknock, Monmouthshire and Gloucestershire, and falls into the Severn, below Chepstow. Architecture has helped to increase the beauty of the varied course of this river. Ruins of castles, embosomed hamlets, the spires of churches, and overhanging rocks invest it with singular interest, and the tourist and artist could scarcely choose a more pleasant tour than in traversing the districts in its course. Few cathedrals present such a wide range of style as Gloucester, verging from early Norman to advanced Perpendicular. We seem to have here an anti-climax of style—a hard blending of rude Norman and late 16th-century Gothic. Its massive nave—pillars of circular form, and lofty proportions, with the deeply moulded and enriched arches that rest upon them, are remarkably archaic and simple, while the enriched Perpendicu-

lar choir, encasing the Norman work, and the Decorated aisle windows, thickly set with the ball flower, present us with a vigorous contrast and wealth of mediæval design that is well worth a tourist's trouble. The grand Perpendicular window at the eastern end, with the richly-ribbed vault of choir and presbytery, are perhaps without a parallel. We know of only one—the west window of Winchester—that can compare with the former feature; but the *coup de grâce* to our minds is the splendid Perpendicular tower over the crossing, with its open lacy parapet of pierced panelling. The *tout ensemble* is admirable, while the richly-divided side of tower is an unique instance of Late Gothic. What struck us particularly in connection with the tower were the great arches on the east and west sides, seen above the flat roof of nave, and the high-flying buttresses on the west side. The whole tower seems to spring from and to be built upon this arch. But, with our admiration, we are obliged to confess that the nave externally is the poorest we have seen. What can be more distasteful than the west window, with its outer mullion buttresses, its ugly curved arch, its flat pierced parapet and pinnacles? Hereford, about which Sir Gilbert Scott read an elaborate paper, or rather delivered an elaborate speech, is chiefly interesting for its old Norman nave, a conjectural restoration of which was shown by the speaker; its fine west front, its transepts, its 13th-century detail, and its grand Lady Chapel. We refer our readers to the paper itself, as reported in our pages. Kenchester, one of the places marked out in the programme of the Archaeological Institute (but not visited from the lack of time), is an ancient Roman town of great interest, of which Leland writes: “This town is far more ancient than Hereford, and was celebrated in the Roman time, as apperith by many things, and especially by antique money of the Cæsars, very often found within the town, and in ploughing about, the which the people then call dwarf's money. . . . Pieces of the walls and turret yet appear *prope fundamenta*, and more should have appeared if the people of Hereford town and thereabout had not in time past pulled down much, and picked out of the best for their buildings.” We are afraid the same spirit Leland records exists now, though there were no archaeological societies who may fairly be said to make business of pleasure. Hereford is said to have arisen from the ruins of old Ariconium, or Kenchester, which was shaken by an earthquake, and Speed records a similar phenomenon in 1571. The county of Hereford is remarkably rich in Roman roads and entrenchments, and this border county was in past time a scene of many a raid of the Welsh. Thus near Wigmore Castle a battle was fought between Owen Glendower and Edmund Mortimer; and the historic battle of “Mortimer's Cross” was fought between Wigmore Castle and Leominster. Speed enumerates twenty-eight castles in this county, many of which do not now exist. It was at Hereford Eleanor Gwyn and David Garrick first saw the light—the first in a humble cottage in Pipe-lane, and the latter in Wide Marsh-street.

The western districts of England, from Chester on the north to Gloucester on the south, are remarkable for archaeological subjects no less than for charming scenery. There are Ross, Abergavenny, Leominster, Shrewsbury, Oswestry, Nantwich, Market Drayton, Tewkesbury, Alcester, and a dozen other places, centres of interest to the architect and archaeologist, many of them barely explored. Madley, on the banks of the Wye, has a very interesting Norman and Transitional church, with a tower of late Norman date. Inside, a vaulted roof claims notice. The apse is also curious; it is

angular, or semi-hexagonal. Monmouthshire is replete with delightful spots for the artist and lover of mountainous scenery. Few more interesting old cities to the architectural tourist are there than Chester, on the border of North Wales, once a great Roman station, or the castra of North-west Britain. Every one probably knows, or has heard of the “Rows,” but there are many other features to instruct and interest, as Stanley Palace, and other structures of the 16th and 17th centuries abound; Bishop Lloyd's house, with its galleried front and gable carving, is a unique bit for the sketch-book, and the cathedral of red sandstone is a mine for the architectural sketcher.

Another route, comparatively unfrequented and little explored by the tourist, in search of the archaeological, is South and East Devon. Exeter alone is worth a ramble; its streets are full of timber gabled-fronted houses; and in North-street and Fore-street there are one or two exquisite studies for the architect intent upon making our streets something better than flat and monotonous walls. The “bay” has been pleasingly worked out by the old builders of the west, and as one sees every type of it in Salisbury, Exeter, and a few other of the old cities of this part of England, it is a charming feature. Cornwall also has its attractions both for the archaeologist and geologist, though its beauties are perhaps better known than some of those localities we have pointed out. It is quite evident England and Wales, to say nothing of North Britain, is rich enough in seascape, landscape, archaeological and architectural objects to satisfy the most varied taste, without leaving its shores, and there are numerous localities untouched by the architectural tourists, as far as critical examination and sketching is concerned in rural districts that lie between the main railway routes in the west of England. Last year the Architectural Association took one of these little explored regions and brought home some capital sketches from Hampshire and Wilts. Under the directorship of the late much respected and much-lamented Mr. Sharpe the members made excellent use of their time, and it is much to be regretted his guidance this year has been lost, and now lost for ever. We are afraid a week's work is insufficient for any thorough examination of a district. Last year, with the exception of a few sketches, the time of the Association was frittered in the large area selected. There are two methods of making a tour: one is a hurried scamper through a certain locality, the chief objects of which are miles distant from one another; and another plan is to take one object or town at a time and thoroughly study its buildings. The general tourist's idea of architecture is no deeper than that of his guide-book; and the parrot-like information furnished by the old verger in one of our cathedrals is probably the only impression he brings away with him. Those who can sketch can always be making use of their eyes and pencil; but even those who cannot sketch can use their note-book in jotting down the characteristics of the neighbourhood, and in remarking upon the principal features that strike them. An architectural, or indeed any student, might very pleasantly pass his time in noting the typical features of a certain locality, such as the geological formation, the material chiefly used in building, its durability, the kind and treatment of roof-covering, mercantile and street architecture, the salient features of the churches; and the practical sanitarian might well bring away with him the results of a certain system of drainage or scheme of utilisation; the wear of the local metalling of the roads, and a variety of other data that may be found of service to him in his practice. Such information can be picked up easily enough, and without in

the slightest impairing the pleasure-seeking proclivities of the tourist. If the annual excursionist pursued this plan, and had any mind for classification, he would in a few years possess a fund of reliable experience. If there were a few Rickmans, Pugins, and Sharpes among the profession; a few Darwins, and Spencers, and Carpenters to infuse method, and to arouse the spirit of classification, our tourists would quickly enhance the value of their present rather desultory studies at this season of the year. There seems to be a plan wanted, some method of classifying the fragments and sketches with an object more definite than the satisfaction of merely increasing one's portfolio with unconnected scraps.

THE PRESERVATION OF TIMBER.

CONSIDERABLE doubt was recently expressed in a paper read before the American Society of Engineers touching the value of the creosoting process as a preservative against worm. In the United States, indeed, the importance of this question cannot be overrated, timber forming so large a part of the builder's staple. Mr. Clinton B. Sears is the author of the paper referred to. In a recent discussion on this paper Mr. Charles Douglas Fox says he has used creosoted Baltic redwood in a tidal river where the worm is prevalent, and for several years has found it a complete protective. The timber was impregnated with 10lb. of oil of creosote per cubic foot. This opinion rebuts the statements made by Mr. Sears, and we believe the efficacy of the creosote process depends on its thoroughness. Mr. Fox lays down a few conditions of success. He says the timber should be previously well dried in open stacks, that the charge be carefully weighed in and out by an inspector, and that the inspector should be present while the oil is being injected, to assure that the oil is of good quality, and that the suction-pipe passes well below the surface of the oil in the tanks.

Mr. S. B. Boulton, of a London firm, supports Mr. Fox's views, and observes that the "Robbins process" is thoroughly inefficient, as it fails in injecting a proper quantity of the creosote. "Creosote injected by vapour has the effect of introducing a small quantity of the oil into the timber, which discolours it indeed, but is not present in sufficient volume to protect from decay or attack, and 1½lb. of oil to the cubic foot of timber would be altogether inadequate for either purpose." The same writer maintains that saturation with the oil to the extent of 10lb. or 12lb. per cubic foot has been carried out largely in England for thirty years, and the treatment has been found very successful. Imperfect saturation is assigned by Mr. Boulton as the cause of failure, as he found that wherever the timber had been attacked it has been in the uncreosoted parts. There is, the writer said, "an enormous series of hydro-carbons, but some of them containing petroleum have not been found efficacious for preserving timber." Petroleum is not used in England for this purpose; in Holland they have been tried unsuccessfully, and it is likely a similar oil was used in America. Mr. Sears, in reply to these objections, says his remarks embodied American practice and results only, and that he had in view the rigid ideas of economy imposed on American engineers.

There is, no doubt, considerable uncertainty as to the efficiency of many injections. We believe much depends on the kind of oil injected, the dryness of the wood, so that its pores are not preoccupied, and the comparative porosity of the wood. Some chemists and engineers prefer thick oil, or that rich in naphthaline; others, the thinnest oil, containing no naphthaline;

but the thin oil is said to be drawn out by the heat of the sun, or be dissolved out by moisture. The action of creosote is to coagulate the albumen, and to fill the pores with a bituminous substance which preserves the fibre from moisture, prevents its absorption, and is obnoxious to animal life. In Mr. Britton's treatise on this subject it is stated, "where the complete preservation of timber is of vital importance, and expense not a consideration, the wood should be first subjected to Burnett's process, and then creosoted," by means of which the sap absorbs the creosote more readily than the heart of the timber. Thus the wood should be first injected with metallic salts, then dried, and next creosoted. It has been discovered that some of the sleepers used on Indian railways have been decayed in the centre, but this has frequently arisen from the employment of the hard woods of India. Mr. Sears finds considerable difference in the quantity of creosote thought necessary to insure immunity from the teredo. Thus, Forestier, engineer-in-chief of the Ponts et Chaussées, says nothing less than 18½lb. per cubic foot can be considered reliable. Again, he observes, taking all the experiments, two only give tests of over ten years; the average for the English being seven, and three for the French experiments. It is considered a question of time as to how long the creosote will remain undissolved or washed out by the seawater, and the timber fall a prey to the teredo; if the life of the timber can be extended 25 years, it is thought the process sufficiently effective and economical, but anything under this term would be hardly satisfactory. One observation is worth quoting: it is, that the timber is best treated after framing. This, however, is seldom the case, and it is one of the greatest drawbacks of the process, in our opinion. To cut and reduce a timber just at its junction with another (inevitable in framed work) after its injection, is to expose the timber in the most assailable parts for the attack of insects. We may add the cost of creosoting is about 15s. per load of 50 cubic feet; the creosote is generally reckoned at 2d. per gallon. The labour and profit may be put at about 5s. to 6s. per load of 50ft.

BUILDING ACCIDENTS.

THE United States have afforded within the last few months ample materials for a long chapter on accidents. The Ash-tabula Bridge accident has been followed by several untoward failures of a structural kind of more or less significance to architects and builders, tending to show the necessity of making both responsible parties instead of leaving construction to the hands of intermediaries. The New York Post-office disaster has been the subject of various findings by different juries. Here a truss on the suspension principle, with top and bottom chords, upright struts, and oblique tension bars of four panels, fell through imperfect construction, and the grand jury at last has found that the fault lay with the incompetency of the inspector or superintendent employed by the supervising architect. The truss had never been properly fixed, but rested upon an end strut 19ft. long without lateral bracing or support, and when the shores were struck, and load was laid upon it, it fell, bringing down a portion of the roof. In fact, as far as we can judge, this failure was from a very stupid want of thought or care in not securing one end of a truss and laterally bracing it. Both this and the Rockford Court-house accident are of special import to the architect.

Another account reaches us of the fall of a house in New York. In this case the particulars we have show that the fault was

the composition of a party wall which first settled. This was built on a foundation of marsh clay to begin with, and, what is worse, the wall had no footing course. These circumstances alone would have been enough to convict any builder of want of common care; but when we go on to read that the wall was composed of a filling-in of loose rubble and brickbats, and was faced with stone without bonders, all we wonder is that it had ever stood. It is stated that the wall gave no premonitory warnings of weakness beyond a few cracks, and that other instances of insecure houses exist in New York, from which it is difficult to expel the tenants, despite of the warning by the police. Under these circumstances it cannot be wondered at that tumble-down houses are run up, seeing that people are willing, as our American contemporary says, to risk their lives.

An important letter appears in the same journal from Mr. Henry L. Gay, the architect of the Rockford Court-house, from which we gather some interesting particulars of the cause of the accident, which, as our readers may be aware, entailed the loss of a dozen lives. We may just remind our readers that the building was of dressed stone, and its main feature was a square dome rising from an attic on the roof, and this dome rested in front on the outer wall, but had no support at the sides and rear, except by two iron columns 30ft. high under the inner corners. These carried girders, upon which were brick walls carrying the dome. The iron columns stood upon brick walls or piers 30ft. high in the first story, and these piers suddenly gave way when the superstructure of the dome was being erected. We may as well premise here that the superintendence of the structure was not under the architect, that one of the building committee performed that task, and that the architect had merely been called in now and then. Such are the bare facts of a disaster which has created a great deal of inquiry, and upon which a committee of experts and General Smith have been engaged in making an elaborate report, which ascribe several faults to the design.

From the particulars now furnished from the architect we learn the fact that considerable alterations had been made from the original designs. The bearing walls or "piers," as they have been called, were intended to carry a light construction with metal cornices, and which was afterwards changed to stone. The modifications were, Mr. Gay says, made on the plans, and figures were inserted. The bearing walls were increased in thickness to the length of four bricks to the particular measurement of 2ft. 10½in. The walls at the bearing points, originally double, with air space, were made solid, and bond stones were inserted, and the section furnished of the wall, as designed, shows that the bearing stones of the iron columns are in line with the pier or wall, and does not project beyond it, as in the case of the executed work, where the inside of the bearing stone rests about 9 or 10in. over the arch. It may be as well to say that these "piers" are called walls by the architect, who says he never considered them to be isolated piers, but continued walls, which, at the centre of a positive weight above, was increased to form pilasters. This is important, as the figures given by experts have been based, it is said, on isolated piers. Mr. Gay asserts that under his supposition of a wall acting as a beam transferring a part of its weight to the adjoining supports, and as designed, the walls would have amply carried the weight of ten tons per square foot. The extreme weight, it is said, should not have been over 130 tons; and in actual construction two sides of the pavilion were increased from 20in. to 2ft. 6in., unknown

to the architect. Mr. Gay also explains that the bond-stones, or headers, were specified every fifth course of brick, so bonded that the outer face of brick helped to sustain the weight. The bricks also were specified to be the "hardest burnt bricks." Referring to the sections before us we find that the basement story was 13ft. 6in., and the first story 17ft. 6in. to the floor line, making a total of 31ft. as the height of these piers supporting the iron columns of the second story. Iron beams and brick arching abutted against these piers at the first and second floor levels, and assisted to stay them. The architect says he was not consulted by the experts at all; that the plans they were furnished with for their examination were not those supplied by him to the contractor, but were the old originals, and that the contractor suppressed his plans, and withheld every instruction that would criminate him. As far as we can form any opinion the immediate cause of failure was the unequal distribution of pressure by the improper setting of the bearing stone on which the iron column rested; it was not placed centrally with the line or axis of pressure, and part of it rested on cinder concrete, contrary to specification. It is estimated also that the column sustained, at the time of failure, 102 tons, and that the greatest part of this weight was at a point between the concrete and brickwork, and just over the skew-back of arch. There is no doubt also the arches exercised a thrust, and the weight being concentrated just within the line of bearing, assisted to throw over the base of the column. The lesson is one pregnant with caution to the architect to see to his bearing piers in such cases. We certainly cannot commend the architectural design of carrying a central dome on mere props, entirely without relation to the internal structure, especially at such a height. The construction was, to say the least, highly risky, and looks too much like a feat of poisoning in the air a heavy structure. Added to which also we find the contractor had not carried out the architect's instructions, and that, indeed, the plans were unjustifiably ignored. We are glad for the profession Mr. Gay has come forward to place his case in a fair light, and to disclaim the personal responsibility which he should justly have borne.

ARCHITECTURAL SCIENCE CLASS.

IN awarding to the candidates of this class the merits due to them we have found the task less difficult than on the former occasion. The increasing complexity of the subjects, and the greater demand on the skill and time of the student, have had the very natural tendency of reducing the number of competitors. As might have been expected, the weaker in the race lagged behind, or dropped out altogether; some have lost patience, and others have become faint-hearted, and ceased to contend. The result has been that the choice has fallen between narrow limits, and, in our opinion, the following candidates are entitled to the three prizes:—

ADVANCED CLASS.

"S. M. E." (C. F. Walker, Upper Britton-street, New Brompton, Chatham, Kent).

ELEMENTARY CLASS.

"Aubery" (J. E. Batchelor, Cambridge-terrace, Great Marlow).

"T." (T. Newbold, Micklegate, York).

We have pleasure also in acknowledging the merits of the replies of the following competitors:—In the Elementary Class the names of "A. L. B.," "J. S. A. M.," and "Wilhelminus" are worthy of special recognition; while, in the Advanced Class, the replies of "Attneave," "H. R. P.," "Voguelin," "Sigma," and "Pro Rege et Lege" have been marked by great merit.

ROYAL ARCHÆOLOGICAL INSTITUTE.

VISIT TO HEREFORD.

[FROM OUR OWN REPORTER.]

THE Hereford gathering of the Royal Archæological Institute will be generally regarded by members and others as a successful one. Numerically, it holds high rank in the thirty-four meetings held by the Institute in various parts of the country. The primary purpose of such a society has been well kept in view by the working members, and many of the visits have been characterised by a careful examination of the objects to be inspected, and deliberate testing of theories by the concrete facts. A notable instance of this concentration of thought was afforded in the devotion of an afternoon and morning almost entirely to a few monuments in Hereford Cathedral, every detail and moulding in the famous "Cantilupe shrine" being diligently scanned, and compared with its other features and with examples elsewhere, to afford bases for possible conjectures as to its origin and date. Some of the excursions seem, however, to have been arranged as much for the enjoyment of the charming forest, hill, and riverside scenery of Herefordshire as for the elucidation of our national history by the light of the monuments scattered around the county. It is possible that one or two of the programmes might have been rearranged with advantage archæologically. From this point of view it is a pity that a day was not allotted to visits to old-world Ledbury; the Roman camp on the summit of Herefordshire Beacon, which, on a clear day, would have afforded a panorama over the west midlands, and a capacity for picnicking, extensive enough to have recompensed, for the scramble to its summit, the visitor of feeblest antiquarian proclivities; and the noble abbey of Malvern—all within the compass of a long day's work by a judicious utilisation of the railway as far as Ledbury. The attendance at the evening meetings in the Free Library was meagre—a circumstance partly accounted for and justified by the small number of papers that had been prepared with special reference to the objects aimed at in such a congress. The hearty spirit with which the citizens, clergy, and county gentlemen received the Institute, was exemplified as much in the manner in which every church, castle, and hall, or, to adopt Mercian parlance for the last-mentioned, each "court," was thrown open for inspection, and its most highly-regarded features indicated, as in the truly English hospitality everywhere extended to the visitors. For this, as well as for more important reasons, the Institute meeting of 1877 will be pleasantly remembered by all who took part in it.

The leading characteristic of the proceedings in Herefordshire has, however, been the examination of a series of village churches scarcely altered from the time of their building, in the early years of the 12th, the 11th, perhaps the 10th, or even antecedent centuries. The successive remoteness of founding—Madley, Ludlow (round), Kilpeck, Brewardine, Moccas, and Deerhurst—was very nearly followed in the rotation of visits. Definite impressions were thus afforded of the Basilical arrangement, and the modes of construction and ornamentation of the earlier "English" churches—the term "English" here including the Anglo-Norman period, and, we may almost conclusively add, that of the Anglo-Saxons.

The centre for next year's annual meeting is fixed at Northampton—a town situated nearly at the southern focus of an elliptic that would enclose in its description a district abounding in examples of a comparatively simple type of broad-spined chureb, rebuilt (occasionally planned) and completed within the period of development of the Decorated style. A wide historical gap will thus intervene between the ecclesiastico-architectonic features of the one congress and its predecessor, but yet affording a promise of a continuance, in some fashion, of an instructive course of study of actual examples *in situ*.

Reverting from generalities to particulars, we resume our journalistic narrative of the week's proceedings at Hereford at the point to which we brought it in our last—namely, with

details as to the events that occurred on the then-preceding

THURSDAY.

THE ANNUAL MEETING

Of the Institute was held at 9.30 a.m., the President, Lord Talbot de Malahide, occupying the chair. The annual report was read by Mr. A. Hartshorne, Secretary. The members were in it congratulated on the great success of last autumn's meeting at Colchester, both from archæological and financial viewpoints. The finances of the Institute were, indeed, in a flourishing condition, but at the same time the council recognised the need for exercising a watchful economy, and had decided to remove the printing of the journal from Messrs. Bradbury and Evans to Mr. Pollard, of Exeter, thereby effecting a saving of £80 a year. Reference was made to the loss the Institute had sustained in the death of Mr. Joseph Burt; also to the fact that £350 had been raised for his widow's benefit; and passed on to note in fitting terms the deaths of Mr. T. Talbot Bury, Mr. Edmund Sharpe, and Dr. Matcham.

The Rev. C. BINGHAM moved the adoption of the report, stating that he never knew a year in the history of the Institute when the death-roll was a more painful one than the past one; indeed, under such losses he almost wondered how the Institute could still be carried forward in its work.

Mr. FAIRLESS BARBER, in seconding the adoption of the report, feelingly alluded to the gap caused in the ranks of archæologists by the decease of Mr. Edmund Sharpe, whose immense patience in research, careful thought and anxiety to impart his knowledge in a clear form to those with whom he was brought in contact, especially to young architectural students, he spoke of as almost unparalleled. It was interesting to learn that at Old Cleeve Abbey, concerning the position of the refectory of which Mr. Sharpe maintained for long a dispute with many of his colleagues, excavations were made shortly before his decease which showed that his theory was correct. Mr. Sharpe's labours and researches would, in his published works at least, continue to bear much good fruit in popularising archæological science.

The report was then adopted, as was also the balance-sheet, which was of a satisfactory character.

THE NEXT MEETING PLACE

(For the annual congress of 1878) was, on the motion of Mr. A. H. Bloxam, seconded by the Rev. Mr. Dyke, decided to be at Northampton, a letter of invitation from the Mayor and Corporation of that borough having first been read by Mr. Hartshorne. Durham was also suggested as a suitable centre, as the only city which has not yet been visited, otherwise than for part of a day, by the Institute. The President suggested that in future excursions should not be planned for long distances from the centre, and that it would be well to give at least two days to sectional meetings; in neglecting the work of sections for long excursions he feared the Institute might be losing its character for useful and solid inquiry.

Mr. STEPHEN TUCKER referred to the serious illness of Mr. J. H. Parker, C.B., and proposed that the secretary write to him, expressing the regret of the members at the cause which deprived them of his presence and assistance, and their hope that with restored health he may be able to be with them on some future occasion.

Sir GILBERT SCOTT expressed his sorrow at Mr. Parker's illness; and the motion having been seconded by Mr. BLOXAM, and spoken to by the PRESIDENT, was unanimously adopted, and the proceedings terminated.

PERAMBULATION OF HEREFORD.

The members then visited some of the principal objects of interest in the city, proceeding first to *All Saints' Church*, near its centre. The lofty spire, 212ft. in height, attracted notice as much from its threateningly dilapidated state (many of the angle quoins having fallen, causing a serrated sky outline) as from its fine proportions. Opposite Broad-street, at the south entrance to the chancel, is a beautiful Decorated porch, with cinque-foiled cusplings of the characteristic fulness at the angles, so common in Herefordshire churches of its

period. This porch appears to have been removed from the nave entrance, a few yards further west, in the succeeding century, when the existing square-headed common-place additions to the nave supplanted it. On entering the church, Sir Gilbert Scott explained that the earliest documentary evidence is that it was given to a hospital at Vienna—an inexplicably long distance away—by Edward I. It seems to have been immediately rebuilt, for the existing fabric is precisely of the character one would expect to be erected at such a date, and a north chancel aisle was added, not being built, as the returning eaves to the north aisle showed, contemporaneously, but so closely afterwards as to be substantially in the same style. Probably some one left money to endow a chantry, while the church was in course of rebuilding, and the work of providing a suitable chapel for masses was immediately undertaken. The western window has upright mullions passing directly through it, and is treated in so rigid and harsh a manner that it would be regarded as late fifteenth or sixteenth century work, were it not that similar windows of well-authenticated date occur in other churches of the district, notably at Brecon. The pulpit-stalls are very good, and the pulpit is a splendid seventeenth century erection, having a fine sounding-board, which he (Sir Gilbert) trusted would be spared by restorers. The church is, all could see, in a wretched state of repair, and the tower walls much cracked. It was stated in the church that Sir G. G. Scott has prepared plans for its restoration, and that the works to be presently undertaken will cost about £1,000.

THE CATHEDRAL.

A return was made to the cathedral, some of the party staying outside a while to leisurely inspect its exterior from various standpoints. The north-east and north-west aspects are the most pleasing. The Lady Chapel, as restored by Cottingham, in neo-Early English, has an elegance faintly recalling parts of Ely, or even Salisbury; but there is too great mechanicality in the modern details to be altogether agreeable. The grandly-proportioned central tower forms a beautiful centre to the edifice, although the ball-flower ornament on the leading lines is so freely repeated as to break the surfaces into series of dots and short lines, distracting attention and impairing the effect. Old prints show the steeple finished by a lead-covered wooden spire of clumsy outline; this was removed by Wyatt during his tamperings with the fabric, as he feared for the safety of the structure. Its loss is not to be regretted, and, looking to the fact that the failing foundations of this tower have been a source of apprehension for several centuries, and that there are now slight cracks visible on the north side of the inner lantern, it is dubious whether it will bear the spire at one time proposed by Sir G. G. Scott to be added. The pair of buttresses which run at each angle of the tower are finished off with a pinnacle, and a larger one springs from the embattled parapet behind these; the groups of pinnacles are fair reproductions of fourteenth-century work—are, indeed, very good for the date at which they were added, fifty years since, and give a distinctive character to the outline; but they do not group sufficiently well with each other, nor blend with the square steeple; some additional clustered members appear to be needed at the point of juncture with the tower. This, by the way, on the older engravings is finished off with a machicolation similar to those of St. Alban's Abbey. Whilst we are jotting down a few of the more interesting details of and about the edifice, we must not omit mention of the three series of cloisters, two of which are incomplete, lying on the southern side. Those to the west alone are strictly speaking entitled to the name; they form three sides of a square, and are Late Decorated in style of tracery. Parallel to these on the east are the bishop's cloisters, of which but two arcaded and covered walks of at least a century later in style than the preceding remain. At the end are scanty foundations of the decagonal chapter-house. The third cloisters, or rather covered quadrangle walks, are at the vicar's choral-house, to the S.E., and are late fifteenth-century in style, and almost perfect.

Entering the church we proceeded to the old bone of contention, the Cantilupe shrine, and about an hour was spent by many members in endeavouring to fix its date and the reason for its singular form, and the great disparity in the character of the sculpture upon it. Some of this is most spirited and free, other parts are of very sorry tooling. That the tomb is a thirteenth-century work all agree; that it commemorates Cantilupe the fully-armed figures of Knights Templars in bas-relief on the plinth appear to prove, as well as the unbroken line of tradition. The most feasible explanation of the poor sculptured blocks introduced at intervals, and the generally inferior workmanship of the upper part, is that suggested by Mr. Hartshorne, that the lower stage was carved by a sculptor, and the upper part was left to a stonemason of the period—the “art-inspired workman”—to complete, and that the fractures caused by the four well-authenticated removals were repaired as well as possible. The screen erected some fifteen years since from Sir G. G. Scott's designs, between the nave and choir, is worthy of examination. It is extremely light in design, and of an English type of late thirteenth-century work, consisting of five pointed arches, divided by slender shafts, and with a lofty gable and cross above the central one. In the upper compartments are seven bronze figures. The screen is bronzed and highly gilt and studded with polished vitreous substances, and stones in mosaics and on the bosses; it was wrought by hand, and made by Messrs. Skidmore, of Coventry, who also executed the massive corona, which is suspended by a bracket of twisted wrought iron from the lantern. The walls supporting the central tower exhibited, as Sir Gilbert Scott pointed out *in situ*, a combination of lightness and strength to which there is no parallel example. The walls are hollow; the inner one, for a height of 26ft. above the turning of the arches from the great piers at the crossing, consists on every side of piers of compact masonry, bonded by a cross-bar of stone, the intermediate spaces being left open, so as to form a series of gigantic stone gratings, on which the upper stages of the tower rest. Cottingham revealed this unique piece of Transitional Norman construction, which had been concealed by a sixteenth-century piece of fan-vaulting. A noteworthy feature in the choir is the fact that it is separated from the Lady Chapel by an open 13th-century arcade, a column standing exactly in the centre of the choir behind the reredos. The tympanum springing from this pillar thus shuts out the line of sight from end of nave to Lady Chapel in a very awkward manner. It had a perfectly plain surface till within the past 30 years, when the younger Cottingham designed a representation of the martyred King Ethelbert (to whom the Cathedral is dedicated) to cover it. The carving, although highly ornate, has a pleasing appearance. In the south-east transept (or Audry chapel) hangs an ancient map of the world, engrossed and coloured on a sheet of vellum 18ft. square, not later than 1314, by an ecclesiastic named Richard de Haldingham and Lafford, afterwards Archdeacon of Reading. Rivers, seas, and countries are interlined with grotesque sketches of men and animals, and the ideas of comparative topography are ludicrous in the extreme, the Holy Land occupying about a third of the map, which is circular in form.

Mr. BLOXAM conducted the members in a tour of inspection round the monuments in the Cathedral, stating first that many of the effigies of bishops could be dismissed in a single sentence, for they were alike in style, size, and appearance, and seemed to have been the work of the same sculptor, and to have been executed in the 14th century. They are arranged under a series of cusped arches, recessed around the cathedral. The other effigies were not always named or dated, but could be identified, to some extent, by the style of dress, beards, &c., for even bishops, like other men, had their fashions. Many of this series represented the bishops in full canonicals, mitred, and with veiled pastoral staffs, and some of the later monuments had the same peculiarity. This was usually supposed to signify that the bishop was also an abbot, but this could hardly have been the case in so many instances at Hereford. Mr.

Bloxam called attention to the effigy of Dr. Lindsell, who, as a post-Reformation bishop (he held the see for one year, 1633-4), wore the square cap which was such an abomination to the Puritans, and also a full beard—a resumption of the custom which existed in the 13th and 14th centuries, after which all priests, for several generations, were close-shaven in accordance with canonical rules. The deans' monuments were numerous and interesting; that inscribed and known as Dean Borew's, on the south wall of the Lady Chapel, was the most beautiful piece of sculpture in the Cathedral, the disposal of the robes being especially graceful. It was not, however, Borew's effigy, for he died in 1462, whereas the style of this was of 1362, or, more probably, just prior to 1350—besides, this figure was bearded, whereas Borew must have been shaven, and would be so represented. The canopy, which bears in the chamfer of the label Borew's rebus (a series of boars with sprigs of rue in their mouths), was unquestionably his, but the monument did not fit its position, and had evidently been shifted. Some discussion arose as to the effigy of “Humphrey Bohun,” which Mr. Bloxam said was clothed with the cyclas, a peculiar habit worn on horseback c. 1315-40, being longer behind than in front, and of which not a dozen sculptured representations exist in the kingdom. It was not that of Bohun. Mr. Tucker (Rouge Croix) said that, from a genealogical point of view, it was important that monuments should be correctly named. This could not be, for there were but three Humphrey de Bohuns, who were buried at Saffron Walden, York, and Pleshey, and the arms of the adjacent monument of “Johanna de Bohun” were not those of that family but of the Pyses, of Herefordshire. The destruction of records monumental in this edifice had been deplorable, and it was the most bare in this respect of the English cathedrals—except in its effigies. In 1645 no less than 166 brasses were uprooted from this cathedral, and in 1684 a great many more were found to have been taken away. When the tower fell in 1786 there was a most wholesale destruction of monuments in the Cathedral; Mr. Havergal had heard of one man metamorphosing part of a brass into a mason's square. A great many passed into the hands of the late John Bowyer Nicholls, and last Saturday Mr. John Bruce Nicholls, who had some of these brasses intact on a wall, said he would be delighted to carry out his father's intention of restoring them to the Cathedral. They were 22 in number. Church-restorers ought to preserve the monuments of the dead, and where they did interfere with architectural arrangements they should be replaced elsewhere. If they must be destroyed the inscriptions should be copied into the parish register. Mr. Lee Warner also spoke of the importance of preserving church monuments. Mr. Hartshorne said that the monument referred to by Mr. Tucker presented a very peculiar example of tomb canopying. It was Decorated in detail, but Perpendicular in style of arrangement. From the style of the work he should think it was of the time of Edward II.

Leaving the Cathedral the members passed, by a cloister on the north side of the south-east transept, to the *College of Vicars Choral*, a low series of buildings erected around a cloistered quadrangle in 1462-72, of poor Perpendicular design. Passing through these they visited the *Castle Green*, Mr. J. E. Clark pointing out the traces of the earthworks and moat of the castle, now utterly destroyed. The green has been rented of the Crown by the Corporation, levelled, and rendered ornamental, and adorned with a memorial obelisk to Earl Nelson. It now forms a pleasant promenade. *St. Ethelbert's Hospital*, a one-storied almshouse for women, having been peeped into, and a few fragments of 16th century carvings seen, they proceeded on to *St. Peter's Church*, a large church with lofty spire, said to have been founded by Walter de Lacy in 1070. We noted nothing, however, in the church giving evidence of workmanship earlier than the reign of Edward III. It is a ceiled and galleried church containing some fairly-designed Perpendicular stalls. To the south of chancel is a chapel, now bricked up. The *Market House* in

the open space behind was far more interesting. It is a large half-timbered house erected in 1621, and forms the only remaining part of a mass of oak-framed houses known as Butchers' Row, that formerly divided the space into two narrow streets; it is adorned with grotesque carvings, and would, with its tarred oak quarterings, discoloured plaster, overhanging gabled stories and bay windows, richly carved bressummers and barge boards, warm tiles, and oddly corbelled stack of chimneys, and set as it is, withal, in a prominent position, be a charming subject for a sketch of "Old Hereford," were it not disfigured with glaring business advertisements, covering the whole of one side. We hear with some trepidation that it is in peril of being restored.

Some of the party passed on to the *Blackfriars Monastery and Cross*. The monastic buildings are now reduced to a few ivy-clad walls of fourteenth-century masonry. Close to them is the Friars' Preaching Cross, which was thirteen years since, as we see from photographs exhibited, a crumbling hexagonal structure with buttressed angles, connected by walling in which were cinque-foiled arches: in the centre of the internal space was the shape of a cross. What stands on the site is the conjectural reconstruction of the cross, made in 1864 in consequence of its threatening condition. On the adjoining site of a Knights' Templars hall is the only private military hospital in the kingdom. This visit concluded the itineration.

We may note here that the other city churches are of little interest, having been rebuilt in recent years. The public buildings are not numerous, and include the Free Library, (the temporary head-quarters of the Institute), a large building with a domestic Venetian dress, next Broad-street, recently erected from Messrs. Kempson and Martin's designs. The Corn Exchange, close by, has a Corinthian frontage; the markets, in High-street, modern Italian; and opposite St. Peter's Church is the Shire Hall, one of Sir Robert Smirke's heavy adaptations of the Doric portico of the Temple of Theseus at Athens. About a mile westward from the centre of the town, at the angle of two roads, is the White Cross, an elegant pedestal and shaft of Decorated work, raised on a flight of eight steps, which, like the superstructure, are hexagonal on plan. It was erected at the close of the fourteenth century to commemorate the Black Plague of 1347, and has been restored by Sir Gilbert Scott, who has added to it a cross, with floriated head and arms. In general effect the cross is not unlike that of Geddington, Northants, illustrated by us last autumn.

EXCURSION TO SUTTON WALLS AND MARDEN.

The afternoon was spent in a carriage excursion to a series of villages within five miles northward of Hereford. None of the sites visited presented any features of even secondary antiquarian importance, the outing deriving its charm from the succession of fine views of the surrounding district, and the blue outlines of the Black Mountains on the Welsh border, and the Malvern Hills, and the peeps at the oak-framed-and-plaster granges, set in the midst of the orchards and hop grounds for which the county is famed; the farm-houses on the route are generally in a sad state of decay from damp and neglect, but therefore the more picturesque and attractive—to those who have no intention of dwelling in them.

We pass *Holmer Church*, a thirteenth-century edifice, having a detached tower, the upper stage of which is half-timbered, on the south-west. A halt is made at *Pipe-and-Lyde Church*, a small edifice restored about two years since by Mr. Kempson, architect, of Hereford, containing traces of Late Early English work in the deeply splayed windows, massive walls, and the font; and also a good fifteenth-century carved rood beam. A tower has been added to westward, in place of the central bell turret, and is about to be finished with a low broach spire. The fourteenth-century church at *Moreton-on-Lugg*, seen soon afterwards, was also restored in 1866-7, and a tower and broach spire added.

Marden Church is a very complete edifice set on the very brink of the river Lugg. The chancel of this church is spacious, deep, and apsidal ended; into it a range of Decorated windows throw an abundance of light. The

tower at the south-western angle of nave has its entrance on the east face: it is finished with pinnacles and a good spire, built, like all in the district, of the local old-red sandstone. The chief curiosity is the well in the church, a small circular pillar a few inches in height is embedded in the floor of the west end of the nave, just behind the font; it is pierced by a well about a foot across, probably fed from the river, and erroneously said never to fail. In the chancel is a fine brass, date 1614, of Lady Chute, showing a matron in richly-brocaded dress and ruff, and with hair trimmed into a crest; by her side are two figures of daughters. Some handsome linen-pattern seating of the time of Henry VIII. has been worked up into benches. The vicar (the Rev. T. H. Clutton-Brock) gave the history of the church, which is said to have been founded by King Offa, who resided close by in a palace on Sutton Walls, as an expiation for the treacherous assassination (A.D. 782) of his guest and daughter's suitor, Ethelbert, King of East Anglia, on the spot where the body was buried. When the body was exhumed from its temporary resting-place at Marden, the dissevered head fell and sunk in the ground, and the spring now marked by the well appeared. The vicar told other traditions concerning the great bell of Offa, said to be sunk in the river just behind the church, and to resist all efforts to raise it, chiming when the bells in the steeple are rung—accounted for by the distinct echo from the water's surface. A bell of copper, 14in. in diameter, has been recovered from a pond near by, and was popularly regarded as King Offa's dinner bell. (It was exhibited in the Institute's temporary museum, and identified as a mediæval sanctus bell.)

At *Freen's Court*—the ancient seat of the Lingsens, but now fallen into a state of dilapidation, owing to its being below the overflow level of the stream, and occupied by a small farmer—some stained glass armorial bearings of about 1500, a Jacobean panelled ceiling and oak wainscoting were inspected, and the ascent was made of the ancient entrenched camp of *Sutton Walls*, the residence of the Mercian kings, until Mercia was merged in Wessex. No traces of buildings remain on the hill, which occupies an isolated position, and is scarped round and protected by ditches, which form entrances and paths to the summit. The Rev. Prebendary Scarth, from the strong nature of the defences, believed it to be a Silurian camp; it was not on a Roman road, and was too high for their purposes, and too strongly ramparted to have been the work of the Saxons. Mr. Bloxam regretted that the crops made a careful investigation of the site impracticable. He believed it to be one of the systems of strongholds thrown up and held by the Silures on their borders, although it might have been subsequently occupied by the Saxons.

On the way home a visit was paid to the very small church of *Sutton St. Nicholas*, having much Transitional work, and a late timber porch, as yet untampered with except by the whitewasher. A semi-circular seat cut in the solid masonry of a window sill on the south side of chancel excited some discussion as to whether it was a peculiar form of sedilia, or merely a recent alteration; its appearance, and local testimony, favoured the former theory. Mr. Bloxam drew attention to a piscina and the remains of an altar in the east wall of nave, south side, and to an aumbry on the opposite side. These were the traces of one of the rood-loft altars that have only recently been examined by archaeologists, and the history of which took the inquirer back into the early Greek church of the 4th century. They were still in use in many parts of the Continent (notably in Antwerp Cathedral), but were comparatively lately noted in English churches. This concluded the out-of-doors programme, and the party returned to Hereford by way of Ailstone-hill.

In the evening a *Conversazione* was held in the Free Library, when the Rev. Canon Jebb read an erudite and humorous but somewhat lengthy paper on "Mexican Antiquities," in which he spoke in high terms of the constructional and decorative qualities of the buildings erected by the ancient people, and regretted the wholesale destruction of the past 300 years, which has almost annihilated their traces. The

hieroglyphic system of written communication, and their calendar, were more complete, and displayed great ingenuity.

FRIDAY.

The most popular and pleasant excursion of the Congress took place on Friday, the route lying through a wooded and hilly district of great natural beauty to the south-west of Hereford. More than a hundred ladies and gentlemen joined in the excursion, which was made in a number of well-appointed carriages. Crossing the Wye just below the city, a pleasant two hours' drive, through a beautifully-wooded hilly country, formerly the Forest of Haywood, brought us to

KILPECK,

where the church, a most interesting and beautiful specimen of an unaltered Norman building, received the careful examination it deserves. The triple division into nave, choir, and sanctuary is clearly marked in this little church. The chief charm lies in the grotesque carvings with which the exterior is ornamented. A corbel table runs completely round the building under the eaves, crossing the west façade at the same level; it is supported by about eighty corbels, each sculptured with a different design, the series including such varied subjects as a monster devouring an infant, children embracing each other, furies, horses, rams, and birds' heads, interlaced serpents, the Agnus Dei, the familiar wreathed foliage, and others; all are spiritedly, and often humorously, executed, with the free use of fine parallel horizontal lines or "combs" so characteristic of pure Norman work, in a very compact and finely-granulated sandstone, that resists the effects of time remarkably well. The series would furnish many hints in grotesquerie to young architects, although one of the representations is so contrary to modern notions of the delicate purity of thought befitting the ornaments of a house of prayer that we are surprised no iconoclastic churchwarden or rector, during the centuries that it has evidently remained on the southern angle of choir and chancel roof-juncture, has cut it away. The west front has no opening in it; a central buttress runs up to support this corbelled string-course, above which is a circular-headed window, with a fine interlaced cable ornament occupying the reveal. From the ends and centre of the course on this west front project three brackets, each about 3ft. in length, in the form of crocodiles' heads, with twisted heads, recalling a similar but larger bracket on the detached Norman tower at Bury St. Edmund's. The southern doorway is remarkably fine; on the tympanum is a representation of the Tree of Life, but without any living figures introduced; the shafts are carved with large dragons, birds, and foliage, and appear a little later than the other work, although of the same stone; above and surrounding the tympanum are the signs of the zodiac, amusingly caricatured, and another row of emblems above, the significance of which we could not decipher, the mouldings between and around being filled with zig-zag, billet, and stud mouldings. The interior was a little disappointing after so much display of original treatment outside; the best feature is the first or choir arch, on which, beneath rich wave mouldings, are carved a succession of acolytes, marked with the stigmata in hands and feet, and each bearing one of the emblems—candle, bell, chalice, patten, &c.—of a procession; these figures Mr. Bloxam spoke of as unique, and only to be paralleled by those on the west front of Rochester Cathedral, and at Shrewsbury Abbey. He thought they could not be more recent in execution than 1150. The chancel arch—that opening into the apse—is much plainer. The windows, except those in the apse and west end, have evidently been tampered with, but are all narrow and deeply splayed inwards into the very thick walls. The font is an immense basin of pudding stone, 4½ft. across, but remarkably shallow; it is set on a modern base. A plain Georgian west gallery of unvarnished wood looks somewhat out of character, but cannot be dispensed with, as the little church will barely seat its Sunday congregations. Mr. A. J. Beresford Hope, M.P., having called the members' attention to the great completeness with which they had pictured before them an

ideal Norman Church, the Rev. Archer Clive stated that the carvings were mended and necessary repairs executed in 1848, under the supervision of the late Mr. Cottingham. It had been stated by "Murray" that the church was "rebuilt, each stone being numbered before removal, and replaced in its former position;" but this was incorrect, except as to a very small part of the walling. At that time the present double bell-turret was added, in style corresponding with the main building. The beautiful south door was formerly half-concealed by a wooden porch, which at length got so seriously out of repair that it was removed.

Kilpeck Castle, the ruins of which occupy a large conical mound opposite the west end of the church, was next visited. It is reduced to two large fragments, both nearly veiled in ivy; the southern is part of the keep, with the indications of a filled-up well close by; the other to the north is part of the domestic apartments, the piece including a great fireplace cavity and the square base of a window. Mr. G. T. Clark, of Dowlais, gave an address on the summit of the mound, in which he said that the hill was almost entirely artificial. The top was levelled and surrounded with a very deep moat and a large base court, while several other platforms might be seen from where they stood, stretching away in lines of defence into the neighbouring country. Its construction compelled him to think the castle was an addition planted into the consolidated remains of an ancient British camp. Before the Normans did this the defences might have been of stone added by the Saxons, but were most probably at first only a timber palisade. The church below was built by the Norman barons, and the farm buildings that they could see a few fields off to the south were formed partly of the remains of the little priory founded by Hugh FitzNorman, in 1134, as a cell to Gloucester Abbey. From the segment of wall remaining in front of him they could all see that the keep was not, like that of Ludlow, a rectangle, but resembled that at Arundel and the majority of those founded on an artificial mound, in being a circular shell. There were evidences that the walls extended all round the hill, and the bit of walling to the right was part of the living rooms. Mr. Beresford Hope suggested that the name *Kilpeck* was Celtic in origin. The Rev. James Davies, of Hereford, said the *Kilpeck* church was dedicated to Saints Mary and David. Most of the dedications in the district were to Cimbro-British saints. The adjacent village of *St. Devereux* (whose little church lay just below the castle hill), investigation had shown, was not renamed from the great Norman family from *Evreux*, who held lands in the Marches, but from the British Saint David or *Dwy*, Latinised into *Dubricius*, and gradually corrupted to its present form.

EWYAS HAROLD CHURCH AND CASTLE were next visited. The Church, an Early English edifice, was restored nine years since. The south porch is a good specimen of Decorated oak framing, and in the graveyard is a cross of the same period, which has been recently re-completed. On the north wall of the chancel is an effigy of a Lady de la Warr, who died 1320; the right hand is represented as holding a heart, and a reliquary close by is said to contain, or have contained, a human heart. The canopy has blind cusping, and, together with the figure, bears in its details evidences of having been fashioned very soon after the lady's death.

The "Castle" consists merely of a conical hill of considerable height, defended by a moat and ditches, and covered with trees and brushwood. The top having been reached after a stiff scramble, Mr. Clark directed notice to the fact that, as at *Kilpeck*, the church lay nearly beneath the mound, and to the east of it. This mound was more artificial than that; but although the English could command a large amount of labour, they always availed themselves, in the selection of a site, of natural advantages. Here they occupied the tongue of a promontory, surrounded on two sides by little brooks, and the plan of working was first to dig a deep trench across the neck of land, throwing it on the centre. A moat was made around, and when the mound had sufficiently consolidated, it was scarped, and made as steep as possible. A good way beck from the con-

fluence a ditch was cut from stream to stream, so that cattle could be depastured under protection. The summit was at first defended by stockades, not unlike a modern New Zealand pah, and as time went on, and the land became more settled, stone defences were raised. Such mounds as he had described were formed within such distances throughout the Marches that their possessors could see if the Welsh were out plundering, and could descend upon them wherever they saw the smoke of a burning homestead. The dates of these earthworks could be approximately guessed at, because they knew that Queen *Ethelfleda*, in the reign of King *Alfred*, erected 30 castles, many of which could still be traced, and were found to be Norman in appearance in the lowest masonry. Again, *Newark* was defended, and was apparently completed, within a few months of commencement. Similar earthworks abound in Normandy, the home of the Northmen. All these, as well as the majority of their names, pointed to the conclusion that the series of earthworks, which protected the western Marches, were Teutonic, and not Celtic, in origin. That similar works existed at two Welsh fortresses, never subdued till Edward I.'s time, was a difficulty in the problem which he could not quite surmount. The Marches being centres of large estates, William the Conqueror wisely gave the estates with the castles to his barons. The tenants by degrees came to regard these as their natural defenders against the Welsh, and thus the feudal system was strengthened.

ABBEY DORE.

A drive over a hill into the Golden Valley brought the members to *Abbey Dore Church*—the only relic of a Cistercian establishment, on the banks of the *Dore*, founded in the reign of Henry I., by Robert de *Ewias*. The parish church consists of the choir and transepts of the ancient church, and the aisles, which pass completely round the building, the square-enclosed space behind the altar being divided into five chapels. The chapels and aisles are vaulted, but the nave and transepts have been covered in with a wooden roof. In the churchyard to the west are the ruined columns and traces of walls of the nave, which, as usual in Cistercian churches, extended about twice as far as the choir. All the structural details are of Transitional and Early English character. An interesting feature, as Mr. Beresford Hope pointed out, is that, in 1642, Lord *Scudamore* restored the building, re-roofing the transepts, building a large square embattled tower in five stages to the west of eastern transept, and adding within an excellent Renaissance chancel screen and pews. He also replaced the altar-table—an immense slab of marble, standing on three clusters of massive circular pillars, about 2ft. in height. Mr. Hope also mentioned, purely as an archaeological fact bearing on a burning political question of the present day, that in the consecration service read in the church by Bishop *Wren* in 1634, the bishop was directed to stand with his face to the table in the midst of the people. Mr. Fairless *Barber* pointed out that the chapter-house, refectory, and other conventual buildings were here placed to the south (for convenience of drainage into the river), instead of, as in most establishments of the Cistercian order, to the north. The square-sided ambulatory showed what *Bylands*—once the largest of these abbeys—must have been when entire. Before leaving *Abbey Dore* several piscinæ, sediliæ, and a reliquary in the chapels and north transept, and two mutilated monuments of knights in chain armour were examined, and also the scanty ruins of the chapter-house at the side of the south transept; and the members proceeded to *Whitfield*, where they were sumptuously entertained by the Rev. *Archer Clive*, and spent a leisure unarchæological hour of enjoyment in the library, grounds, and richly-wooded park, as idiosyncrasies prompted. During the return journey

MADLEY CHURCH,

now in the restorer's hands, was visited. It is one of the largest in the county, measuring 170ft. by 68ft., and consists of lofty clerestoried nave of six bays and aisles, with a chapel annexed to the south aisle, and a chancel ending in polygonal apse as at *Marden*, with crypt beneath, and a west tower, with

embattled roof—the greater part of the edifice being of a late Decorated character. At present the builder (*Mr. Collins*, of *Tewkesbury*.) is in possession; the floors are up, the fittings and some windows removed, and an effort of the imagination is needed to see the building as a complete fabric.

Mr. Kempson, of *Hereford*, the architect engaged in the restoration, stated that he had found remains of a Norman window in the north porch, and also a continuous wall foundation just within part of the arcade, indicating that a small cruciform Norman church occupied the centre of the site. The three western bays are larger than the other three, and a break in the walls at this point shows the addition of the fourteenth century to the church of the preceding one. The clerestory windows were throughout deeply splayed. Somewhat later a south chapel and a west tower were added to the church.—The windows in the chancel do not range with each other, and are somewhat varied in character; the ball-flower ornaments, we noticed, are sparingly introduced in the tracery and on the sedilia. The crypt beneath is accessible by staircases on either side of the arch, and has a good clustered central shaft, from which fan groining radiates with charming effect; a number of pointed windows give a full light that is unusual in an underground chapel. In the churchyard are two headless crosses about 8ft. or 9ft. in height, including the steps on which they stand.—*Mr. Beresford-Hope* trusted that *Mr. Kempson* would carry out the work now going on in a way that would show that restoration did not mean destruction. They had that day seen a series of churches illustrative and forming a compendium of the history of our ecclesiastical progress and change of thought and fashion. First was *Kilpeck*, which was completed nearly as they had seen it, in the earliest period after the Norman conquest. *Abbey Dore* was of the thirteenth century, but showed also what restoration was like 200 years ago; and, lastly, they saw around them *Madley*, a thoroughly English church of the last period of fourteenth century architecture, now in course of restoration.

The return journey was then made by way of *Cleghonger* and *Belmont*, where a very complete Benedictine monastery for 40 monks and pro-cathedral have been erected by *Mr. Wegg-Prosser* from *Pugin's* designs, in the Decorated style. The cathedral is 113ft. in length, and consists of nave, chancel, transepts, and unfinished central tower. The east window has very elaborate tracery, and has been fitted with stained glass by *Messrs. Hardman*, of *Birmingham*.

In the evening the architectural section met at the *Free Library*, when a paper was read by *Sir Gilbert Scott* on "The Seventeenth Century Restoration of *Abbey Dore Church*."

SATURDAY.

The excursion for the day was by rail to and from *Ross*, and thence by carriage to *Goodrich Castle*, and was less numerously attended than the previous meetings. Three miles from *Ross Station* a halt was made at

WALFORD CHURCH.

This small church is a fair example of what may be hoped for should the *Anti-Restoration Society's* views again come into favour with the public. No architect appears to have had a hand for generations in the repairs executed about it, and the conservative mode in which it has been treated has certainly the advantage of enabling the story of its life to be read very easily. As *Sir John MacLean* said in the short address he gave, it exhibits traces of the successive work of all periods from Transitional Norman to Churchwarden's Gothic. The tower, a Perpendicular one, stands on the north side, and was formerly capped by a spire which was blown down nearly 70 years since, and has not been replaced. The east windows in nave and north chapel are of very plain type of Decorated, almost approaching the Perpendicular in the use of long mullions. The west gallery appears by an inscription to have been added in 1754, and the high pews are of the same date, of fair workmanship. Near the crown of the chancel arch on either side are corbels which appear to have supported the rood loft, which, if so, must have been placed unusually high. However,

the theory is supported by the position of the rood stairs, and the rector stated that under the plaster in the south wall of nave is a rood loft piscina of early type. Suspended on a nail over the chancel arch is the helmet actually worn (and not as usual, a mere heraldic emblem) by Col. Kyrle, a noted Parliamentarian general and the uncle of the Man of Ross. The nave is crossed beneath the coiled roof by several rough and crooked beams which add to the quaintness of the interior, and on the wall are traces of a fresco apparently of Adam and Eve, but only the trunk of the tree and the nether limbs of the erring couple are discernible. Careful removal of the many coats of whitewash would probably be rewarded by the bringing to light of a complete series of 15th century mural paintings. The rector mentioned the curious local custom of using the south porch for funerals, and that the corpse is then brought round the north aisle and chapel to the nave for the reading of the burial service.

Crossing the Kerne bridge, a fine many-arched and buttressed structure of stone, spanning the Wye, we came directly to

FLANESFORD PRIORY.

This ancient Augustinian building has been applied to more useful purposes as part of a farmstead. We approached it, warily picking our way through the mire, towards that part of the heavy stone structure which showed its former use by the foliated crosses on its gables. At the east end is a singular double flight of steps leading to a door; but, although the masonry looks ancient, this may have been altered to better serve its purpose as a granary. The upper window spaces are pointed, and were once adorned with decorated tracery of similar pattern to that at Walford Church, on the opposite bank of the Wye; but the stonework is broken away, and the whole filled with wooden louvres. Walking round we see that the original west front has been enclosed by a later addition—probably since the secularisation—and it now forms an internal wall face, showing a pointed doorway, with canopied niches on either side, and a window base above each, dimly suggesting the White Ladies' in the Tything, Worcester. The north wall has along it a row of built-in coeval corbels—possibly a provision for future extension, or to support a lean-to roof, or even an external gallery, as the marks on the wall suggest. The principal apartment has lost its internal floor, and is now littered with straw and manure; even in its degraded state, and open from substructure to roof, the proportions and form are good, and mental restoration would be easy but for one puzzling feature. A piscina in the south wall, nearly under the break in the roof where the central cross stands, would indicate an altar but that exactly opposite it is an immense fire-place, which must have been inconveniently close to officiating priests, even if, as was suggested by Mr. Kempson, of Hereford, a parclose divided chapel from kitchen. Many of the corbels are of a pleasing form almost confined to this district. The table is supported by a clustered triplet of slender shafts or "fangs," ending in a point. The windows in the L-shaped projection at the east end are more plain in treatment than the others, and suggest that the domestic offices were located there. Scarcely anything is known as to the history of this little priory (which has been previously almost overlooked by archaeologists), except that it was founded in 1347 by Richard Talbot and his wife, the heiress of Goodrich, and that it passed into the hands of the Crown at the Dissolution, and only the name of the last prior is preserved.

GOODRICH CASTLE

Was the terminus of the day's wanderings, and a pleasant hour or two was spent in its courtyard, rambling over the very perfect ruins or ascending the keep, in some cases perhaps, for the sake rather of the view to be thereby obtained than to more closely examine the jointing and workmanship of the Normans. The general outline of the castle is a parallelogram of buildings erected on the top of a small, high hill, and enclosed by a deep moat or fosse. At each angle is a circular tower, and on the south-west side an isolated square keep. This, the chief part of the castle, is the oldest part of the structure, and is evi-

dently Norman in style, the fact that no mention of Goodrich appears in "Doomsday Book" precluding the suggestion that it may be of Saxon workmanship. It is built of Forest of Dean stone, and at a later period—probably about the time of John Talbot, first Earl of Shrewsbury, who held it in Henry VI.'s reign—a double shafted window has been clumsily inserted into the circular banded window on the inner face. In the face of the keep towards the quadrangle is the low acutely-pointed opening into what was once the dungeon, an apartment 15ft. square, leading into a smaller cell, with the scantiest possible provision for light and air. It was added by Richard Talbot, by licence from Edward III. Most of the castle is thoroughly Edwardian in character. The angle towers are round, and are built of stone excavated on the spot, the quarry being made to serve as an immense moat to the building, which is, it will be seen, built into the solid rock. Somewhat later than these in style is the chapel, which adjoins right side of entrance gate; the few details of the ruins identifiable are mixed Early English and Decorated character. Between the chapel and the keep is an octagonal tower known as the watch tower, formerly occupied by the chaplain and warders; it is of great solidity of construction, and a covered passage in the wall remains leading from it to the south-western angle or garrison tower. On the other side of the keep is the north or ladies' tower, which is Late Perpendicular in style; it is planted on the brow of a steep ridge, so as to be the most defensive part of the tower. The state apartments occupy the western side of the building, and resemble in plan, to a remarkable degree, those at Ludlow. The resemblance goes, indeed, further, to similarity in sites, for each is planted on a notched platform of rock, with its steepest side next a stream. The entrance to the hall from the quadrangle at Goodrich is placed on the left of the great hall, but is not approached by a flight of steps as in the Salopian Marche's stronghold. The buttery and serving rooms occupy the space still further to the left, and on the right are the living apartments. A clustered thirteenth-century shaft in that portion of the internal façade beneath the baronial dwelling—dividing an Early circular opening into two lancets and an unpierced spandrel—is in its creeper-and-lichen-wreathed ruin one of the most charming features of Goodrich, and a pleasing contrast to the stern solidity of the keep, bare of any kindly softening touch from Nature's hand, save the moss that adheres to the exposed footings. The windows of the great hall are very similar in place and position to those of the more important ones at Ludlow. The corbels have been treated alike, and the buttery hatches, through which the viands were brought to table, are the same. We cannot detect, under the ivy on the north face, any trace of a ladies' gallery, and it is probable that this provision for the comfort of the fair inmates of the little garrison did not exist in Goodrich. The fire-place is a conspicuous feature of the great room, and is doubtless a late addition. As at Ludlow, the internal floors and roofs have disappeared from the castle; all that exists is the bare masonry. We have left a notice of the entrance to the castle quad till the last. It exhibits a skill in arrangement for security rarely equalled. From the external mound the quad is entered over a drawbridge across the moat, covered by arrow slits in either flanking tower. This leads to a dark passage 50ft. in depth. About 11ft. within are traces of a massive gate and curtain, over which are machicolations for pouring down boiling water or molten lead on assailants' heads. At intervals of 7ft. further there hung two portcullises, the intervening space being defended by loopholes and machicolations. About 2ft. more inward was another strong gate, and about 6ft. beyond this, on the right, a small door once existed, which gave access to the long passage to be seen in the thickness of the wall. This leads to the eastern tower. At the present day the entry is directly over the draw-bridge, through the first long straight passage, into the centre of the quad. Goodrich Castle, we were told, on the authority of Mr. Taylor's guide-book, read aloud by Mr. Owen within its walls, is probably,

in its origin, the work of Hugh de Laey, the founder of Llanton Abbey, who held feudals way over Hereford and Monmouth during the reign of William Rufus. It seems, after De Lacy's death (without issue, in 1131), to have passed into the hands of the King, for in the 11th year of Henry II. (1165) it was held by Wm. Marshall, Earl of Pembroke, who paid about 30s. annually to the crown for possession. The male line of the Marshalls became extinct in 1245. The seal of Walter, the last Earl of Pembroke but one, was found amongst the ruins some years since. The constableness of the fortress passed into the hands of the De Valences, and through them to John Comyn. Elizabeth Comyn, one of his three children, became the wife of Richard Talbot, by which union Goodrich Castle became possessed by the Shrewsbury family, and was for some centuries their principal seat. It derives most renown from having been the seat of the invincible Sir John Talbot, to whom it descended in 1420. Talbot was for years the terror and scourge of France, and was victorious in 24 battles and skirmishes. His career, and that of his son, Lord Lisle, closed at the battle of Chatillon. A petition presented in 1423 against Sir John by the male inhabitants of the hundred of Wormlow (in which division the castle is situated) shows him to have been an ungracious and overbearing neighbour at home. The castle remained in possession of the Talbots till 1616, when it passed by marriage into that of the Dukes of Kent, and from them by purchase to the ancestor of Mrs. Marriot, the present possessor. It is not known to have had its immense power of resistance tested till the Great Rebellion, when it was at first occupied by the Parliament, but in 1646 was garrisoned for the King by Sir Richard Lingley. After an eighteen weeks' siege by Colonels Birch and Kyrle the garrison capitulated, when it was reduced to its present ruined state.—The President (Lord Talbot de Malahide), after the reading of its history, of which the above is an abstract, expressed the personal interest which he felt as the lineal descendant of the Talbots, in this their most important stronghold, and the members returned by a fresh route to Ross, passing on the way the modern castellated mansion of Goodrich Court, which occupies a height separated only by a narrow dingle from the castle. Close to the Wye-bridge is Wilton Castle, and it is to be regretted time did not permit of a closer inspection than could be obtained from the carriages, for it dates from the days of Stephen, although almost rebuilt in Elizabeth's time, and was burnt by the treason of the garrison within, during the Civil War, before Charles I.'s downfall. The Wye-bridge adjoining has itself a history, the irregular appearance of the arch next the Wilton shore being due to a rebuilding subsequent to its being broken down in 1644 to impede the onward march of the Parliamentarians. In one of the triangular recesses over a buttress, on the up-stream side of the bridge, is a four-sided stone pillar carrying sun dials.

ROSS.

“But Wye
To Ross her course directs, and, well her name to show,
Oft windeth in her way, as back she meant to go.
Meander, who is said so intricate to be,
Hath not so many nooks or cranking winds as she.”

Thus we adjudged with diffuse Drayton, as taking a quiet stroll after luncheon on the terraces of the Royal Hotel, and the adjacent well-named Prospect, we “viewed the landscape o'er.” “Sylvan Wye” appeared as a horseshoe-shaped ribbon below, and then, doubled and twisted in each direction to the points where its course was lost to sight behind the hills. Returning to the town for more purely archaeological purposes, we find memorials and reminders of John Kyrle, the “Man of Ross,” of whom Pope has so eulogistically sang. Indeed, the town seems to live on the reputation for benevolence of this worthy townsman, and the very newspaper is named in honour of Kyrle. “The Prospect” was laid out by him on the cliff edge next the churchyard. Twelve of the elms he planted yet stand, though now showing signs of decay, for it is more than three half centuries since the “Man of Ross” died. A good Renaissance gateway, dated 1700, separates the Prospect from the churchyard.

(Continued on p. 163.)

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ILLUSTRATIONS.

SEA-SIDE RESIDENCE AT OSTEND, FOR THE KING OF THE BELGIANS—CHURCH OF ST. MARY, MIDDLESBROUGH.

OUR LITHOGRAPHIC ILLUSTRATIONS.

MARINE RESIDENCE FOR THE KING OF THE BELGIANS AT OSTEND.

The design which we publish to-day was prepared in accordance with instructions given by the King of the Belgians to Messrs. Lucas Bros. Ostend has always been a favourite seaside resort of the King of the Belgians, who has hitherto resided in a house of his own in the centre of the town. Some years ago, when the project for the demolition of the old fortifications was first mooted, and new streets and boulevards projected upon their site, the late King Leopold first commenced the erection of a palace on a rather large scale facing the sea. This, from various causes, was never carried higher than the first-floor level, and after remaining for years as a ruin, was sold for old materials. In the meantime, the old house, called by courtesy a palace, in the town, having become extremely insalubrious, the present King determined to erect a bathing chalet on the digue, and the present designs were carried out in furtherance of that idea. Since that time, however, the scheme has taken a larger form, and other buildings have been added. At about 150ft. away from the first pavilion, which is intended for the exclusive use of the King, a further pavilion almost similar, both in plan and in external design, has been erected for the use of the Queen, and the two are connected by means of a long glazed corridor and winter garden, having in the rear a spacious banquetting hall, richly decorated, and intended for state dinners, and in the basement below, which, in consequence of the slope of the ground, becomes a ground-floor story at the back, is extensive accommodation for the large staff of servants which are always sent from Brussels whenever the King resides at Ostend. In front is a broad terrace, about 400ft. long, communicating by flights of steps at either end with the sands; and in the rear, facing the boulevard, is a residence for the king's gentleman in waiting, and also a large range of stabling, with further rooms for servants. In order that the most recent sanitary arrangements might be adopted, and also that the work might be of the best quality, it was the wish of the King that the buildings should be erected by an English contractor, and the whole of the timber-work was framed together at Messrs. Lucas' works at Lowestoft. It was then taken to pieces and shipped direct to Ostend, where it was erected by the same staff of men who had prepared the work, the stone basement having been previously built by English workmen. The site being extremely exposed to wet and driving winds, and the local bricks being very porous, it was decided to construct the building solidly in timber, with a panelled face, and with internal plastering in the usual way, and as a further security there is a second skin of plaster midway in the depth of the studding. The soil being a dry shifting sand, the whole stands upon a block of concrete, and it is roofed in zinc laid upon boarding and felt; and, as a protection against great heat, the under sides of the rafters are lathed and plastered. The pavilion, which we now illus-

trate, was the only portion carried out by Messrs. Lucas. It was designed and built under the superintendance of Mr. W. J. Green, architect, of 8, Delahay-street, Westminster, who also designed the residence for the gentlemen in waiting, and from whose designs the stables, &c., are now being executed. In consequence of some local jealousy having been shown at the employment by the King of a foreign contractor and foreign workmen, it was determined that the rest of the work should be executed by Belgians, and the Queen's pavilion, with the winter garden and banquetting hall, were designed by Mons. Symon, Ingénieur des Ponts et Chaussées, under whose superintendance they were carried out, and who has immediate charge of the works now going on. The King's pavilion was furnished by Messrs. Jackson and Graham.

ST. MARY'S CHURCH, MIDDLESBRO'.

We give further details of this church which we described last week.

A NEW ADAPTATION OF CONCRETE TO BUILDING PURPOSES.

WE noticed, at the Exhibition of Sanitary Appliances, held last week at Manchester (of which full particulars will be found in to-day's *Public Health*) a model illustrating a new system of binding-in concrete, now being introduced by Mr. George A. Marsden, of Liverpool, which has several advantages, particularly in the facility it affords for the introduction of external ornament, which can hardly fail to secure for it the favourable consideration of architects, who have, up to the present, rather held back from the ordinary monolithic system on account of the difficulty of obtaining any other than flat external surfaces. The system, which differs entirely from any other yet introduced, consists in the use of slabs made either of concrete or clay of any desired size, and upon the bottom and end of each slab or tile is placed a flange extending outwards parallel with the main surface of the slab, so as to form a rebate or overlapping on the inner side of the next slab below it, and on the one side of it—thus interlocking in the most complete manner, and presenting when in position an uniform surface on each exterior of the wall. On the back of each slab stout eyes are moulded, and the slabs are connected with light iron dowels or clamps having bent ends which are inserted in the slots or eyes. When the external and internal slabs forming the wall are erected and secured by the iron tie, the arranged interlocking flanges are so perfect in action, in securing strength and firmness, that when only a small section of wall is erected, great force must be used to disturb it in the least. These remarks refer entirely to a temporary structure, one to be used for temporary purposes, and capable of being removed with ease, and without any damage to the slabs. In erecting a permanent building, it is intended to fill in the hollow space between the exterior and interior slabs with coarse concrete, which, when complete, will combine all the solidity of the monolithic mode of building, and with the addition of a casing of strong stone concrete slabs, will make, according to Mr. Marsden, one of the strongest erections that can possibly be built. A number of houses are now in course of erection in Blackpool, by the licensee of the patent in that district, Mr. Walker, a builder of that town. He is building these houses for himself, and having practically tested the cost of making these patent slabs, he is convinced that by this method a house can be built for a less sum than of bricks, and without taking into consideration the many additional advantages of this system over brickwork—its weather-resisting qualities—its increased strength and rapidity of construction, the facilities for the flues, heating or ventilating arrangements, &c. Mr. Marsden has also just undertaken to build some memorial schools at Bolton on the system, and plans are now being prepared by Messrs. Parslow and Clarke, architects, of Liverpool, to build a villa at Southport on the same principle. The judges of the Sanitary Exhibition at Manchester awarded a certificate of merit to the invention, and a very favourable opinion of it seemed to be entertained by all who inspected the model.

A PLEA FOR THE PICTURESQUE.

MR. J. HINE, F.R.I.B.A., read a paper last week, before the Devonshire Association at Kingsbridge, entitled, "A Plea for the Picturesque," in the course of which he maintained that, in the restoration of old churches and in the repair of old villages they had been dreadfully shorn of the picturesque—for example, there was Kingsbridge. It was a town of considerable antiquity, its history stretching back nearly to the Norman conquest, yet it presented the appearance of a New England settlement. It was clean, it was new, but it was not picturesque, and as a sort of climax it had a tetotum sort of clock-tower. Totnes and Dartmouth, on the contrary, possessed not a few relics of their ancient architectural glories. Totnes was the Chester of Devonshire, and had reason to be proud of its early history and of its remains, both ecclesiastical and domestic. Some admirable sketches of these relics were shown, and elicited warm approval, and the writer appealed earnestly to the authorities, and to the owners of these remains, to keep them from the fate of their fellows that have perished. After descanting on the beauties of Dartmouth and its surroundings, the writer went on to deplore that a new town was elbowing the old one out. Buckfastleigh was another place that had two old cottages of great antiquarian interest; though the village was dreadfully unpicturesque generally. In the discussion which followed Prof. Hodgson, as a staunch utilitarian, said there was no truth in the notion that there was an antagonism between utilitarianism and the picturesque, for Mr. John Stuart Mill, who might be said to be the inventor of the word, had employed the latter part of his life in the endeavour to preserve the picturesque. It was unfortunate that old buildings were given to decay, but though they might have age they were not bound to have ugliness. In conclusion, he remarked that some buildings could not be said to be complete until the architect was hung at the doorposts. (Loud laughter.) Mr. Parfitt protested against the slavish copying of the three conventional styles of architecture, and wanted to know why the architects of the 19th century could not strike out a style of their own, and thus mark the present age. Mr. Worth defended the architects from this reproach, and said that it was true that modern building was too often undertaken without regard to the purpose for which houses were intended. In this part of the county, for example, hundreds of houses were built with no intent on the part of builder or architect to comply with the necessities of those by whom they were intended to be occupied. The Ven. Archdeacon Earle added that so long as he had a comfortable house he did not mind whether it was Elizabethan or not. Mr. Hine replying, instanced several eminent architects, notably Sir Charles Barry, who had "left their mark upon the age by the invention of perfectly new and distinct types of architecture." (?)

COMPETITIONS.

STALYBRIDGE.—The directors of the Stalybridge Oddfellows' Hall and Social Institute Company having offered premiums for the two best designs for an Oddfellows' Hall and Social Club, to cost about £2,000, four sets of drawings were sent in. Mr. Amos Lee, borough surveyor, acted as professional adviser to the Board, when it was decided that the plans bearing motto "Adaptation" were the best. Mr. Gregory Gill, architect, of The Hollins, Stalybridge, was the author, and the work has been entrusted to his care. The foundations have already been laid, and the superstructure will be proceeded with as quick as possible. The building is in the Italian Gothic style, plain, but characteristically treated with stock bricks and York stone dressings. It is situated in one of the most central positions of the town, and will form a very conspicuous and pleasing feature in a town not overstocked with buildings of much architectural attraction.

In our report last week, on p. 141 of the new sewage works at Southport, we omitted to mention that the blue bricks are being supplied by Mr. Joseph Hamblett, of West Bromwich.

THE BUILDING NEWS, AUG 17 1877.

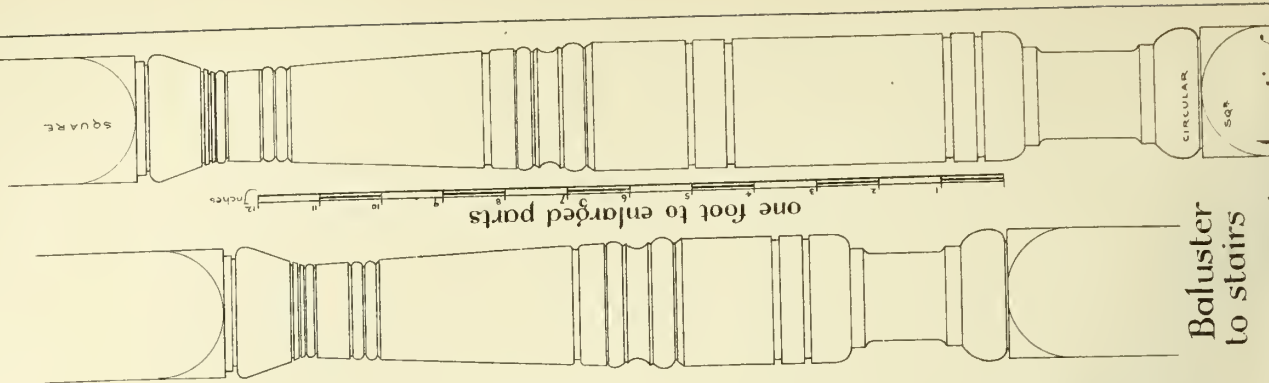
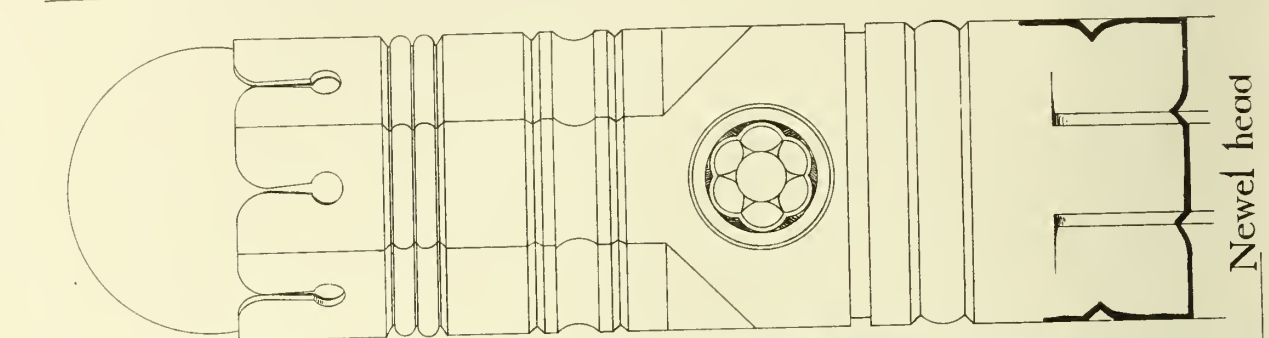
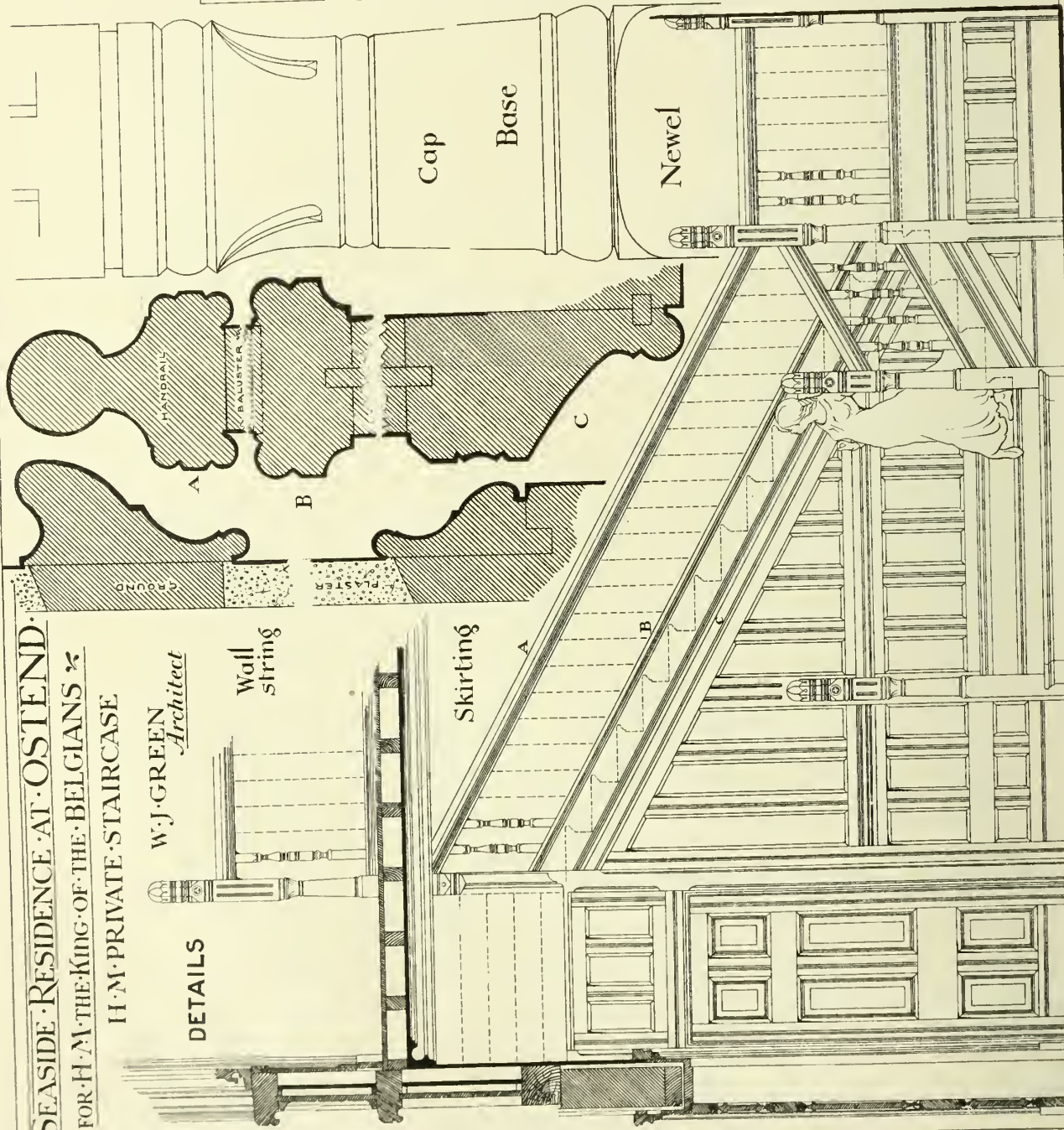
SEASIDE RESIDENCE AT OSTEND
 FOR H. M. THE KING OF THE BELGIANS &
 H. M. PRIVATE STAIRCASE

W. J. GREEN
 Architect

DETAILS

Wall string

Skirting



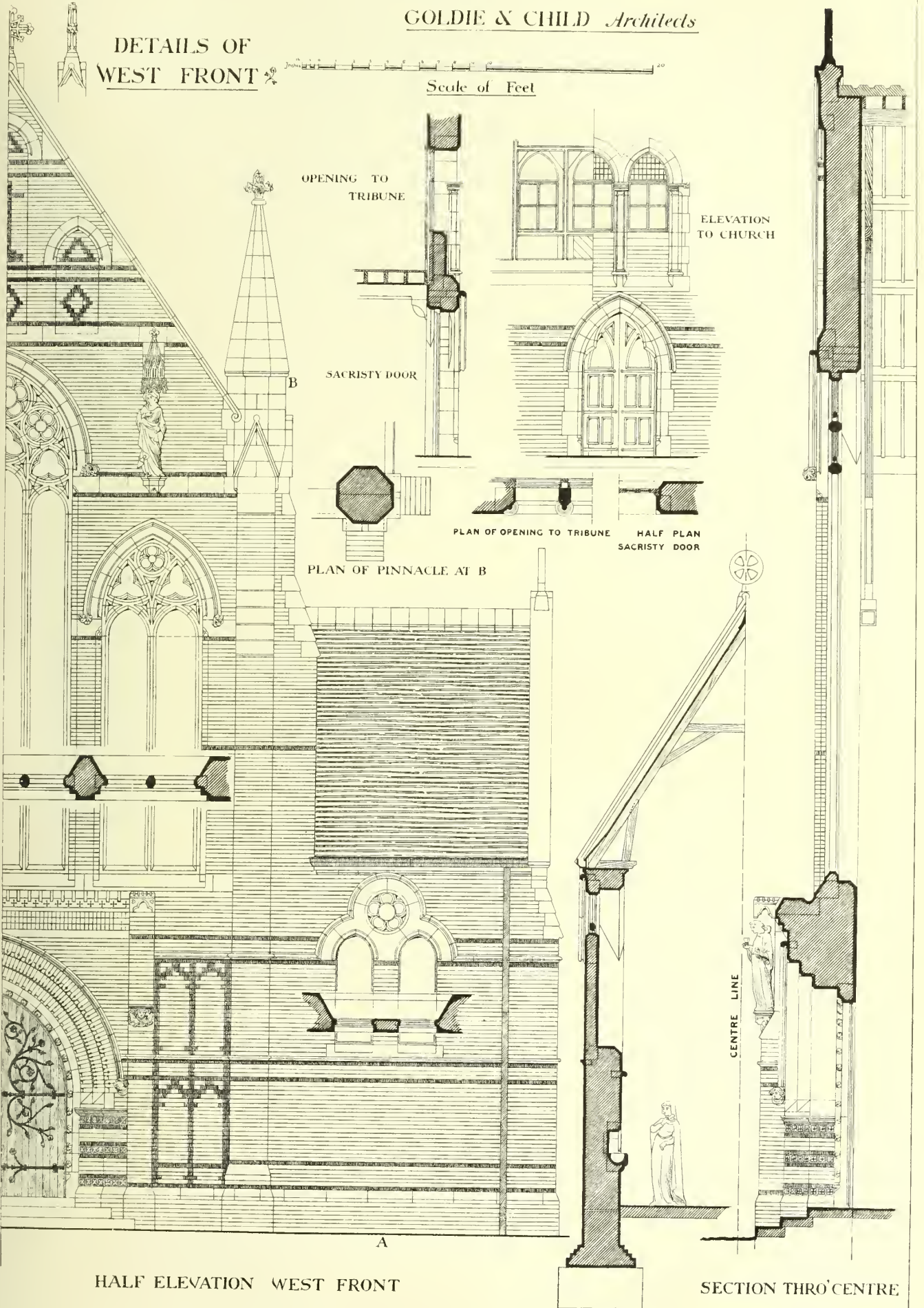
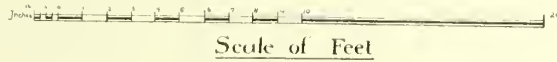
Scale of feet
 Elevation

Baluster to stairs
 do. to landing

CHURCH OF ST. MARY MIDDLESBOROUGH YORKS

GOLDIE & CHILD Architects

DETAILS OF WEST FRONT



HALF ELEVATION WEST FRONT

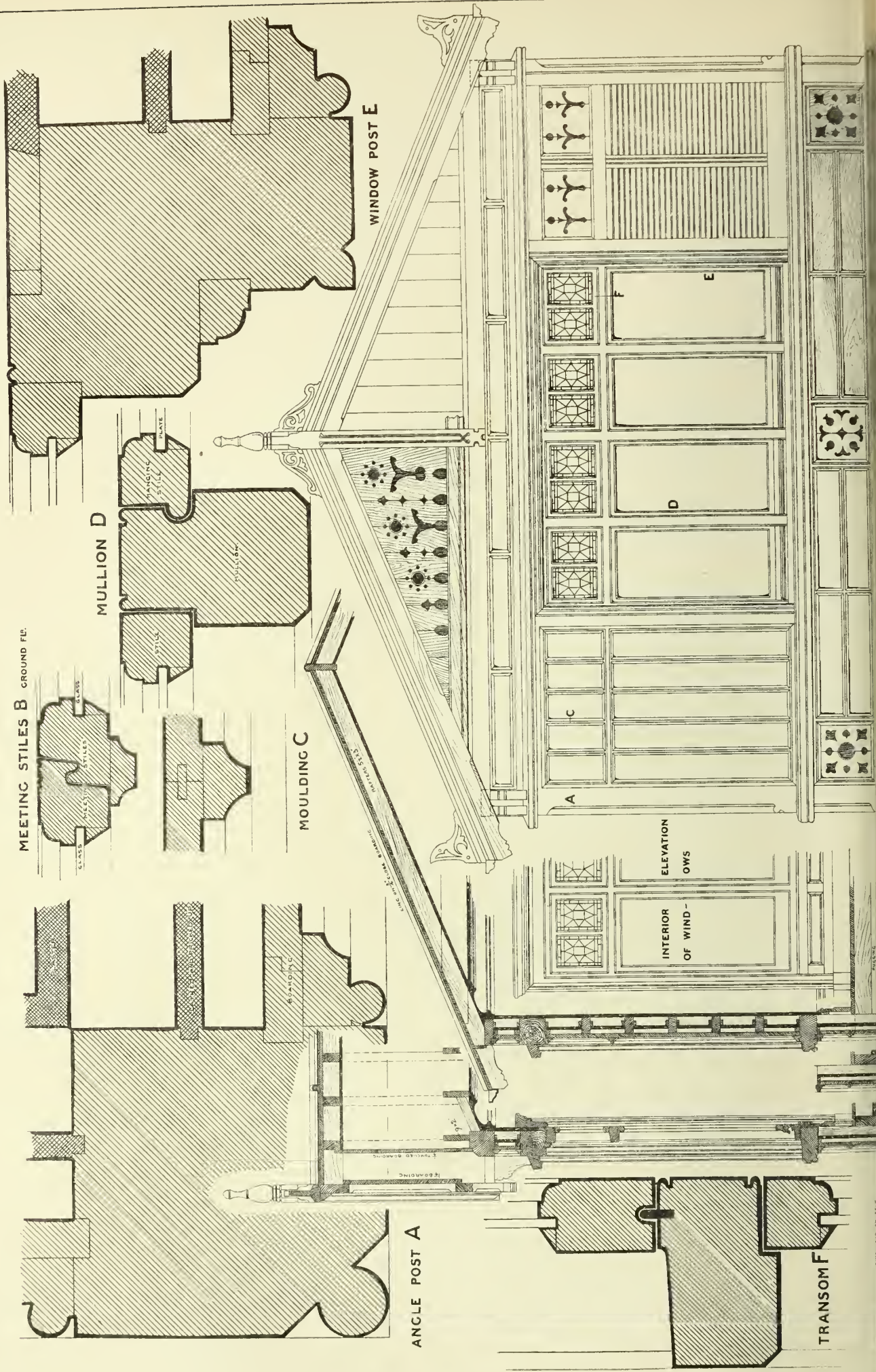
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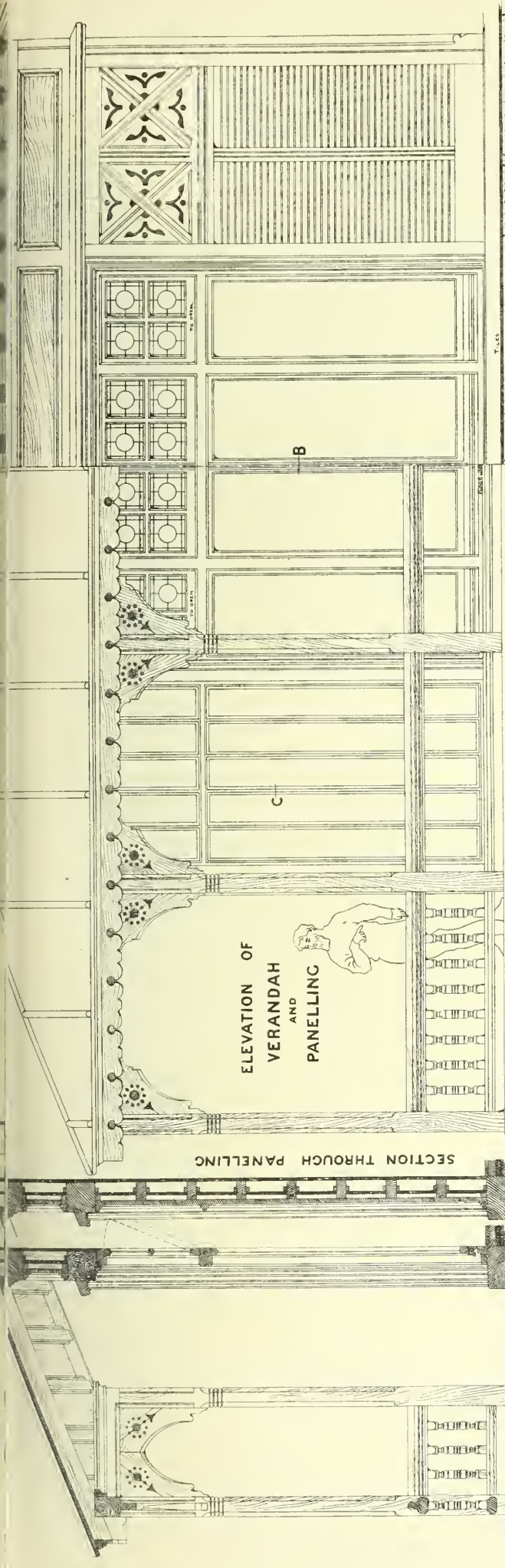
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MAURICE B. ADAMS DEL.

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SEA-SIDE RESIDENCE AT OSTEND
 FOR H.M. THE KING OF THE BELGIANS

DETAILS OF SEA FRONT * H.M.'S PRIVATE WING

SCALE OF ONE FOOT FIGS A TO F

SCALE OF FEET

MAURICE B. ADAMS DEL

ROYAL ARCHÆOLOGICAL
INSTITUTE.

(Continued from p. 149.)

"Who taught that heaven-directed spire to rise?
The Man of Ross, each lisp'ing babe replies."

The matter-of-fact stones tell a different tale to the lisp'ing babes quoted by the poet, for the spire must, from its outline, have been heaven-directed a full century before John Kyrle's birth. Possibly he repaired it, but all trace of such work has disappeared, for in 1852 it was struck by lightning and was partly rebuilt. Waiving our querulous criticisms for the nonce we glance once more at the fine spire, more than 200ft. in height, and enter the church itself. The nave is at present open to the sky, and occupied by the contractors, Messrs. Pearson and Son, who, under the direction of Mr. Nicholson, of Hereford, diocesan architect, are raising the walls and putting upon them a new barrel-vaulted roof. In the north-western corner, under a hoarding, are a number of displaced monuments, including an effigy of one of the Rudhalls, accoutred in armour, with flowing wig and open Spanish boots, with the figure of his wife by his side. These bear date 1636. By them is the marble statue of the Royalist general, Rudhall, who appears in the semi-garb of a Roman soldier, with long locks, peaked beard and moustache of the period, and carrying a wooden sword—altogether a singular combination of monumental anachronisms. A more pleasing peculiarity of the church is the pair of feathery elms, offshoots from one of those planted by Kyrle, which have sprung through the flooring near the window at the end of the south aisle. High up in the chancel arch, on the north side, has just been discovered a piscina, which occasioned some discussion as to its use. It probably marks the position of a rood-loft altar. The chancel, like the nave, has been much restored, but contains traces of Decorated and Perpendicular workmanship. A large mural tablet records the virtues of "The Man of Ross," and during the visit of the Institute the parish registers are displayed, the second volume being open at a page whereon we read under the head of Burials, "1724, Nou. 20, John Kyrle." *Toujours Kyrle!* We hasten from the church to see, not his residence, but the market-place—a singular Renaissance building, supported on twisted circular stone columns, with an arcade above. High up on the chief front is the bust, and scarcely recognisable bust, of the Second Charles. There is little else in Ross worth notice, except a few timbered houses, and we return to Hereford by train in the evening.

MONDAY.

The carriage excursions of the Congress were closed by a visit to Credenhill, Moccas, and Bredwardine. The first divergence from the main road was made to

CREDENHILL.

The church, a 13th-century building, with some traces of earlier work here and there, was restored last year by Mr. Nicholson, diocesan architect. On either side of the chancel arch are side passages from nave to chancel. These have been opened out, and the heads filled with cinquefoil cusping, in accordance with what is supposed to have been the original intention. The westernmost window in the south wall of chancel is a double lancet, filled with stained glass of the Edwardian period, of rich purple and ruby tints. The original glazing is still almost perfect, and represents the two Saints, Thomas à Becket and Thomas de Cantilupe, each wearing the mitre and episcopal robes, and carrying a crozier. The fashion of dress and the fleur-de-lis bordering fixes the period of the glass at the middle of the 14th century. The south porch is large and well carved, and has been cut from a single piece of oak, the wings being sawn nearly through and twisted back. The ancient camp on the top of the same steep hill was next visited, fine views being obtained of the surrounding country as we plodded up the narrow Roman stone paths, about 6ft. wide, to the summit, 715ft. high. This includes 56 acres of rough forest, surrounded by a mound and two precipitous ditches, in which are three entrances. One side has been injured by the quarrying of the stone, but the works

have been abandoned on account of the difficulties encountered in the transportation of the material. No coins or other proofs of the Roman occupation have been found. Credenhill is probably an ancient British entrenchment, made use of by the Romans as an earthwork for their fortified camp at Kenchester. While descending the hill a slight detour was made to look at the "Prophet's Oak" in the rectory garden, a noble tree of great height and girth, which, tradition says, loses a branch when any member of the family is about to die. The rector's hospitable proffer of refreshing cider and perry was thankfully accepted, and the move was made towards

BYFORD CHURCH.

A First Transitional building with a decidedly Norman feeling about the details. In the thirteenth century a south aisle was added, and at a later period a transeptal Lady Chapel on the same side. The clustered columns supporting the arcade of the Lady Chapel are very light in appearance, and the capitals and responds above are deep and elegant. On the east wall of the Lady Chapel are a pair of projecting corbels, probably once occupied by statues of St. Joseph and the Virgin, placed on either side of the altar; on the west wall is a singular recess, possibly for a lamp. Byford Court, opposite the church, is a fair example of a modernised English mansion of Henry VIII.'s time; in its construction native oak timber was freely used.

MORNINGTON-ON-WYE.

The church is a fifteenth-century building restored, according to the dates on the porch, font, and screen, in 1679-80. Mr. Beresford-Hope gave an address within the church, speaking of it as a fine example of the survival, almost amounting to a revival, of Gothic in the seventeenth century, the double transomed windows and the woodwork generally being very good examples for so late a period. The chancel screen was especially noticeable; there were many pre-Reformation screens, but scarcely any after that date; that at Ingestre, completed in 1689, was the only instance that occurred to him. A hasty visit was paid to the manor house close by, formerly the residence of Sir Thomas Tompkin, who restored the church as it now appears; it contains some good panelled ceilings and timber work. In the principal room is a fine piece of carving, having upon it "T. L. T. 1658," and the following Latin jingle, which is also carved upon the old manor house at Leominster—

Vive Deo gratias,
Crimini mundatus,
Toti mundi tumulatus,
Semper transire peratus.

From Byford a long drive brought us to

MOCCAS,

where, after partaking of the hospitality of the rector, the Rev. Sir George Cornwall, we proceeded to inspect the church, which stands in the park. It is a good example of an Early Norman church, consisting of nave, choir, and apsidal chancel, in plan precisely like Kilpeck, but there is very little ornament displayed, probably owing to the fact that the building stone employed in its erection is a very porous travertine, quarried on the estate; it is soft in working, and hardens on exposure, but will not readily bear tooling, except in the simplest of chamfers. All the decorative features here are of limestone, brought from a distance for the purpose. The south door has a lintel deeply hatched with the diagonal lines frequently employed by Norman builders; above is a tympanum, showing a Tree of Life, with two animals, apparently mules, in the act of devouring human figures, who are suspended head downwards. On the walled-up north door is a somewhat similar subject in a tympanum, but there only one quadruped is introduced besides the mystic tree. The chancel arches are circular, and ornamented with the wave pattern. The windows are set very much higher in the walls than in the companion church at Kilpeck. The church was repaired by Westmacott about 1803, and a few years since it was re-restored from Sir Gilbert Scott's design. The organ stands in the tower arch, which is at the west end; it has a new case, a copy of one of the Norfolk examples, and therefore scarcely in keeping with its surroundings. The Rev. Sir G. Cornwall read a paper

(which we shall reproduce in an early number), in which he suggested a very early date for the church, and said that some years ago he found the site and traces of the old Castle of Moccas. Mr. S. J. Tucker identified some stained glass arms in the window as that of one of Sir G. Cornwall's ancestors, one of the De Fresnes of Moccas, and remarked that the coat was one of the oldest and best-identified in the kingdom, containing the lion of the King of the Romans (the son of King John). Mr. Beresford-Hope said this was evidently a church built prior to the days when the distinction between the choir and chancel was obliterated. There was a strong family likeness between this church and the one at Kilpeck; there was in both a display of very ingenious carving and planning; but one did not look to buildings of the Norman period for high art, and certainly not for Academy models. Any criticism on their relative appearance, or fribbling æsthetic commentary upon and comparison of them, he should look upon as a waste of words. The interest of Norman churches to archæologists was not their intrinsic beauty, but their associations and history. Kilpeck and Moccas were types each of their own phase of Norman, and each was interesting because real, and thus comparisons between them would simply come in the way of true art, and would but be a piece of shallow sentimentality. Mr. Hartshorne spoke upon a singular effigy in the centre of the chancel, which he pronounced to be probably Hugh de Freynes, who died in 1329. The effigy is attired in scales of horn—the only example of the kind in England, although used from the days of the Assyrians upwards, with a singular garment forming a link between the surcoat and cyclas, with the arms of the wearer upon it. It has two swords, and was cross-legged. In the general discussion afterwards it is generally agreed that this church is earlier than that of Kilpeck, although it is possible the comparative plainness may be due to the isolation or poverty of the district, added to the difficulty of procuring stone suitable for the sculptor's art.

The members examined in the garden of the Court a singular sun-dial, to which there is said to be only one parallel—that at Kinlet, Worcestershire. It is of sandstone, is of singular form—the east and west faces being cut away into a blind St. Andrew's cross, and stands on a high pedestal. The sides are deeply cut, scored, and lined so as to form a great number of time-indicators—as many as 16 subsidiary dial-faces being formed out of the east and west sides, many more on the south, and even two, only available after 8 p.m. on midsummer nights, on the north side, while the top also bears a principal dial. It is ornamented with the planetary and zodiacal signs and several inscriptions, of which the most decipherable is:—

Time passed and stayeth not;
Death cometh and waited not.
Aneud to-day and slack not;
To-morrow thou can not. 1550.

In leaving the park the "giant oak," the largest in this county of fine trees, was visited. It still bears leaves, but is much decayed, and the centre has been burnt out by an accidental fire; yet a tightly-stretched tape across the trunk, 5ft. from the ground, showed a circumference of 36ft. 2in., without allowing for the bulging of the side that has succumbed to the elements.

BREDWARDINE CHURCH.

This was the only church visited during the congress in which there is no chancel arch. Instead of it there is a large buttress projecting into the south wall. Opposite to this the tower thrusts itself into the church. Judging from the poor mason's work and debased style of the upper stage and embattled parapet of the steeple, at least the upper part was rebuilt about a century since. The base is plain and massive in construction. Some travertine stone has been employed in the church, in which there is a good deal of the plainest Norman work, including some herring-bone work in the walls, and a little zig-zag carving on the lintel and imposts of the south door; the tympanum is quite plain. The church has just been restored and benched under the direction of Mr. Nicholson, diocesan architect. There appear some traces of an arch at the east end, once opening, without doubt, into an

apse. The windows are insertions of the 13th and 14th centuries. In the chancel are two effigies; that on the north is the earlier—probably, from its chain armour and basinet, carved in commemoration of a knight about 1380; the other, on the south side, is dressed in plate armour and skirt, and is about 70 years later in style. Messrs. Hartshorne and Tucker spoke of the peculiarities of these figures, the latter gentleman remarking that the collar of SS., worn by the one on the south side, denoted that he was a Lancastrian knight of about Edward IV.'s time. The first SS. collar was probably that given to Henry IV. by his father, John of Gaunt, who received it from his mother, Philippa of Hainault, who in turn gained it, as the mark of the Order of San Salvador, from her father, Philip of Arragon. It is now only worn by a privileged few, including her Majesty's judges and heralds, but was during the Wars of the Roses the badge of the Lancastrians. Mr. Beresford-Hope pointed out that the chancel is strongly deflected from the central line of the nave. Some discussion arose as to whether the tower was part of the original Norman church, possibly a north transept, built over and enclosed at a slightly later date. This theory was broached by Sir G. Cornwall, and it was suggested again that the Norman church had a bell turret or tower at the intersection, and that this became unsafe, was removed, and the present steeple constructed. No concurrence of views was arrived at, and the party returned to Hereford, the lateness of the hour and a slight accident to one of the vehicles rendering inexpedient the completion of the programme by visits to the churches of Staunton-on-Wye and Mansell Lacey.

In the evening the concluding meeting of the congress was held in the Woolhope room, when votes of thanks were passed by the members of the Institute to the annual president and local committee, the Lord Mayor and Corporation, and the ladies of Hereford, for the cordial hospitality shown by all.

TUESDAY.

The proceedings of the Institute had nominally closed, but a large proportion of the members availed themselves of an invitation to join the Worcester Diocesan Architectural and Archaeological Society in a visit to

TEWKESBURY ABBEY.

The members of the two societies met at the Abbey at noon, and Sir Edmund Lechmere, Bart., M.P. as chairman of the local restoration committee, welcomed the party, and introduced to them Mr. Thomas Blashill, of London, who had kindly undertaken to describe the abbey and the works now being carried out in it under the direction of Sir G. G. Scott. Mr. Blashill at once commenced his duties as guide, making a systematic perambulation within and without the abbey, propounding a theory as to the order of changes in the mode of building, and directing attention to the structural evidences in demonstration thereof. Under the central tower Mr. Blashill read a paper on the abbey (which we shall probably give in an early issue), the processional circuit—a necessarily slow tour from the great numbers of the combined party—being resumed afterwards. The edifice is temporarily divided at the intersection by hoardings during the progress of the works of restoration (which are being carried out by Mr. Thomas Collins, contractor, of Tewkesbury), so that it is not easy to get a general idea of the building. The walls of the choir, pillars and piers, and the western bays of the nave have been cleansed from whitewash and repaired. The bosses in the vaulting of the choir, tower, transepts, and the eastern bays of nave have been treated in gold, vermilion, and blue, in accordance with the traces of ancient colour. The remainder of the nave bosses are dealt with less ornately, and the spandrels and web of the choir-roof have been coloured in salmon, blue-grey and similar neutral tints. The floors have been removed, and the surface is laid with a thick bed of concrete, on which it is proposed to lay, as funds shall permit, specially designed encaustic tiling, showing the armorial bearings of the Clare, De Spencer, De Brien, Beauchamp, and other noble families buried in the abbey. These will be based on the coats on nume-

rous ancient tiles discovered during the re-flooring, which have been carefully preserved. The removal of plaster and whitewash from the remainder of the abbey walls is at present in progress, and also the re-roofing and restoration of a thirteenth century chapel, opening out of the north ambulatory—the latter being undertaken by the order of Freemasons. Other contemplated works are the repairing of the flooring in the transepts, ambulatories, and chapels; the provision of suitable furniture; the refitting of the seven ancient choir clerestory windows; and, "if considered suitable to the style of the abbey," the erection of a reredos. The works, which are estimated to cost about £6,000, in addition to the sums already expended, are not proceeding so rapidly as they would otherwise do, on account of the insufficiency of the funds.

Mr. BLASHILL commenced his itineration of the abbey by inviting the visitors to view the grand west front. This consists of an immense arch, emphasised by six deeply recessed members; in the centre is a Late Norman doorway, the entire space above being filled with a Perpendicular window. The arch, which thus forms a vestibule, is flanked by the north and south aisle walls, supporting two tiers of blind arcading in the spandrels and terminal turrets, to which, in the 15th century, bulbous spirelets have been added. The original plan was probably to screen the aisle ends as at Lincoln, with two large western towers, but Mr. Blashill said that cuttings into the casing masonry showed that, if designed, these flanking towers were never commenced, and that there was no foundation for supposing this arch was intended ultimately to become an internal vestibule. Returning to the nave, Mr. Blashill pointed out the great height (30ft.) of the massive Norman circular columns, the plain triforium and clerestory above, and the beautiful 14th century groined roof. The plan of the existing building is a nave of 8 bays, with north and south aisles, a choir surrounded by a chevette of chapels, and transepts, the intersection being marked by a massive square tower of very fully-developed 12th century work. On the north side, next the ambulatory, is a roofless vestibule leading into the chancel of a Lady Chapel; its nave has been destroyed. At the east end of the abbey was a Lady Chapel, the foundations of which have been found, and are to be excavated. Tewkesbury is one of a group of three Benedictine abbeys, the other two being Gloucester and Pershore, which bear tokens of having been designed at the same period, and by the same hand. Mr. Blashill broached a theory as to the construction and development of the ambulatory, and series of chapels now surrounding the choir, which he fairly established by the traces on the work itself. This was that, to provide more room, the monks built, in the 14th century, a new aisle round the choir, and in place of the three small chapels of the old aisle, they constructed six radiating chapels and a vestry. After this was done they decided to rebuild the arches and upper part of the choir, and to put up a groined roof. When this was done the spandrels of the aisle vaulting were found to project below the new acutely-pointed arches in an unsightly way. They therefore covered most of these spandrels with a light diaper pattern, leaving the eastern one bare, as it now remains, because it was effectually concealed by the high reredos, that has now disappeared. Vaulted ceilings were then added to the rest of the church. In reply to questions, Mr. Medland (from the office of Sir Gilbert Scott) explained that the canted form of the new altar steps had been adopted as a matter of convenience. The reredos that once existed was known to have been filled with sculpture, and many figures have been found buried under the flooring which may have come from it. The painted glass in the clerestory windows of the choir contains heraldry, which gives a somewhat later date in the 14th century than the details of the tracery would have suggested. Mr. Gambier Parry pointed out the resemblance between these windows and the great eastern one at Gloucester Cathedral. They saw here the effects of very positive colouring on the vaulted roof above them (in the choir), and he trusted they would have no more of it. Any one who should attempt to touch with a brush

the splendid old frescoes on the walls—more especially that in the Warwick Chapel—ought to be turned neck and crop out of the abbey. Mr. Blashill explained that Sir Gilbert Scott has only reproduced the old colouring that remained under the whitewash on the bosses. One boss in the north transept has been left unrestored as a sample of how far this colouring went. As to that under the central tower, he was informed that Sir Gilbert himself considers it too vivid, and it will be toned down. Some of the bosses were of wood. All the large gilt suns of York so freely employed in the decoration were of oak, held up by strong iron pins. In showing the chantry chapels Mr. Blashill urged that the most elaborate of these, decorated with fine tracery and rich pendants, should not be called the "Warwick," but the Beauchamp Chapel, as its foundress did not marry the second Earl Warwick till long after its erection. Some discussion arose with reference to the kneeling figure of the last of the Despencers over the Trinity Chapel, it being shown that the substructure of the chantry is of later workmanship than the upper part and figure. Whether the monument has been removed, or simply the base of the building restored, was debated, but no unity of opinion was arrived at. In one of the larger south-eastern chapels is arranged a museum of coins, small figures, corbels, tiles, and other fragments, discovered in the course of the restoration works. After examining the singular north Lady Chapel, the visitors went outside the abbey, examining closely the great flying buttress thrown over this chapel to the choir wall in the 14th century, the traces of the Lady Chapel at the east end, the beautiful remains of the panelled work of the 13th and 15th century cloisters let into the south wall, and the fragments of the domestic buildings. Mr. Blashill also directed attention to the flamboyant south aisle with windows, remarking that these and the chevette of radiating chapels suggested the employment of a Continental architect during the middle of the 14th century, to superintend the alterations for the works.

The subsequent public luncheon at the Town Hall was not rendered more digestible by a bad quarter of an hour that followed its consumption, owing to the caterer's audibly-expressed suspicions that some of the company were leaving without paying their shot—a doubt explicable by the circumstance that no tickets were issued, and the waiters collected the half-crowns in an unsystematic manner. Having relieved our minds by parting words more plain than pleasant, we gave a second and hurried glance at the varied specimens of half-timbered houses with which Tewkesbury High-street is still to a large extent lined, and took our places on a steamboat, which, after a short trip down the Avon and Severn, was brought-to at

DEERHURST,

Gloucestershire, where we at once proceeded to the parish church. Its out-of-the-way situation has caused Deerhurst to be somewhat overlooked, but it is worthy of more leisurely and detailed study than could be bestowed upon it in the hour and a-half at the disposal of the party. The church was restored about 18 years since by the late Mr. Slater, and the work gives evidence of the care taken to simply clear accretions from the originally rude, uncoursed masonry, leaving exposed large blocks and slabs of a harder stone which run through and bond the walls together. A Latin inscription, dug up many years since on the site of the chancel, and now preserved in the Ashmolean Museum at Oxford, states that this church, "hunc regum aulam," was dedicated by Earl Odo, who, there is historical proof, died in 1056. The parts of the church that can be referred to that date comprise the nave and west tower. The nave is narrow, and of high pitch, the ridge line on the face of the tower shows that its roof was once more steep. On the inner side of the east wall is built-in a round-headed arch. Outside are not only breaks in the masonry of this wall, but fragments of foundations beyond it, corroborating the tradition that the chancel was destroyed during the Wars of the Roses. A conjectural restoration from other early chancels on the banks of the Wye and Monnow would show it as a low

and deep polygonal apse, lighted by small circular—or, perhaps, only circular-headed—windows set high up in the walls, and well played inwards, with a corbel table beneath the roof, which might have been thatched with reeds from the Severn, not 200 yards away. The tower is of small dimensions and considerable height, divided internally into two parts by a solid wall. The entrance is beneath a circular arch, which, like that of the chancel, is of large voussoirs, slightly recessed from the general wall, and only chamfered away to a regular outline on the lower and outer surfaces, the superior face being left rough as received from the quarry. These semicircles of voussoirs end in drip stones, which are each rudely carved into the indication of a horse's head. The second stage of the tower is very lofty, and is divided by a double belfry window, consisting of three oblong blocks of stone, coarsely fluted. These are set near each other, forming pilasters, on which are fixed deep imposts and four long pieces of stone set ridge-wise against each other at an acute angle, so as to leave narrow triangular-headed openings between. Above these, in the next stage, is a deeply-splayed, circular-headed opening, and irregularly disposed about the faces of the tower are large slabs of stone. In the east and side walls of what now forms the chancel are other similar slabs, some triangular-headed and others plain. Those in the east wall are so disposed above the arch that once led to a chancel as to appear like walled-up pentagonal windows, but Mr. Slater showed that they pass completely through the thickness of the wall, so that they may be either bonds, as at first suggested, or they may be a clumsy attempt at ornament. The font is not the least remarkable feature of the church. The base is a hard, dark-coloured cylinder of limestone, and to it is found cemented another block of similar cylindrical form, but of a lighter-coloured stone and slightly larger. Its upper surface is hollowed out, affording sufficient area and depth for the practice of infant baptism by immersion. Both stones are graven with concentric patterns of connected circles similar to those on the "Runic" slabs and crosses of Cornwall and the Western Isles. So much about the earlier work as it remains; the subsequent alterations may be dismissed in a sentence or two. The nave had at first plain north and south walls, but early in the 13th century an extension was determined upon, and aisles were thrown out, extending to the west front of the tower, and the east wall of the nave, part of the original side walling of which was left, thus forming chapels at either end. The clustered piers have plain but well-moulded caps. In the following century the windows of the north aisle were gradually replaced by others of a commonplace type of flowing tracery; possibly those on the south side were altered in like fashion, but that work of reconstruction is now entirely effaced by a range of windows conceived in the baldest form of the revived Perpendicular of half a century ago, with upright mullions and diamond panes. At some early period the solid wall that now divides the tower into two unequal parts was constructed, and another story added; the smaller side has a saddle-backed roof, the larger a flat one, the whole being surrounded by the embattled parapet commonly added to Gloucestershire steeples at every post-Reformation date.

Mr. BLASHILL gave an address in the church, in which he spoke of the crude and archaic character of the masonry and carving as proofs that they really saw before them a church built at least 10 years prior to the Norman Conquest. He considered the chancel arch, and that of the tower, somewhat later than the building into which they were inserted; the horses' heads on the dripstones were paralleled in Malmesbury Abbey and one or two other later Norman buildings. The altar table and choir fittings were historically interesting, as they were almost the only existing examples of a church which still retained the chancel arrangements of the Puritan days; it was remarkable that neither at the Restoration, nor in the subsequent two centuries, these fittings had been altered back to the old and usual ecclesiastical style.

In reply to questions, the Rector (the

Rev. G. Butterworth) stated that there were some doubts as to what the dedicatory stone referred to as "hunc regum aulam," but after careful study of the fabric he strongly believed it to be Saxon in origin, and the building referred to. The only difficulty in the way of this theory was that it was not easy to trace where the Saxon work ended, and that of the Norman period began, as the masonry was all of similar character, and seemed properly bonded together. There were references in Saxon chronicles and early works to a monastic establishment in the village. Alphege, afterwards Archbishop of Canterbury, was known to have been a monk at Deerhurst in the year 960, but he had not been able to find traces of the buildings nor records of their destruction. Mr. Beresford Hope said the rood-loft doors were much like those at Kilpeck, but the structure appeared more ancient. He could not see any reason to doubt that it was really the work of Odo, as the inscription stated, because where there was no wholesale destruction of monuments, it was a mere question of wear and tear whether a solidly built church like this was 800, 900, or a thousand years old. He believed the original structure to have been Saxon in origin, but he agreed with Mr. Blashill that the porch and chancel arches were later than the main building.

The visitors then returned by boat to Tewkesbury, many of the members of the Institute leaving by train. Some, however, remained on board availing themselves of Sir Edmund Lechmere's invitation to spend the evening at the Rhydd, near Upton-on-Severn, the steamer taking them on to Worcester at a later hour.

THE EGYPTIAN OBELISK.

THE model obelisk on St. Stephen's-green, Westminster, is now completed. It was hurriedly built with boards, which have wide spaces between them, but at a little distance give the effect of a needle of Syenitic granite. The colour is not very good. It should be reddish grey. The dimensions of the model are those of the original. The precise height of the obelisk is 68ft., but the pedestal is 10ft. high, and is approached by steps, which raise the total height of the model to 81ft. The obelisk is 8ft. wide at the base measured one way, and 7ft. 3in. wide, measured the other. The ideal proportions of an obelisk are such that the height should be ten times the breadth; and thus the obelisk is not quite so tall as it should be. It is 180 tons in weight, and the site selected for the model is just above the Metropolitan District Railway. But according to Mr. Dixon, the engineer who has undertaken to place the monolith in position, this situation offers no obstacle to securing a good foundation upon an iron bed, which might be laid across the railway. The *Times* says it was by the express wish of Lord Beaconsfield that this model was erected. The site originally proposed for the obelisk was a green corner of the Thames Embankment, offered for the purpose, near the statue of Outram, but there it would be comparatively obscure. The back of the Horse Guards and the front of the British Museum were also proposed, but objections were urged. The present site was chosen for the model because so tall and heavy a single mass of sculptured Syenitic granite is a precious stone on the largest scale, and it seemed fitting to place it in a setting which is also of value. It is further necessary not to move too far from the river. The pedestal is built low enough to enable Egyptologists to read the hieroglyphs as they were read by the priests of On, the city of the Sun, 3,000 years ago, before the great stone was floated down the Nile to Alexandria, and there erected in the eighth year of Augustus beside its fellow, which still stands in Egypt. Both that and this are called Cleopatra's Needle. It was the wont of the Egyptians to erect these mysterious pillars in pairs, and thus there are two "Cleopatra's Needles," just as there are two "Pharaoh's Needles," the one now at St. John Lateran, and the other in the Atmeidan, in Constantinople. This English Cleopatra's Needle is more valuable than its Egyptian fellow, as it is 200 years older, and shows in its hieroglyphs two periods of Egyptian sculpture—the age of Thothmes III. and that of Rameses.

Building Intelligence.

BLACKBURN.—The new Roman Catholic Church of St. Joseph, Blackburn, is approaching completion. The style is Italian. The plan is a Latin cross with a total length of 144ft., and a total width of 70ft. A bell tower forms at once a porch to schools and church, and a belfry. The interior of the church, which possesses an enriched ceiling, is imposing, and affords a spacious and unobstructed area for the congregation. The apse is approached by a lofty arch, supported on sculptured consoles and Corinthian capitals, which surmount marble pilasters. The high altar is of elaborately sculptured wood-work, gilt and painted, inlaid in marble slabs. The tabernacle is enriched with enamel painting, representing the wheat and vine, and a brass crown and curtains surmount the whole. Behind the apse are convenient sacristies. To the right, in the transept, the organ tribune is reached by a separate staircase, which also serves the sacristies. The left-hand transept is to contain a lofty and elaborate altar of marble and alabaster. The works have been carried out under the direction of Messrs. Goldie and Child, architects, of Kensington, by Mr. Craven, builder, of Blackburn. The whole cost is something under £12,000.

DEAN BARRICKS CHARITY, WESTMORELAND.—Two new schools, in connection with this charity, were opened at Witherslack last week—one for boys and one for girls. The buildings are of stone, and the contracts have been carried out by local tradesmen, under the care of Mr. G. Rigg, the architect, of Kendal. The schools throughout are warmed and ventilated by Shillito and Shorland's Patent Manchester School Grates, which on testing were found to be extremely powerful.

GLENFIELD.—A new Wesleyan chapel has been opened at Glenfield, Leicester. It is in the Early English style, and is built of Groby slatestone, with Bath stone dressings externally, and Bath and red Alton stone dressings internally. It is in the form of a cross, and the nave is 36ft. long by 24ft. wide, the height of the roof being 20ft. The schoolroom, which adjoins, is 33ft. long by 15ft. wide. The chapel itself is seated to accommodate 250 people. The whole building has been erected by and from designs made by Mr. H. F. Allen, builder, Erskine-street, Leicester. The total cost is about £800.

LONDONDERRY.—On Friday last a new theatre was opened in this town. The general tone of the decoration is a light cream-coloured ground, upon which is painted Renaissance ornament in gold and colours. Mr. C. J. Phipps is the architect.

NEWCASTLE-ON-TYNE.—A new bank for the North Eastern Banking Company has been erected in Grey-street, Newcastle-on-Tyne. The bank is entered through a stone door of Classic design, the columns and architraves being of polished granite, the rest of the work being of polished Kenton stone. The size of the public-room is 70ft. long, 41ft. wide, and 38ft. high. It is designed with a dome to ceiling panelled, and with moulded and ornamental ribs, supported upon ornamental trusses. The sides of room are spaced out with Corinthian pilasters, with caps, moulded dado and bases, the spaces between pilasters being arched, and the whole filled in with moulded and ornamental work. This is entirely of Keen's cement, and was executed by Messrs. W. B. Wilkinson and Company. The general works have been carried out by Mr. L. Gaby, and the whole is from the designs of Mr. W. Lister Newcombe, architect, of Newcastle.—The Newcastle-upon-Tyne Improved Industrial Dwellings Company, which has proved a great success, have agreed to extend their existing block to about treble its present size. Since the foundation of the company, eight years ago, repeated attempts have been made to extend the buildings, but on receiving tenders it was found impossible to carry out the plans without advancing the rents, to which the directors have always objected, as tending to exclude the class of tenants for whom the buildings were principally designed. In consequence of the present depression of trade,

the company now find themselves in a position to proceed with their work in a more satisfactory manner. The proposed additions, which will cost upwards of £10,000, will embrace several improvements, sanitary and otherwise, calculated to promote the health and comfort of tenants. We may at another time give a detailed description of the building.

ST. MARK'S VICARAGE, NOTTINGHAM.—The corner stone of this building was laid on Tuesday last, by the Rev. W. Felton, in the presence of the committee and a few friends of the vicar. The building, towards which the Ecclesiastical Commissioners have made a grant, is being erected from designs prepared by Mr. S. Dutton Walker, of Albert-chambers, Nottingham, and is situate in a pleasant part of Maperley-road, at a distance of only a few minutes' walk from the church and parish.

WHIXOE, SUFFOLK.—The School Board have accepted the tender of Messrs. Mason and Son, builders, Haverhill, for the erection of the new schools and teachers' residence. The site selected is at Baythorne-end, and the works are to be commenced immediately. Mr. Frank Whitmore, of Chelmsford, is the architect. Mr. Whitmore has designed a great many schools in this neighbourhood, and they have given great satisfaction.

SCHOOLS OF ART.

BARNSTAPLE.—A new school of art is formed at Barnstaple, and will probably open on the 1st September. Mr. S. John Ireland, late headmaster of Barrow-in-Furness, is appointed to the mastership. It is also contemplated to open a school of art at Ilfracombe, for the benefit of residents in the winter, and of visitors in summer; but at present there seems a difficulty in obtaining premises of sufficient size to carry on the classes. It is expected that Mr. Ireland will also conduct this school. We shall be glad to hear that this latter is in working order, for then there will be some probability of visitors bringing away a few souvenirs of the delightful scenery of North Devon.

PUBLIC HEALTH.

The Leading Journal of Sanitary Science and Progress. Price Two-pence. The number published August 17 contains articles on The Manchester Exhibition of Sanitary Appliances, The Filtration of Water, The Air of Cities, Hospital Construction, Ventilation, Watering Places and Summer Resorts, The Compulsory Registration of Infectious Diseases, Visit of the Sanitary Institute to Leamington, Mr. Mechi on the Sewage Question, Public Health Reports, Parliamentary Notes, Legal Intelligence, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c. Price 2d. (Annual Subscription, post-free, Eleven Shillings). 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces. Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s. Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

TERMS OF SUBSCRIPTIONS.

(Payable in Advance.)

Including two half-yearly double numbers, One Pound per annum (post free) to any part of the United Kingdom; for the United States, £1 6s. 6d. (or 6dols. 40c. gold). To France or Belgium, £1 6s. 6d. (or 32f. 60c.). To India (via Southampton), £1 6s. 6d. To any of the Australian Colonies, New Zealand, the Cape, the West Indies, Canada, Nova Scotia, or Natal, £1 6s. 6d.

Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—C. S.—J. Robinson.—F. W. T. ARCHITECTURAL SCIENCE CLASS.—A. E. J. (writes to express his disappointment at the termination of the Science Class. In reply to his questions, we beg to say the class commenced in January, 1876. It is our intention to commence another series, as supplementary to the last.)

"BUILDING NEWS" DESIGNING CLUB.—Lcizlad. (We will make inquiries. Your suggestion shall be considered.)—James Hornley. (We intend to republish the rules for the benefit of several inquirers, in our next issue.)—Omega. (Shall be attended to.)

Correspondence.

HOW NON-SURVEYING ARCHITECTS "PROTECT" THEIR CLIENTS.

To the Editor of the BUILDING NEWS.

SIR,—Your contributor, referring to my letter of this day fortnight, asks if enormous overcharges caused by excessive quantities do not occur as often when an architect takes out his own quantities as when he leaves them to an independent surveyor. I think any one with much practical experience of contracts will agree with me when I say most decidedly not. The reason is clear. In nine cases out of ten the architect is exceedingly anxious to keep the cost down to the amount of his own estimate, and architects' estimates are very seldom too high. So strongly does this cause operate that, in justice to the contractor, the quantities should always in such cases be made the basis of the contract.

Your other correspondent may be assured that it is far from my intention to cast any slight upon either surveyors or builders generally, though in the particular case I named there are strong reasons to suspect that one of the surveyors was in collusion with the builder whose tender for the original works was the lowest. All I say is that, with an independent surveyor, tenders, in my experience, have always come in high. At all times and places this fact has recurred till it has forced itself upon me as a sort of primary law of nature. Why it is so is a different matter, which need not be discussed now. But the important point, which ought never to be lost sight of is this, that the architect who does not take out his own quantities is powerless to protect his client. His building is practically certain in any case to cost 5 or 10 per cent. more than it ought to cost, and how much more it may come to the facts given in my last letter will enable every one to judge. While the client is being victimised in this way the non-surveying architect stands helplessly by, and thanks Heaven that he is not as other men are, nor like these undignified architects who take out their own quantities.—I am, &c.,

CLAMANS IN DESERTO.

KENSINGTON VESTRY HALL.

SIR,—In reference to the notice which appeared in your journal the week before last, I beg to state that there is all the difference between my design and that of Mr. Walker that there is between (if I may venture to compare buildings, so infinitely superior to either), as the Farnese Palace and the Library of St. Mark's, the Reform Club and the Carlton. My reason for choosing the simpler style of design is explained in the letter I have addressed to the vestry, a copy of which I enclose.

With reference to the estimated cost of my design (based on the actual cost of a building now erecting by me in the immediate vicinity of the Vestry Hall), I beg to append the following ex-parte statement of a well-known firm of builders.—I am, &c., EDWD. C. ROBINS, Author of the design marked "Experience."

[Copy.]

7, St. George's-road, N.W., Aug. 10, 1877.

PROPOSED VESTRY HALL, KENSINGTON—MOTTO, "EXPERIENCE."

E. C. ROBINS, ESQ.

Dear Sir,—We have made a careful estimate of the cost of the above design, as now lying at the Vestry Hall, and we should have been prepared three months since to have entered into a contract to complete the same for £18,000. We should not object to take the works now for £20,000; but, as you are aware, the masons are on "strike," and we should not like to give you a definite estimate until the labour question is settled, when most probably it might be done for something less.—We are, &c.,

(Signed) MANLEY AND ROGERS.

[COPY OF LETTER ADDRESSED TO THE CLERK OF THE VESTRY OF KENSINGTON BY "EXPERIENCE."]

GEO. C. HARDING, ESQ.

MY DEAR SIR,—Since accepting your invitation to meet the committee on Tuesday, the 14th inst., I have seen a paragraph in the

BUILDING NEWS which surprises me. In the instructions to architects the vestry reserved to itself the selection of the premiated plans, after taking the advice of a "professional assessor," to be "appointed to advise as to whether the selected designs can be carried out for sums mentioned by the respective architects." And I think it would be gratifying to all the competitors if the report of the assessor were published. For myself I should be glad to learn his opinion as to the cost of the other three selected designs, some of which, it is said, were not included in his list of designs to be recommended to the vestry, and notably that selected for the first premium.

From inquiries made by me, before entering upon the competition, I was led to believe that the vestry had made up its mind to adopt the best plan, and avoid an expensive elevation. The tone of the instructions seemed to confirm this view, and therefore it was that I threw my strength into the development of the interior arrangements of my plans, and so far succeeded that there does not appear to be any great difference of opinion that the plans and sections presented by "Experience" were the best. This opinion was confirmed by the committee, which at its two first sittings acted upon this conviction and put my designs first by an overwhelming majority.

Judge of my surprise, therefore, when I read in the BUILDING NEWS that "Experientia" has been selected solely because the elevation given was by some considered to be the better, and that it was even proposed "to refer the matter to the committee, to consider what plan should go behind the elevation of 'Experientia.'"

Now, nothing is easier or more agreeable to an architect than to design a noble facade if it is desired, and when he puts a restraint upon his pencil to meet the expressed wishes of his clients, and with a view to economy where it will least interfere with efficiency, it ought not to count against him, and even deprive him of both the first and second places in the competition which he has fairly won by his plans.

Having been engaged in the full practice of my profession for upwards of twenty-five years, during which time I have won more competitions than fall to the lot of most architects, surely I may be trusted to design a facade sufficiently handsome to meet the new requirements of the vestry, and worthy "to go before" my own plans, and not those of another.—I am, my dear Sir, yours faithfully,

EDWD. C. ROBINS.

14, John-street, Adelphi, Aug. 6, 1877.

WAITING FOR A DETAIL.

SIR,—Under the above heading a correspondent asks in last week's issue of your valuable paper, "Who but a contractor is weak enough to sign a deed containing a clause to the effect that it (i.e., a detail) may be added afterwards? Every builder knows what it is to receive detail drawings when a job is half finished, perhaps not only showing more work than was anticipated, but requiring work already in hand to be altered."

Much, Sir, has been said about this, and also about the question of quantities, by correspondents whose knowledge of professional practice must be very limited—much that I believe would not have been written had their knowledge of this been more extensive. And, as an architect, I protest against the insinuation of unfairness contained in the above quotation, as though the architect knowingly defrauded the builder by detail drawings supplied after the signing of the contract, showing more work than was "anticipated" (?)

Anticipated by whom? I would ask. Surely not by the builder. With a carefully prepared copy of quantities before him, what need, nay what right, has he to anticipate anything, certainly so far as the "work" is concerned? The preparation of an estimate from a carefully prepared bill of quantities is not a work of anticipation, but is one of certainty.

The suggestion desired by your correspondent of "some plan to improve the present state of things" is very easy to give. It is, first, that the architect take out his own quantities.

Knowing what work he requires to have done he knows best how explicitly to describe

it in the quantities; and afterwards, when he prepares the detail, he knows exactly how he had described that particular work in the quantities supplied; and, secondly and mainly, to make the quantities the basis of the contract. This I think I may say is always—certainly almost always—done in Manchester; and, indeed, out of London I am of opinion that this is mostly done. That it is the only equitable mode, wherever quantities are supplied, to make them the basis of the contract, there can be no doubt. We do so in Manchester, and thus when we prepare our details we know that, if those details contain any work whatever over and above that given in the quantities, the builder must be paid for it as an "extra;" and that, if our moulded work, say our cornice, was given in the quantities as 12in. girth, and our detail of cornice girths 3ft., the builder is clearly entitled to the additional 2ft., and we also know that he will not forget to claim it.

The closing suggestion of your correspondent, "Consider the End," is, nevertheless, a good one. At the same time I would invite him also to

CONSIDER THE BEGINNING.

Intercommunication.

QUESTIONS.

[5087.]—Durability of Timber.—Will some reader inform me whether timber, left rough from the saw, is more durable than when it has been planed up, and if so, the reason of it?—L. G. S.

[5088.]—Cement Floor.—In a house recently built, the basement floor is laid in cement, on a bedding of broken stones 6in. to 9in. thick, beneath which field tile drains are introduced to carry off any surface water; notwithstanding, the floors are continually moist. Could any readers of "Intercommunication" kindly give the reason and cure for above?—FIELD RYE.

[5089.]—Roll Wrought-Iron Girders.—Will some kind friend inform me what size girders I shall require? I am about building a pair of houses, with a passage between 3ft. 6in. wide, leading to back. At first-floor I want to build the 9in. party-wall, with double chimneys over centre of passage, to make the bed-rooms equal size. I want to put short girders bearing on passage walls, then girders from front wall to back, resting on short girders, to carry 9in. wall. I intend turning arches over passage to carry chimneys. The wall will be 35ft. long, by 20ft. high.—IGNOR.

[5090.]—Bamboo Furniture.—How can I stain bamboo cane, such as is made up into Indian furniture? Must one remove the flinty surface; and, if so, can it be done with any acid, and what?—F. C. P. F.

[5091.]—Window Tracery.—Will any reader kindly inform me which is the best method for measuring and drawing out the tracery of windows?—ALPHA.

REPLIES.

[5073.]—Wall Decorations in Distemper.—"Kappa" and J. A. Howick, are recommended to visit the offices in Cannon-street, of the Liverpool Silica Paint Company, whose advertisement will be found in current BUILDING NEWS. This company's distemper has the pureness of tint and absence of glaze so valuable in distemper colouring, with the great advantage of being, like oil paint, durable. It is capable of being washed frequently and acts on a damp wall as waterproofing. It will, I believe, prove the desideratum longed for by artists for pictures, all other mediums having failed for mural purposes. I should fancy in time it must supersede ordinary distemper and oil paint. I beg to say I have no connection with the company. Let "Kappa" and others examine for themselves.—M.

[5074.]—Cleaning Plaster Casts.—Simple plaster cannot be well cleaned. The best way to treat casts would be to saturate them with size and give them a coat of oil paint. For the mending, soak the parts well in the size, and when dry unite with glue. The effect of the sizing is to harden the surface and prevent absorption.—M.

[5078.]—Colouring Lithographs.—With a broad flat camel hair brush spread a thin solution of size over engraving. One application will probably be sufficient. A pennyworth of size can be obtained at any oilman's, and will go a great way. It is simply the application of size which makes the difference in paper manufacture, whether it absorbs or not. Insignificance will also do for the purpose.—M.

[5079.]—Church Roof.—The pitch pine boardings you name would make a very good covering. Try Engert and Rolfe's felting, Poplar, London, E. It is about 1d. per square foot.—G.

[5082.]—Warming Rooms with Hot Air.—"S. Y. D." would do well to avoid fitting his room, heated with dry hot air, in the manner he describes. See Dr. Ure's paper in a late number of *Loudoun's*

Architectural Magazine. The air would be much too dry, burnt, and sulphurous to be healthy. Hearn and Co., Liverpool, fitted for me two top rooms, heated by lin. hot-water pipes, the source of heat being the open grate in the parlour. The ordinary fire-bars were removed, and instead was placed a circuit of wrought-iron piping, shaped like the bars, which, passing up the chimney, goes into the top rooms, and round the skirting, and from this I got 60° to 70°. The pipe forming the bars of the grate—indeed, the whole pipe—is filled with water, and as it becomes heated, the water forces itself upwards and along the piping, back to the fire again. No boiler is needed, only half-pint of water once in three months or so.—E. J. ARCHER.

[5082.]—Party Wall.—I should say that the party wall agreed to be built by B., 6ft. high, would be understood as measured from the original level, and not from the sunken level A. has reduced his ground to. He has evidently done this at his own risk, and for his own convenience, and should certainly pay for the additional footing of wall required.—G. H.

[5082.]—Party Wall.—From "B.'s" level, making "A." pay for any backwork beneath it.—J. HATTON LOWE.

[5082.]—Party Wall.—6ft. high would be interpreted to mean 6ft. high from the natural level of the land, as it was at the time of making the covenant, unless the deed provided for an alteration of that level.—L.

[5083.]—Board Schools.—A fair average may be taken at from £7 to £10 per head. For a plain building the first sum would be a fair rate, although some of the Board schools have cost as much as £13, and even more. If space is no object I should certainly prefer the buildings to be one story, but, economically considered, a two-storied building is best.—G. H.

[5084.]—Quantities, &c.—The spars and joists of roofs and ceilings, along with timber, labour, and nails, are measured superficially. Wall-plates, bond-timbers, purlins, ridges, &c., are given lineally.—J. HATTON LOWE.

[5084.]—Quantities for Joiner and Carpenter.—The proper and customary method is to take the measurement of floors and roofs as follows:—Take the timbers in joists, principals, &c., as cube, "fixed" or "framed," only according to labour; and in measuring the timbers take the full quantity used, including all tenons and bevelled ends. The 11th clause referred to means that the nett length only of the timbers is to be taken. The measurements are generally taken in superficial feet, not yards. In the Manchester method the labour and nails are measured superficially by the yard, and the joists or timbers taken lineally.—G. H.

[5085.]—Plumbers' Quantities.—Take the quantities of piping for the building only; the gas or water company usually bring it to the house.—G. H.

CHIPS.

The interior of St. Nicholas Church, Worcester, is being renovated and decorated in colour by Mr. F. Wells, of that city. Gilding will be freely applied, the ground tones being French grey and white.

The next Congress of the Bristol and Gloucestershire Archaeological Society will be held at Cirencester, under the presidency of Earl Bathurst, on August 28th, 29th, and 30th. It is intended to visit Calmsden Wayside Cross; Chedworth Church and Roman Villa; Stowell Church and Manor House; Fairford Church, with its figured windows; Amney Crucis; Quenington and Bibury.

A new drinking fountain is about to be erected at the northern end of the eastern Royal Exchange-avenue. In the design adopted the lower part of the fountain is of Penryn granite of different tints, and polished. The contract for this will be entrusted to Messrs. Freeman. Upon this base, supported by coupled columns at each angle, is an ornamental canopy to protect a group of sculpture; this will be wholly of bronze, picked out with gilding. (This part of the design will be entrusted to Messrs. Hart, Son, Peard, and Co.) The architect is Mr. W. S. Edmeston, Great Winchester-street.

The foundation stone of a new church at Lane End, near Great Marlow, has been laid. The church, which will have sitting accommodation for 300 persons, has been designed by Mr. J. O. Scott, the contractors being Messrs. Silver and Son, of Maidenhead. It will consist of nave, chancel with aisle for children, and a low tower. The style will be Early Decorated, and the cost £2,845.

A new painted window has just been placed at the east end of Barton Stacey Church. The window, which has been manufactured by Messrs. Ward and Hughes, of Soho, represents the Crucifixion, with smaller representations underneath of the offering up of Isaac, the Paschal Lamb, and the serpent in the wilderness.

A new church at Sunk Island was consecrated on Wednesday week at a cost, with the parsonage, of about £6,000. The style is Early English, and the building is of red brick with stone bands and dressings. Mr. Ewan Christian is the architect.

Our Office Table.

THE Rev. Charles Boutell, a well-known antiquarian, has died at his residence in Portsdown-road, Maida-hill, at the age of 67. Mr. Boutell graduated at Cambridge, but was subsequently incorporated at Trinity College, Oxford. Having been ordained, he held curacies in Norfolk and Herefordshire, and afterwards became Vicar of Downham Market and of another living in the former county. He was well known by his works on "Heraldry," "Ancient Monuments and Recumbent Effigies," and on "Ancient Arms and Armour." He was a member of several antiquarian and archaeological societies. He was at various times during the past quarter of a century a contributor to this journal, and was at all times ready to aid in giving or obtaining information relative to architectural and archaeological matters.

ON Saturday, Mr. James Abernethy, Vice-President of the Institution of Civil Engineers, distributed to the successful students of the Crystal Palace School of Practical Engineering the certificates that had been awarded by the examiners, Mr. Henry Law, M. Inst. C.E., and Mr. William Dempsey, M. Inst. C.E., for the term that has just closed. The principal awards were:—Railway and dock work—1. F. J. Scott; 2. C. H. Clarke. Drawing office—1. F. J. Scott; equal 2. C. H. Clarke, E. Hott, P. H. Naftel. Pattern shop—1. T. E. Fuller; 2. C. W. Carrington. Fitting shop—equal 1. G. F. Hardy, W. S. H. Hutton; 2. A. Pine. Civil Engineering Section—Parliamentary Work, &c.—equal 1. G. S. Firth, L. W. Toms; 2. H. H. Lake. Working plans for a railway and dock—1. S. R. Lowcock; 2. C. W. James. Mr. Howard Newton and six others received certificates in the Colonial Section.

We have just received copies of the latest editions of Mr. B. T. Batsford's catalogue of architectural and engineering new and second-hand books, to which we direct the attention of the many readers who are so constantly asking us to recommend books. Mr. Batsford's long experience and acquaintance with the literature of the two professions is always at the service of inquirers, and it must be a book of very little value or unparalleled rarity that cannot be procured at his shop. We notice he offers for sale a complete set of this journal from 1857 (the commencement of the illustrated series) to 1874, at a price which is very moderate considering its scarceness. When it is remembered that the set of volumes contains over two thousand illustrations, embracing the "Art Foliage" series, the BUILDING NEWS Sketch-Book, and other valuable and interesting plates, it will be admitted that Mr. Batsford is not indulging in any exaggeration when he describes a set of our volumes as "an architectural library in itself."

The new Catholic Apostolic church, at Summerhill, Birmingham, has just been enriched by the addition of a very handsome pulpit, the gift of a lady, who unfortunately died before the work was erected in its place. The design, by Mr. J. A. Chatwin, is circular on plan, wrought in Caen stone, alabaster, and Irish marbles, and was executed at the establishment of Mr. John Roddis, Birmingham.

The foundation stone of a new Wesleyan chapel was laid at Horfield, Bristol, on Monday. The building is in part an enlargement of a former structure. The designs have been prepared by Mr. H. Williams, and Mr. Price is the builder. The cost has been estimated at £800.

We are pleased to observe that a certificate of merit was awarded to Shillito and Shorland for their patent Manchester Grate and School Grate, at the exhibition of sanitary appliances, in connection with the British Medical Association, held at Owen's College, Manchester, last week.

The Manchester School Grates are fitted up throughout in the class and lecture-rooms of the new Roman Catholic College of St. Francis Xavier, Liverpool, now being completed from the designs of Mr. H. Clutton.

The Primitive Methodist church, at Hessele, was reopened on Sunday, August 12th, after being thoroughly restored and enlarged at a cost of £831 10s., from the designs and under the superintendence of Mr. R. Poits De Redder, M.A.A., architect, of South Shields.

LEGAL INTELLIGENCE.

CHURCH BUILDING CONTRACT—Covenant by Vicar to pay, whether building personally or as Trustee—Chancery Division—Williams v. Hathaway—Before the Master of the Rolls.—By an agreement made between the plaintiff, a builder, of the one part, and the Rev. W. W. Champneys, Vicar of St. Pancras, and the Rev. C. H. Andrews, incumbent of St. Luke's district, of the other part, after reciting that under the St. Luke's (King's-cross) District Act, 1868, said Champneys and Andrews, as such vicar and incumbent respectively, held a fund for building a church, to be called St. Luke's Church, for a new district within the parish of St. Pancras: It was witnessed that, "in consideration of £9,391 to be paid by said Champneys and Andrews, their executors or administrators, or the person or persons for the time being entitled to apply the said fund under the said Act, to the plaintiff in manner thereafter specified," he, the plaintiff, agreed with said Champneys and Andrews, "and said Champneys and Andrews to the intent (so far as they lawfully could or might) to bind such person or persons as aforesaid, but not so as to bind either of themselves, or his heirs, executors, or administrators, after he or they should have ceased to be entitled to apply the same fund, did, and each of them did, thereby agree with the plaintiff," then followed provisions for building the church. By another agreement of the same date, and made between the same parties, an agreement containing a similar covenant was entered into for the building of a parsonage-house with the balance of the fund. In November, 1868, before the completion of the church and parsonage, Champneys ceased to be Vicar of St. Pancras, and by that time the whole of the building fund had been expended on the building in question, but a sum of £1,585 remained due to the plaintiff for "extras." In February, 1875, Champneys died, whereupon the plaintiff brought this action against his executors to recover the £1,585, insisting that Champneys' covenants in the agreements were personal covenants, and as such binding on his representatives. An action for the same amount was also pending in the Common Pleas Division against Andrews. The Master of the Rolls held that the covenant was enforceable against Champneys only so long as he was Vicar of St. Pancras—that is, so long as he was a trustee of the fund; and that in any event the covenant merely bound the fund. Action dismissed with costs.

CHIPS.

At a recent meeting of the Christchurch (New Zealand) Philosophical Institution, President Haast gave an account of the discovery of remarkable ancient rock paintings in the Weka Pass Ranges. He exhibited careful drawings of them. Some of them are 15ft. long; they represent animals of foreign countries, weapons, and dresses of semi-civilised people; underneath are characters like those of the Tamil language, and those on the ancient hill found in the North Island.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,

Have REMOVED from 57, St. Paul's Churchyard, to new and extensive Premises,
123, QUEEN VICTORIA STREET, ST. PAUL'S, E.C.
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Trade News.

WAGES MOVEMENT.

LONDON.—The Central Association of Master Builders have issued an explanation of their course of action with regard to the dispute now pending between themselves and the London masons. It appears, according to their statement, in January last a demand was made by the masons for 1d. per hour increase of wages, and the shortening the hours of labour by two-and-a-half per week, to commence from the 30th of July. After some correspondence the masters refused the increase in wages, but were willing to meet the masons by opening their works during the summer months half an hour later in the morning, provided the men would work half an hour later in the evening; but as this would necessitate the works being kept open for one trade only, the masters could only concede this point upon the conditions that the masons themselves obtain the consent of the other trades affected to work the same hours. At a conference of the masters' sub-committee and the masons' delegates on the 26th ult., of several hours' duration, the men did not, in the opinion of the masters, adduce any sufficient reason to warrant an increase in wages. The delegates declining to fall in with the masters' suggestion to meet the difficulty of working hours as conveyed in their resolution, the masons have since endeavoured to enforce their demand by striking; they having left all the London works on the 28th of July last. It has been reported that 55 firms have conceded the increase in the rate of wages, but the masters now state that there are only two firms, employing a very small number of masons, who, for special reasons, have given the increase under protest. At the meeting last week the masters' committee saw no reason to depart from their resolution. On behalf of the men, Mr. Henry Nisbet, the secretary of the London lodges' committee of the Operative Stonemasons' Society, writes, contradicting the masters' statements. He admits in the present accuracy of the report that 55 firms have conceded the increase in the rate of wages, but he says that report was correct when made, and others must now be added, as there are now 90 firms who have conceded the increase of wages. He declares if the members of the Masters' Association were to walk the length of the street in which their office is situated, they would find at least two firms paying the advance—one of them employing about 100 masons. The list of firms now paying the advance, he repeats, numbers 90, the correctness of which he is prepared to prove to the satisfaction of any one, under certain conditions.

MANCHESTER.—On Thursday week 34 carpenters arrived from New York at Manchester. They have accepted work with Messrs. Neill and Sons. A good many of them are Englishmen, returning to the old country. Several more are expected to follow. On the part of the men it is said that up to the present time upwards of £4,000 has been contributed from outside sources towards the support of the joiners who are out on strike in this city; and that the number of men in receipt of strike allowances has been reduced during the past week from 810 to 723.

TERMINATION OF THE MASONS' STRIKE AT CARDIFF.—This strike, which has lasted nearly four months, was brought to a close on Saturday. A large meeting of operative masons was held at the Swiss Hall, on Saturday afternoon, to consider a communication from the Master Builders' Association, expressing the willingness of the masters to try for a period the Conciliation Board, as proposed by the men. The masters have for some time been willing to adopt the Conciliation Board, but in the event of the board not coming to an agreement, the board to appoint an umpire. To this latter point the men objected. They required that the points in dispute should be again referred to the general body for further consideration. The masters have now yielded this point, and the men passed a unanimous resolution to resume work on Monday morning.

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These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—[ADVT.]

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TENDERS.

BASFORD.—For the erection of two houses with sale shops for Mr. W. H. Hutchison. Mr. S. Dutton Walker, F.S.A., and Mr. Herbert Walker, C.E., joint architects; quantities supplied:—

Hodson and Facon	£1,025 0 0
Bell and Son	975 16 0
McCulloch	941 12 0
Woodcock and Clayson	913 19 5
Clarke	895 0 0
Wooll	880 0 0
Hopewell	853 2 0
Doughty	839 8 0
Wade	830 0 0
Baines and Trpton	825 0 0
Stainforth (accepted)	765 0 0
Newham	760 2 8
Herriott	750 0 0
Dickens and Brown	548 5 11

BULWELL.—For paving Herbing-street, in Bulwell Market-place, for the Local Board. Mr. Herbert Walker, engineer; quantities supplied:—

Cordon	£696 0 0
Messon	593 0 0
Redgate	551 3 2
Stainforth	525 0 0
Meats Bros.	521 10 3
Attenborough	467 18 8
Parker	434 7 6
Knight (accepted)	337 5 0

ESSEX.—For additions to 13, Manor-villas, Theydon Bois. Mr. William Eve, architect:—

Heiser	£478
Clarke (accepted)	357

HACKNEY.—For works in forming new roads, &c., at Hackney. Messrs. Lee and Smith, surveyors:—

Castle	£495
Waldram and Co.	449
Forrest	379

LONDON.—For alterations and fittings at 52, Thread-needle-street. Mr. William Eve, architect:—

Lawrence and Sons (accepted)	£492
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LONDON.—For the erection of stabling and warehouse at Stoke Newington. Mr. William Eve, architect:—

Heiser	£1,160 0 0
Devereux	1,109 0 0
Salt	994 16 0
Sheffield	968 0 0
Crabbe (accepted)	950 0 0

LONDON.—For stabling, &c., at Amhurst Park-road. Mr. William Eve, architect:—

Crabb	£350
Salt	245
Heiser	244
High (accepted)	232

LONDON.—For rebuilding No. 2, Pancras-lane, for Mr. Champion. Quantities by Messrs. Batterbury and Huxley:—

Greenwood	£2,260
Newman and Mann	2,135
Ashby and Horner	2,113
Ashby Bros.	2,078

STEPNEY UNION.—For painting the exterior of the workhouse and infirmary, at Bromley-by-Bow, and for sundry repairs and exterior painting, at the offices, York-street, Commercial-road, E., for the Guardians of the Stepney Union. Messrs. A. and C. Harston, 15, Leadenhall-street, architects:—

Fowler, Stratford	£599
Balding, Belvedere	466
Wortley, Finsbury Park	345
Whitford, Stepney	327
Anderson, Stepney	311
Haynes, Bromley, E.	297
French and Maloney, Mile End	285
Derby, Limehouse (accepted)	279

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 24, 1877.

THE PRINCIPLES OF RENAISSANCE ARCHITECTURE.

THERE is, as we have lately had occasion to remark, a decided indication of a return to the Renaissance, not only of this country but of France. The tendency towards this taste is at least a healthful one, as it shows that our modern architects, in obedience to the wants of the age, are casting about for elements and forms that have some affinity with the requirements and social habits of their day. Gothic types have been pretty freely used. We have seen several admirable efforts to adapt the style to public and domestic buildings. It must be admitted also there have been some absurd blunders. The public at last seem to have expressed their discontent at the result, and while it has been generally agreed that the style is admirably suited for ecclesiastical purposes, and even for situations demanding a variety in the external features, it is acknowledged that the requirements of modern buildings in our large towns, and the use of square-shaped openings, favour the employment of a style that verges more on the lintel than the arch arrangement. There is no doubt the Queen Anne presented to the architects influenced by it one of the nearest approaches to the taste dictated by the domestic programme of modern life; it was besides a facile style readily adapting itself to brick, to the venacular sash window, and to furniture and decoration. This flexibility also, it must be observed, helped to bring the style into favour with those who had "cut their teeth" upon Gothic, and who had been brought up in total ignorance of Classic principles of design. The leaders of the Queen Anne, we need scarcely remark, were at one time Gothicists, and denounced Classic in unmeasured terms, not from a critical knowledge of its principles, but from a complete ignorance of them. Singularly enough these very men are now studying Greek and Roman detail, sticking on pediments and pilasters to their façades, and docilely falling back upon that formula they so much detested and assailed—the "Five Orders." We do not despair of seeing even Batty Langley extolled and made again to do service. Such must be the inevitable eventuality of a system of architecture that has no method, that is governed by a capricious taste, is bolstered up by a few leaders or a clique, in spite of intelligent criticism, that portion of public opinion which represents the advanced taste of the age, in opposition to the views and demands of scientific improvement. This clique sets up its own claim as representative much in the same way as a few religious dogmatists assert their pretensions in defiance of modern theological belief. Men of large views in art as in religion are regarded by such cliques as latitudinarians, wanting in all the attributes of genius and enthusiasm; and this is the invariable retort they receive. Unfortunately for the art sectarian, however, he is always a stumbling block, but is at last compelled to move and retract his opinions, by the force of that overwhelming law of change which he endeavours to resist. The ultra-Gothicists, the sticklers for one phase, and the adherents of dogmas, equally mistake in taking a form for a principle, and in pertinaciously fighting for it. The foolish idea of being made a martyr is, in the eyes of such enthusiasts, a virtue.

As affording one illustration of our remarks, we may refer to the principle of

symmetry in buildings. Viollet-le-Duc distinguishes the two modes of applying symmetry, adopted especially by the ancients and the architects of the middle ages. The Greeks we know admired the principle, but it should be remarked that although they made each building conform to its rules, they did not apply the symmetry of form to an agglomeration of buildings destined for distinct uses. They adopted a central axis to their temples, both sides of which were uniform, but in their houses they did not subject practical considerations to the same law—that is to say, the several parts were diverse in size, form, and position. The Romans, too, followed this wise rule of making each function, or part of a building independent of a general uniformity, though each part may have been symmetrical. Thus the Palatine at Rome was composed of several distinct parts not comprehended under a mask of symmetrical design, and ancient Roman buildings of which we have knowledge were always planned on the principle of giving to each office its special form, height, roofing, and importance in the structure. Though the Greeks and Romans both regarded symmetry in the parts, they did not make it a rule with the mass. It will be more correct, we think, to call the symmetry of the Greek temple an axial symmetry—that of the Roman palace displaying a symmetry of the integral parts. The former is really a correspondence of halves—the latter uniformity in the detail. We may remark *en passant* that one writer on architectural design rather forcibly combats the idea of the symmetry observable in animals which have no uniformity of internal parts, and yet have a correspondence of halves—an argument which, if it is worth anything, refutes the above doctrine. While we fully admit that this quality is one of the highest in design, and is as much a mental as a visible beauty, we cannot accept the doctrine that a building, with a public hall on one side, and a set of offices or domestic apartments on the other, should have a symmetrical outer casing. At any rate it is certain that perfect symmetry of *ensemble* did not exist to the extent believed among the Romans, and that symmetry of detail or parts was rather an accommodation to the programme. Be it observed, however, this liberty was a very different thing to creating diversity and irregularity for the sake of picturesqueness—a fault reserved to the school of Gothicists, who have adopted a form rather than a principle of action.

M. le Duc complains of the manner in which the Academic routine of French architecture adheres to the formal symmetry. We may also say the same of many of our English followers, who adopt the other fault of diversity and accidental shapelessness. The *Therma* of Caracalla or Diocletian, the *Basilica Ulpiana*, and other buildings show us, too, how the Romans expressed their internal treatment. A vaulted or ceiled apartment was evident from the very design and plan—each had its own treatment. The stone vault and the timber roof were each the outgrowth of the structure which supported it. Again, we find the same relation in the middle ages—the ground plan determined the whole. There is nothing redundant, and from the foundations upwards the architect had a clear methodical conception. The growth of the Renaissance, as depicted by Viollet-le-Duc, was a wonderfully different thing from the copying of classical forms and façades of the present day. From the time the Dukes of Orleans patronised the new school in the beginning of the fifteenth century, throughout the whole period of the Renaissance, architecture

continued to be the outgrowth of the day. Thus, the *Château de Madrid*, designed for Francis I., appears to be a compromise between the Gothic and traditions of the middle ages and the wants of a Court that had broken away from the past. There is a semi-Gothic arrangement of the pavilions and features. Though M. le Comte Laborde attributes the design to Della Robbia, the well-known designer of *faience*, he yet acknowledges the master-mason, Pierre Gadier, though as a subordinate artist or workman. As Viollet-le-Duc says, the term "master-mason" was applied to architects down to a late date, and there is reason to believe Della Robbia merely assisted Gadier, and modelled the decorative sculpture. Even De Laborde himself confesses the important share in the design Pierre Gadier had; how he broke up the front of this *château*, 250ft. long, into three blocks by stair pavilions, which give points of rest to the eye, and thereby enhance the value of the intermediate arcades. These turrets were suggested by those of the baronial castle. It is certain, however, Italian models had little influence on the design of this building, and Le Duc challenges comparison with any Italian palace. The *Château de Madrid* was continued by De l'Orme, who employed Pierre Courtois, of Limoges, to finish the *faience* work. As a model of a primitive structure this *château* stands unrivalled. The central hall, with *dais* at one end, the apartments with their separate *boudoirs*, the five pavilion stair turrets, square externally and circular inside, rising from the lower story, and connecting the suites of rooms on each floor, and also the arcaded terraces or balconies, which form so unique a feature, present us with an arrangement perfect for the age in which the traditions of the feudal residence or castle still lingered. As a plan of a seigneurial *maison*, the design is justly pronounced perfect. The programme of the day was observed in (1st) a well-considered aspect, so that each side might get the sun's rays; (2nd) in the apartments being grouped round a centre hall; (3rd) in facility for communication and service; (4th) intercommunication and independence of apartments; (5th) great depth of building, with the coolness in summer and warmth in winter hence resulting; (6th) balconies so as to shelter the windows; (7th) a well-lighted and vaulted basement. Such was a *château* adapted to the brilliant and select gatherings of Francis I. While privacy was maintained each guest could retire at his ease; the outer porticoes gave a quiet promenade, that on the coolest or warmest side being selected as preferred, with ready access unobserved to the private apartments of every floor, as the stairs were accessible from the balconies. In the planning of the great and inner halls we find means provided of entering the latter without crossing the great hall; behind the great open fireplace in the inner hall is a passage to allow of persons passing without interfering with those in front of the fire, and other ingenious arrangements to meet the special wants of the day are observed.

Of a far more pretentious character was the *Château de Chambord*. Here we have a quadrangular plan, with a central court and circular angle towers. The hall is cruciform; in the centre is a flight of double winding stairs, giving access to each floor, and this hall and its surrounding apartments form a distinct square block within the quadrangular area of the outer buildings. *Château de la Muette* is another example of a quiet retreat, planned for Francis I.—a kind of hunting-box. Here, again, the plan conformed to the programme required. In this plan, which

is singularly original in conception, there is a hall with windows on three sides, two balconies, two fireplaces, two entrances into large angle apartments, forming pavilion-like masses, and also an entrance into a chapel. Two other apartments corresponded to the hall on the other side of a central axis, which also had the same angle rooms, and communications between these are by the great hall or exteriorly, by means of spiral stairs, one of which is placed at each angle. Thus on each floor there are two suites of apartments, consisting each of the common hall and three bed-chambers, with wardrobes and closets. This château consisted of five stories with two entresols; it was chiefly built of brick, and the centre portion consisted of buttresses and arches. Another plan illustrating the Classical influence, and in which the Academic plan is apparent, is De l'Orme's projected design for the Palais des Tuileries for Catherine de Medicis. Only a fragment of this vast palace was erected by Philibert de l'Orme, and his design has been so transformed that few traces exist. As Viollet-le-Duc says, "the plan resembles more an Asiatic palace than a French château—at least, the plan as left by Du Cerceau." The elevation of the portion erected on the garden side by De l'Orme is admirably proportioned, and displays the refinement of the author. As Le Duc observes of the garden portico of the Tuileries, there are "few novel ideas, even old ones, but a special character and a subtle and delicate reasoning." There is, at least, the stamp of the French artist, Classical though it be. The Ionic columns consisted of a fluted stone drum separated by thin bands of marble delicately chiselled.

Another illustration from Du Cerceau's collection, published in 1615, shows a Manor House, consisting of a great hall commanding the prospect, lighted on four sides, attached to four suites of apartments on the ground-floor, and two flights of stairs to another floor of the same kind. This Manor House is of the end of the sixteenth century, and is surrounded by a moat with trellised walk, parapets, and bastions. Each block is roofed separately with high pavilion roofs—a custom which gradually disappeared before the grandiose notion of including all the apartments under one uniform eave and roof. The Château de Chantilly is illustrated to mark a feature of some interest and value—viz., the plan of forming two stories in a composition of one order. This was, indeed, the last struggle against the adoption of the system of superposed orders, which ultimately prevailed. The Château de Charleval is a remarkable instance of the architect's endeavour to avoid the double order, and to employ what is called the "colossal order," certainly not a very logical or artistic treatment. It at least gave an appearance of external grandeur, and when confined to large buildings, as it was at first, it did not lack consistency; but towards the middle of the seventeenth century it became general. Louis XIV. seems to have greatly admired the single order as indicative of grandeur. From the ascendancy of the "colossal order," architecture gradually lost its independent principles, though even towards the end of Louis XIV.'s reign it "ended with dignity," and even down to the close of the last century Viollet-le-Duc declares buildings were designed and executed with something of the sound traditions of art. "No one can enter a saloon of Louis XV. without finding himself transported into the midst of the society of that epoch." In short, it is shown that the Renaissance was virtually a following of the traditions of Gothic art, in which the structure and the decoration were never entirely separated—the body and the dress are one and the same thing.

DATA USEFUL IN CONSTRUCTION.

WE lately reviewed a portion of Mr. D. Kinnear Clark's "Comprehensive Manual of Rules and Tables," recommending the work to all those engaged in the arts of construction as the most complete treatise of the kind published. We now select at random a few figures and data that are of almost daily requirement in building operations. So full and comprehensive are the tables of weights and measures that no one need be at a loss in finding anything within the scope of those terms. Concerning water we have various useful standards. Thus it may not be known by every one that at the standard temperature of 62° the weight of 1 cubic foot of pure water equals 62.355lb.; the coincidence of the figures may be useful to the memory. Where great accuracy is not required the hydraulician or constructor may take the weight at 62½lb. equal to 1.000°. Again, the weight of a gallon of water at the standard temperature is 10lb., and by a lately-repealed Act of Parliament the volume of one gallon was put at 277.274 cubic inches; 1 cubic foot of water equals 6.2355 gallons, or 6¼ gallons for practical purposes. It may be usefully borne in mind by the practitioner that the capacity of 1 gallon is equal to 1 square foot, nearly 2in. deep, or to 1 circular foot, 2½in. deep nearly; a given volume of water in cubic inches may be converted into gallons by multiplying it by .00036, and that a ton of water contains 224 gallons, and is equal to 35.90 cubic feet. Referring to the pressure of water, it is necessary to bear in mind that a column of water 2.3093ft. high exerts a pressure of 1lb. per square inch, and a pressure of one atmosphere, or 14.7lb., is exerted by a column of water 33.947ft. high, or 10.347 metres. Every foot of water in height presses on its base with a force of 0.433lb; this is an important fact to remember in designing embankments, quay walls, and other tidal works, as well as tanks, reservoirs, and cisterns; as the lateral pressure of water at any depth below the surface equals the weight of a corresponding column.

Many are probably doubtful as to the origin of our common measures. The grain of corn constitutes the basis of our lineal measures. Three grains of barleycorn, placed end to end, made an inch; the ell (ulna) was derived from the length of Henry I.'s arm, and answers to one yard, though the standard yard, as most of our readers know, is a square bar of gun-metal marked with holes 36in. from centres, regulated by a pendulum 39.1393in. long, vibrating seconds in a vacuum in the latitude of London. The various wire gauges are given, including the Birmingham, Lancashire, Sir Joseph Whitworth's, &c. Decimal equivalents of inches and fractional parts are exceedingly useful. We find little respecting builders' measurements, but the French metric standards are amply detailed. These standards are the metre, and the kilogramme, the metre being the common basis. It may be interesting to know that the French metric system has been adopted by the following States: Belgium, in 1801; Holland, in 1819; Greece, in 1836; Italy and Spain, in 1859; Portugal, in 1868; the German Empire, in 1872; Columbia, Venezuela, in 1872; Ecuador, Brazil, Peru, and Chili, 1860; the Argentine Confederation and Uruguay. Great Britain adopted it so far as to render contracts in the French system permissive; so also the United States in 1866 legalised it concurrently with the old system. Other countries have adopted decimal measures, and Russia awaits the example of countries with which her commercial relations are most intimate, especially England.

An approximate rule for converting metres into yards is to add 1.11th. For

converting them into inches multiply by 40. For practical purposes a metre may be taken as equal to 3ft. 3¼in. = 40in. nearly, being 1.64th part less. The measures adopted throughout British India are so important that we give them:—

3 Jow	1 Jow or jaub	= ¼in.
4 Ungulees	1 Ungulee	= ¼in.
3 Moots	1 Moot	= 3in.
2 Big'haths	1 Big'hath or span	= 9in.
2 Hath	1 Hath or cubit	= 18in.
2 Guz	1 Guz	= 1 yard.
1,000 Dandas	1 Danda or fathom	= 2 yards.
	1 Coss	= 2,000 yards, or 1,136¼ mile.
4 Coss	1 Yojan	= 4,545 miles.

The Government surveys adopt the following land measures:—

3 Guz	1 Guz	= 33 lineal inches.
9 Square guz	1 Baus or rod	= 8½ lineal feet.
400 Square rods	1 Square rod	= 68½ square feet.
	1 Beezah	= 3,025 square yards, or 625 acres.

At Madras the English foot and yard are used, and at Ceylon the weights and measures are all English.

An approximate rule for the strength of cast iron flanged beams is the following:— "To the sectional area of the lower flange add a fourth of the sectional area of the web, calculated on the total depth, both in inches; multiply the sum by the total depth in inches and by 2½, and divide product by the span in feet. The quotient is the breaking weight at middle in tons." This supposes a tensile strength of 7 tons. Some remarks on wrought iron flanged beams will be found of service. Beams can be rolled to lengths of 30ft., but the cost is less per ton when the length does not exceed 20ft. We here cull from an extensive table a few data that will be of value. Thus taking a span of 10ft., we find a rolled iron joist of 4in. deep, 3in. breadth of flanges, with a web of ¼in. and a flange of ¾in. thick, has a weight of 12lb. per lineal foot, has an ultimate strength in middle of 3.8 tons, and a safe permanent load of 25cwt. A beam 6in. deep with 5in. flanges ½in. thick, and a web of ⅞in. weighs 30lb. per foot, has an ultimate strength in middle of 15.1 tons, and a distributed safe load of 101cwt.; a beam 8in. deep, with 4in. flanges ½in. thick, and web ¾in., weighs 21lb. per foot, has an ultimate strength in middle of 15.4 tons, and a distributed safe load of 103 cwt.; while a beam 10in. with 4½in. flanges ¾in. thick, and a web of ¾in., weighs 36lb. per foot, has an ultimate strength of 34 tons, and a safe distributed load of 227 cwt. To find the strength and safe loads for beams of other spans, divide the weight given above or in the table by 10, and multiply quotient by given span. Mr. Clark furnishes the following approximate rules for the strength of solid wrought-iron joists of ordinary proportions:—"To the sectional area of one flange add one-fourth of the sectional area of web calculated on the total depth, both in inches; multiply the sum by the depth in inches and by 7, and divide by span in feet; quotient is breaking weight at middle in tons. Another rule is: Multiply breadth of joist by square of depth in inches, and by 0.6; divide product by span in feet; the quotient plus 1 is the breaking weight at middle. For hundred-weights substitute 12 for the multiplier 0.6 in the preceding rule; the quotient plus 20 is the breaking weight. The first rule is the most correct. A very full table of the crushing and tensile resistances of stones, brick, cement, &c., is given, from which we find that red bricks have a crushing strength of .358 tons per square inch; yellow-faced burnt, .643; gault pressed, 1.111; stock brick, 1.044; red Farehams, 2.500; brickwork in cement, .232 tons. Results published by different authorities vary so greatly in these matters that we have some hesitation in accepting the figures given, but the above are the most recently published, and as such we may regard them as having been verified.

FLIMSY CONSTRUCTIONS.

LAST week we noted a few recent failures in America, arising not so much from imperfect design as clumsy and defective workmanship. The modern contract system is undoubtedly at the root of this evil, and it behoves the architect or engineer to anticipate this vice of the age by giving such a margin of safety to his structures as will compensate for the inevitable tendency of the contractor to scamp. Doubtless it is a bad doctrine to hold that the cupidity of contractors should be neutralised by increasing the quantity of material—in fact, substituting mass for good workmanship—but even this is better than to depend for safety on the coherence of a few inches of brickwork, a weak pin, or the tensile strength of a slight tie-rod. We have lately recorded the failure of one or two bridges. The Ashtabula Bridge has been pronounced to be a “conglomeration of errors” and bad workmanship. The bracing has been proved to have been defective in both these respects, the points of connection of the bottom lateral bracing and the struts were faultily designed, the chords—upon which really depended the strength and stability of the structure—were actually strained by various forces, and the attachment of the braces tended rather to twist them into a zig-zag line than to preserve their rigidity and alignment. Then, again, we find from a recent discussion on the subject at the Annual Convention of the American Society of Engineers, that the attachments and joints were of the most flimsy kind, the transverse vertical braces were fitted by hooks into the angle blocks, and held in place by a small $\frac{3}{4}$ in. tap bolt; the main chords, which consisted of five lines of 6 in. I-beams placed side by side, were held together by two trumpery $\frac{3}{4}$ in. bolts in each panel, notwithstanding that the effective strength of such composite chords mainly depended on the frequent clamping of the five beams. The lugs to the main braces cast on the angle blocks did not fit properly, and the connections of the main braces with the counter braces were by 2 in. bolts that did not pass through. The bearings were equally defective; the chord bars had at one end a bearing on one edge only. As might have been expected, the examination of the wreckage has shown that in this instance failure took place by the buckling of the main braces, or top chords, which were so badly connected, and no evidence of derailment has been found. Again, in the case of the Bath-bridge accident, there can be no doubt the structure was too slight for its carrying capacity, and that sufficient margin of safety had not been given. The operation of time had been overlooked, and the original structure also tampered with. In many instances we have an inherent defect in design, or workmanship, increased by subsequent reparations or patchings. In a construction like a bridge the integrity of the structure is of the greatest importance. Unlike an ordinary building, a house for example, it admits of no tampering with its structural members—they must be replaced *in toto*, or not touched, and it is this principle that has been gravely overlooked in the reparation of our bridges. An attempt to repair a rib, or a chord, whether of timber or iron, must be attended with difficulty, if not danger; it is quite as difficult and as dangerous as the endeavour to replace an arch or keystone. In America theoretic nicety of design is too frequently purchased at the expense of solidity and massiveness, and the very slightest imperfection such as the buckling of a chord, the connection of a brace, a weak pin point, or an uneven bearing, is enough to destroy the value of the nicest theoretic calculations upon which the structure was designed. Let it be understood we

by no means undervalue theoretic design; on the contrary we should pronounce that work a failure which was based on mere rule of thumb or empiric knowledge, but we contend that after proportioning his members by theory the engineer or architect should add a considerable margin of strength to them, not by merely adding to their weight of material or substance, but by endeavouring to increase the areas of resistance with the least possible augmentation of dead weight. Thus there can be no doubt that if the chords of the Ashtabula bridge had been tubular, instead of a series of flanged beams inadequately tied to each other, the same, or even a less amount of iron would have sufficed. Mr. Squire Whipple, in the recent discussion, said that in his opinion this bridge owed its destruction to an excess of 6 in. I-beams in its compressive members. The fable of the old man, who broke the bundle of sticks one by one to enforce upon his sons the lesson of strength in union, and weakness in division, is a good illustration; and if half the material in the braces and chord had been used in the form of phoenix columns, or a hollow well-proportioned form, the result would have been otherwise. In this case, there was clearly too much metal in the upper chord, and not sufficient in the bracing; in fact, the braces, it has been shown, were so defectively tied or stiffened, that they virtually resembled struts or columns of 105 diameters in length. Although the design of the truss of this bridge (trapezoidal, filled with verticals and diagonals) was one of the best, theoretically, there was a defective apportionment of the material—certain practical conditions were overlooked, as that of lateral stiffness; the thrust members or braces were made longer than the tension members or verticals, and the floor-beams were placed between the supported points of the chord. All these errors show that in this instance both theory and workmanship were in fault. If the braces had been of two pieces braced between, as at Charing-cross railway viaduct, and if the upper chord had been a tube, we very much doubt whether such a frightful and fatal accident could have happened.

To take another case, the late Rockford Court-house, brick piers are carried up to a height of 30 ft., without the exercise of that due caution necessitated by the weighty superstructure which they had to carry. Here the contractor, if we are to believe the statements made, actually reduced the dimensions of the piers, without the architect's knowledge, and reduced their strength also by inferior workmanship. We desire to caution the young practitioner against the error of imagining that his areas of support in piers and columns, as shown on a plan, can be implicitly relied upon. Though their substance may be enough theoretically, he has to count against a dishonest contractor, or a scamping bricklayer or mason. A few badly burnt or soft bricks, a layer of poor mortar, a core of rubble, to say nothing of a bad foundation, may really diminish the strength of a pier or column of masonry 50 per cent. at the very least. Experience in building operations has shown us that the contractor's scamping is in the unseen portion of buildings, in the filling-up or backing of walls and piers, and just, in short, in those parts where the architect's eye would be least drawn to. It is quite true a brick pier may carry from a $\frac{1}{4}$ of a ton to 1 ton per square inch of section, but how much of the available area shown by the architect or his plan is utilised at such a pressure is the chief point to consider. The question is, whether the workmanship and material are in a fair proportion to the area of the parts, and to insure their being so is the duty of the supervisor of every building. For instance, an 18 in. pier in soft or friable brick will not

sustain more than 30 tons; but if built of hard well-burnt brick the same pier will sustain four times that amount. Architects are prone to err on the side of massiveness, without considering whether the solidity is fairly utilised, or whether it is so much material thrown away. A heavily-timbered roof may ultimately cause its own destruction. These considerations lead us to the importance of combining as far as practicable theoretic or scientific excellence with sound workmanship and material—that is to say, that some due proportion be observed between the theoretic breaking and actual load or strain; between the strength of the structure, calculated theoretically from the design, and the actual strength of its weakest part. As regards bridges, the American engineers are in favour of annual or biennial inspection, and the State legislatures are passing laws to provide for the inspection of railway and other bridges; and we find the loads for different spans specified. Thus, for spans of 15 to 20 ft., 5,000 lb. per lineal foot for each track is provided; bridges, with spans of from 30 to 40 ft., 3,700 lb.; from 40 to 50 ft., 3,300 lb., and so on by a diminishing scale of loads. We are of opinion that the inspectors should be independent; that they should be experts in bridge construction; and that the varying systems of construction should be considered. A factor of safety should be enforced, and this should be for the structure and not the mere material. It should be at least 4 to 6, and the limit of strain should not be above 10,000 lb. per square inch. As the strength of every structure is that of its weakest part, it is absolutely necessary that an inspection should include that of the minutest detail of each part under a running load. It is quite evident the fatal calamity at Bath would have been averted if it had been clearly seen that the margin of safety had considerably dwindled, or had been grossly over-estimated.

TEWKESBURY ABBEY.*

CONSPICUOUS among the earliest works of the great church-builders who rose up in England after the Norman Conquest are the three abbey churches of Gloucester, Pershore, and Tewkesbury. They were built in near neighbourhood, and were essentially of the same type—a type which had certain peculiarities that we find nowhere else. We may therefore safely assume that the same hand designed the three.

A monastery had existed here since the seventh century; in the latter part of the eleventh century it was a mere dependency of the Benedictine Abbey of Cranbourn. But at that period the establishment was removed from Cranbourn to Tewkesbury, and then an entirely new monastery required to be built, the conventual buildings of which were completed ready for habitation in 1102. The founder of the new order of things was Robert Fitz-Hamon, to whom his relative, William Rufus, had granted the Honour of Gloucester, which included the Lordship of Tewkesbury, and he and his descendants were the patrons of the abbey and the promoters of all the important works that were done here until shortly before the time when the monastery was dissolved in 1539. Fitz-Hamon died the death of a warrior in 1107, and his eldest daughter marrying Robert, the natural son of Henry I., he became Earl of Gloucester and patron of the abbey, and in his presence the church was consecrated with great state on the 20th November, 1123. Although he is said to have built a wooden spire covered with lead, it is probable that the great central tower, so much more ornate than the rest of the building, was not then built, but we may fairly infer from the existing structure the plan and general

* Read in the Abbey before the members of the Royal Archaeological Institute of Great Britain and Ireland, and of the Worcester Diocesan Architectural and Archaeological Society, by THOMAS BLASHILL, architect, August 14th, 1877.

design of the church as it stood in its stern grandeur on the consecration day.

The plan was no doubt that which was then common, consisting of a long nave with aisles and a transept, the choir (or more properly the presbytery) being very short, and ending in an apse. So much of the plan still exists, and at the east side of the south arm of the transept remains a semicircular chapel as was usual, the transept of Pershore still showing the like. A similar chapel opened out from the north transept, and we may reasonably conclude that the church terminated to the east with a Lady Chapel and two other small chapels that projected from the aisle which went round the apse. Another feature which we see here, and which is common in churches of the same date, is the carrying of the central tower absolutely, without any projection of the four great piers into the area of the church, so that nave, tower, and choir preserved one clear width throughout.

The great feature which distinguishes the three churches I have named is the immense height of the circular pillars of the nave, which are here 30ft. high, or 3ft. higher than the nave pillars at Gloucester. A very low and insignificant gallery runs over them, and above it were the original windows of the clerestory. In each church the pillars of the choir were low, and the aisle that ran round the choir were in two stories, a second arcade of low arches being imposed upon the lower arcade. This upper aisle, or triforium, was easily accessible by way of the staircases at the angles of the transepts. Owing to the all but total destruction of the nave at Pershore, we cannot make any detailed comparison with it; but comparing this church with that of Gloucester, there is here a much greater plainness and severity in all the leading features. But Tewkesbury is distinguished from all existing churches by the great arch which spans the entire width of the west front of the nave. It has been conjectured that this archway opened into a large vestibule, and that the true west wall of the nave was a few feet within it. It has also been supposed that a great western tower existed outside it, and that in fact it was an ordinary tower arch opening out from the west end of the nave. But it is clear from the masonry that is now exposed to view, that it was filled in with a wall which would have some arrangement of windows and probably a door. On each side of this arch the original design was to build a large tower, each tower standing over the end of one of the aisles. The walls must have been carried up as high as the aisle roofs, for portions of them still exist in those roofs, roughly broken off from the walls of the nave, and there also still exist the original corbels of the aisle roofs: but nothing more than the smaller turrets over the staircases appear to have been actually done. These turrets have been rather extensively repaired. I feel sure that the groups of conical finials at the top have been wholly rebuilt, the original design being now doubtful, but we know from old drawings that something of the same general outline existed there towards the end of the seventeenth century. The great central tower (which may be compared with that of St. Alban's, but not with the towers of Durham, which belong to the following century), is a very fine specimen of fully developed twelfth-century architecture. Rich arcades with windows are formed in it, which were visible from the floor of the church until the erection of the present vaulted ceiling. In the interior of the tower we can see these fine arcades, which are part of the original construction. Above them is the great mass of the tower, of different workmanship and built of different stone, which together with its design indicate a later period in the twelfth century for its construction. Originally the tower must have had four square angle pinnacles, which in the fourteenth century gave place to groups of light crocketed pinnacles with battlements between them. The pinnacles which now exist were built in 1600, the tops of the old crocketed pinnacles being replaced above them. The great north porch is of the twelfth century; it has a chamber over it accessible from the church, and which had a circular-headed window, which is now filled up with a figure of the Blessed Virgin

under a canopy. There are some slight remains of the monastic buildings of this period; they were burnt in 1178, and rebuilt, to be destroyed again, at least in part, and again rebuilt in the fifteenth century.

The church remained without material alteration from the time of Earl Robert for 100 years, during which time this Earl's son, William, and after him the husbands of two of his daughters, were successively Earls of Gloucester. One of these was Prince John, afterwards to be King. In 1221 Gilbert de Clare, Earl of Hertford, the son of William's daughter, Amice, succeeded to the Earldom of Gloucester, and the De Clares were patrons of the Abbey for 98 years, which period coincided with the best period of 13th century and early 14th century architecture. Of the very little work of the 13th century that remains in this county, some very fine specimens exist in this church. In 1237 Prior Sipton built, or re-built, the chapel of St. Nicholas, which is supposed to be the small apsidal chapel on the east of the north transept; but a much larger and more elaborate work was carried out at about the same time, at the end of the north transept. A handsome archway was opened through the north wall, giving access to a building resembling the nave of a small church, to the eastward of which was a chancel opening from it by a very graceful arch, divided by a central column and tracery. Great use was made of Purbeck marble in capitals, bases, and detached shafts; the windows must have had a very fine arrangement of columns and arches, and I think it is clear that the east end had a fine triplet of lancet windows. It has been thought that this was the chapel of St. Eustatius, built by Prior Henry de Bunhury, and dedicated in 1246; but it appears much more likely that a work of such size and beauty was built by the patrons of the Abbey for a much more important object. We know that at this time, somewhat early in the 14th century, it was common to attach Lady Chapels to the transepts of such churches as this on the side which was opposite to the monastic buildings. This was then the most convenient position; for where the nave was used as a parish church, as in this case, it gave the laity ready access to the shrine of the Virgin without interfering with the choir of the monks. In such a position in Bristol Cathedral is the building called the "Elder Lady Chapel," which is of a similar style to this. Here there was a chapel already existing in the angle of the choir and transept, and therefore this large chapel was built beyond the transept with a finer effect than I remember to have seen elsewhere. The "Annals of Tewkesbury" state that in 1239 the church was dedicated, "with the major altar in honour of the glorious Virgin Mary." I am inclined to think this refers not to the major altar of the church, but the major altar of the Virgin, the small Lady Chapel at the east end being still in use by the monks. I only throw out these suggestions for what they may be worth. The last male De Clare was killed at Bannockburn in 1314, and his sister having soon after married Hugh Despencer the younger, the favourite of Edward II., that family became the patrons of the Abbey until 1414, another period of about 100 years, which included nearly the whole duration of the 14th century style of architecture. It was during their time that the great alterations were made which changed the eastern portion of the building from the simple arrangement of the twelfth century to the most fully developed form which was ever adopted for the chancels of our great churches, and materially altered all other parts of the church in correspondence therewith. It has been pointed out by Sir Gilbert Scott that this work must have been done by the same architect who built the towers of Pershore Abbey and of Salisbury Cathedral. The greater part of it was certainly done close to the time when Tewkesbury was in the possession of Elizabeth, the widow of the third Hugh Despencer. She was a Montacute, the daughter of the Earl of Salisbury; we do not know whether this may have influenced the choice of the architect, or whether it is a mere coincidence. She held Tewkesbury from the death of Hugh, in 1349, to her own death, in 1359, and her second husband, Sir Guy de Brien, Lord Welwyn, who lived till 1390,

and was a benefactor of the Abbey, seems to have been closely concerned in the work. The mode in which this work was carried out deserves very careful attention.

The chapel attached to the end of the north transept had been built about 100 years; it was but slightly attached to the massive Norman walls, in which a settlement had taken place, perhaps sufficient to cause the ruin of the nave of the chapel, which either fell or was taken down, and a strong buttress placed against the transept; but the whole building was exceedingly light and fragile. The projecting chancel was preserved, a fine flying buttress and other strong buttresses being added to it; new windows were put in, and the vaulting reconstructed, new ridge ribs being added, the bosses of which now bear the arms of De Clare and Despencer, indicating probably that it is the work of Hugh Despencer, the husband of Isabelle De Clare. A wide archway was formed in its south wall, and the existing chapel in that side was similarly joined to the north aisle of the choir. Even before this time the need of additional chapels must have been felt, for the monastery, instead of providing a separate parish church for the people, as was usual with the large Benedictine houses, had admitted the people into the nave, reserving for the monks the choir, the tower space, and the eastern end of the nave; thus two distinct classes of persons, who must be kept separate, had to be provided for, besides the lay brethren and guests of the monastery. To meet these requirements they now built a new aisle round the choir, and in place of the three small chapels of the old aisle they built six chapels and a vestry, the chapels radiating from the apse in the form called a chevette. This was not copied in any way from the thirteenth-century chevette of Westminster Abbey; it was an idea that must have been perfectly familiar to all the leading people in England, for our long possession of French territory and the Continental wars in which the patrons of the Abbey were engaged would cause many such examples to be seen by them. The central or easternmost of the three chapels would be the new Lady Chapel, accessible at proper times to the people, a screen being fixed between the great piers to enclose the choir of the monks.

The most remarkable thing about this is that the new aisle and chapels were built before they thought of building the new arches and upper part of the choir. This assertion, which I have before made, has been disputed, but I think it is proved by an examination of the work. The new aisle was kept low in order that its vaulting should rest against the old twelfth century choir just above the arches of the lower arcade, and below the openings into the upper arcade or triforium. This could never have been done deliberately if it had been intended to build the present choir, for not only are the aisle and chapels kept much lower than they need be (too low indeed for good proportion), but the spandrels of the vaulting were left to show below the new pointed arches of the choir. To get over this disfigurement they filled in the spandrels with diaper patterns, and provided new vaulting ribs to carry them. On looking at the work from the side next the aisle, we may see the parts of the old Norman capitals which were left to carry the vaulting, and notice how the old piers were raised on the side next the choir, in order to carry the new arches, the whole being certainly a clever piece of contrivance to meet an emergency, but not the deliberate design of men who saw from the first to what their work would extend. The new choir had no triforium, or second story, to the aisle, its great windows extending the whole height from the arches, which carry it, to the vaulted ceiling; therefore the large arches which had opened from the second story of the old aisles into the transept were filled in with windows, which are of very elegant design.

The choir being built, vaulted ceilings were put to the rest of the church. Those of the transepts resemble that of the choir. The splendid vaulting of the nave, which bears on its bosses exquisite carvings representing the history of our Lord, seems to have followed. There is on a boss of one of the aisles a shield bearing the Despenser arms. The tower was

now filled in with a ceiling that bears the arms of Despenser, Sir Guy de Brien, and Montacute, also a curious shield, which bears Montacute on the dexter side with Sir Guy de Brien on the sinister. Many windows were at the same time put in all parts of the Abbey, all being of late 14th-century character. The design of the chapels round the choir included a new Lady Chapel, which would occupy the central or easternmost place. There is a tradition that it was 100ft. in length, and it must have been large, lofty, and of very elegant design. The arch that opened to it from the choir aisle exists, and indications of an open screen of stone that was added to it very much after the manner of the screen of the Lady Chapel at Gloucester, have lately been exposed. We shall be able to judge of the lofty proportions of the chapel from the private grounds at the east end of the church, and through the kindness of Mr. Brown, its foundation has been exposed to view. Doubts have been expressed as to whether it was ever completed, but it is clear that the windows were fitted with iron work for glazing, and that whenever it was destroyed, pains were taken to make good the broken masonry against the church with the greatest neatness and finish.

With the completion of the fabric of the church commenced the series of minor constructions, consisting of elaborate tombs and chantry chapels for which Tewkesbury is celebrated. There is an early 13th-century tomb in the south aisle to Abbot Alan, who died in 1202; and there are, besides, some other noticeable monuments of a minor character. The first of the remarkable series now commenced is at the back of the sedilia, to the right of the high altar. This is said to be the tomb of Hugh Despencer the younger, the favourite of Edward II., who was hanged at Hereford a few years before the new chancel was built, but there is no proof of this, though it is on record that he was buried on this spot. In the corresponding position to the north of the high altar is the tomb of his son, Hugh Despencer "the Third" (but the second of the Tewkesbury Despensers) and his widow, in whose time the choir was built, and opposite to it, at the entrance of the north chapel of the chevette, is a similar monument to this lady's second husband, Sir Guy de Brien. Then we have on the north of the choir a chantry chapel built in 1397 by Abbot Parker, over the spot where he supposed the body of Robert Fitz-Hamon, the founder of the church, then lay. Opposite to this is a chantry, called by some the "Trinity Chapel," a painting of the Trinity being still to be seen in it. It was built to commemorate Edward, the nephew of this last Hugh Despencer, whose kneeling figure is under a canopy on the top of it. The upper part of the chapel is later than the date of his death in 1375, and seems to have been substituted for a former structure, the lower stage being of different and earlier character. The most elaborate of these chantries is that built by Isabel, the heiress of the Despensers, to the memory of her first husband, Richard Beauchamp, Earl of Worcester and Abergavenny. It is called "The Warwick Chantry." Why this should be is not clear, for it was completed before the foundress married her second husband, Richard Beauchamp, a great, though not the greatest, Earl of Warwick. It is really the Beauchamp chantry, and is one of the most splendid specimens of that class of structure.

The last work of great importance that was done to the Abbey was the rebuilding of the cloisters in the style of the 15th century. Enough of this work remains to show that it was of the richest character, resembling that of the cloisters at Gloucester, and covered with fan vaulting. The doorway which gave access to the church seems to have been inserted at a later date, and is of magnificent design.

Of the monastic buildings but little remains, though the gate house, the abbot's lodging, and some few buildings were retained for various uses. But overshadowing them all in interest, and growing day by day in beauty, is the church, to which the noblest names in English history are linked by durable memorials. Let us hope that neither names nor funds will fail it now when it is being restored to a state in some measure worthy of its ancient beauty and grandeur!

THE ARCHITECTURAL ASSOCIATION IN WARWICKSHIRE.

DURING last week the members of the Architectural Association have held their eighth annual gathering at Warwick. Monday week was devoted to the town, and at eleven o'clock, according to previous arrangement, Mr. J. Tom Burgess, F.S.A., the Rev. C. Newcomb, Mr. F. Moore, and others met the party at St. Mary's Church, which was thrown open for the occasion. Mr. Burgess said he was placed in a somewhat difficult position, because he had to speak to a body who had a special object in view, and the Church of St. Mary's, Warwick, was somewhat of an anomaly in architecture. To clear up any bewildering doubts that might arise on entering the nave, he would reverse the usual order of description, and, like an auctioneer, commence at the lowest and pass on to the highest date of the church. They must not forget that there had been a fire in Warwick, for on September, 5, 1694, the greater portion of the town was consumed by fire, which broke out in Britain's-lane, a little south of Leicester's Hospital, and was fanned by a strong south-west wind until it reached the Old Three Tuns, in Jury-street, whose strong stone walls resisted the flames. The wind then seemed to have turned, for the flames then took a direction towards the north-west. The affrighted inhabitants brought their goods to the church then standing, and with the goods sufficient fire to consume the chapel, except the choir, Lady's Chapel, and chapter-house. The total loss was estimated at £90,000. The Crown appointed commissioners to superintend the rebuilding of the church, for which Sir Christopher Wren appears to have made designs, but the work was ultimately given to Sir William Wilson, a gentleman, who, though his tomb at Sutton Coldfield states him to have been a good freemason, certainly had most incongruous ideas of architecture, for though the stately tower and general proportions were worthy of all praise, a worse mixture of Classic and Gothic ideas could not well be conceived. The nave and tower of the church were finished in 1701, at a cost of £4,874 9s. 5d. Various little details of some interest were pointed out, particularly the section of the piers, which were similar to many fifteenth-century churches in the Midlands, and the substitution of the Pagan urn for the Christian cross in the parapets over the horse-collar tracery of the aisle windows. Proceeding to the choir, Mr. Burgess pointed out that though they had a date, 1392, as the period of the building of the choir by the second Thomas de Beauchamp, Earl of Warwick, the east window appeared half a century later, and might possibly have been altered when the Lady Chapel was built. If not, it was one of the earliest examples of the kind in England. The open ribs of the roof were generally much admired. Originally, they were of the stone of the neighbourhood, but when the restoration took place the decayed ones were replaced by wooden ribs sanded over. The roof had been partially destroyed by the great fire, and the melted lead had injured the fine panelled work, which had been touched up with cement. The sedilia, piscina, and the hagioscope from the chantry chapel were duly pointed out, as well as the details of the tomb of the founder, the figures round which, as Mr. Burgess pointed out, were excellent studies of the costume of the fourteenth century. To those curious in the armed panoply of their forefathers, he mentioned that this church and Charlecote, which they would visit the following day, contained effigies clothed in every variety of plate armour, whilst the rich stores at the castle gave some earlier examples and many variations of fashion, details, and manipulation. The party then proceeded to the vestry and lobby, remarking the fifteenth-century screen which divided them, and the groining of the roof. The chapter-house, now filled with the Jacobean tomb of Fulke Greville, was visited; and, in answer to the vicar, Mr. Burgess said that though there were nine seats, there were a dean and five prebendaries, and the incumbents of some of the neighbouring churches had a voice in the chapter. He could not tell the exact number of the chapter. The crypt and the exterior on the northern side

were next visited. The Norman work of Earl Roger (circa 1123) was pointed out, together with the tumbrel of the ducking-stool.

In the Chapel of our Lady Mr. Burgess gave a brief description of the building, which was erected in accordance with the will of Richard Beauchamp, Earl of Warwick, who died at Rouen, in 1439, and whose body was brought to Warwick, and laid in the church until the chapel was finished. They had full illustrated details of the ceremony. The roll of expenses still preserved, the full details of the cost of the latter work, of the figures in the housings of the tomb, the richness of the armorial bearings, executed in silver and gold, together with the brass hearse and effigy, were dilated on, together with the peculiarity of the armour. The tombs of Ambrose Dudley, the "good" Earl of Warwick; that of Robert Dudley, Earl of Leicester, together with Lettice Knollys, his wife, and the "noble imp," their son, were noticed, together with the singular gift of Lady Levison Gower, of £50, to keep the chapel in repair in honour of "her grandfather." The Chantry Chapel, with its fan tracery, its peculiar lobby, together with the small chapel generally known as "the confessional," was the subject of much comment—Mr. Burgess maintaining that confession boxes were unknown in the inventories of the churches of England prior to the Reformation, though it appeared that the low side "windows" were used for such purposes. The party then proceeded to sketch the interesting details, whilst a few accompanied Mr. Burgess to inspect the brasses of the Okens and Beauchamps, the entrance to the Beauchamp Chapel, executed by Samuel Dunckley, a Warwick mason, in 1704; and the plaster altar-piece, designed by Collins, erected in 1735.

At four o'clock the entire party met at the Castle, when Mr. Burgess again acted as guide, giving a brief historical account of the castle and the ascertained dates of every portion of the edifice visible. Towers, dungeons, mound, and out-works were visited, and Mr. Hill, the house-steward, showed the state-rooms, armoury and crypt, Mr. Burgess pointing out the peculiarities of the armour and their historic associations, as well as the effigy in the chapel. After a long investigation the party dined together at the Warwick Arms, under the presidency of Mr. Paice.

On Tuesday the Association visited Stratford-on-Avon by way of Snitterfield, where the carved work drew forth many tokens of admiration, and many "bits" were eagerly sketched. Then, by way of Ingon Hall, to Stratford, where, at Holy Trinity Church, Dr. Collis gave a very interesting and exhaustive account of the architecture of the building. After luncheon at the Shakespeare, the party went to the Chapel of the Holy Cross, where Mr. J. Tom Burgess gave a description of the architecture, both of the exterior and the interior; a history of the frescoes, now obliterated, which were on the walls and over the chancel, representing the Last Judgment and the punishment for committing the seven deadly sins. The Grammar School was next visited. Here Mr. Burgess gave an outline of the ancient Guildhall, where the justices formerly sat—in fact, to the beginning of the present century. He also described the ancient chamber where the Town Council, until very recently, carried on their deliberations, the rooms in which tradition had it that Shakespeare acquired his "little Latin and less Greek," and where, in all probability, he saw his first play. From hence to Hanley-street, a party detached themselves to sketch the "glover's house" in High-street, whilst others stopped to look at some quaint-timbered houses between Henley-street and Wood-street. Subsequently, all met at the birthplace of the poet, where Mr. Burgess gave a history of the whole building, its original plan in the dramatist's day, the purposes to which it has been applied, and the alterations which had been made. He described the portrait picture of the poet, its discovery, treatment, mode of restoration, and its similitude to the bust in church. The documents, records, and relics in the museum were minutely detailed, together with the curious inventory of the goods of Rookwood, one of the Gunpowder Plot conspirators, who resided for a time at Clopton. Mr. Burgess took the party to some open-timbered houses

existing in Rother-street, at the rear of "The Firs," and stated that they were the only specimens in the county of that peculiar style of building. The party departed at four o'clock from the Shakespeare Hotel, taking en route the site of the New Theatre on their road, that they might see the foundations and the satisfactory progress made with the building; thence by Tiddington and Alvestou to Charlecote Park and mansion of the Lucys, which was most courteously thrown open for inspection.

After many thanks the party accompanied the Rev. Mr. Granville, Vicar of Charlecote, to visit the comparatively new parish church in the park, designed by John Gibson, and inspected the monuments of the Lucy family, particularly the exquisitely-executed effigy of Sir Thomas and Lady Lucy, of the Cavalier period. The party then divided; a portion went to inspect the garden front of the hall, and the others to see the imposing Church of Hampton Lucy, in company with Mr. Rickman, the first designer of the church. This structure, which is a fine monument of the late Rev. John Lucy, is imposing; for, though the greater knowledge of Gothic details we now possess enables many defects to be pointed out, the church is a fine one. The work of Sir Gilbert Scott, at a later period, scarcely harmonises with the ideas of Mr. Rickman, but as a whole the church was pronounced satisfactory. The party united at Charlecote, and, after a pleasant drive, reached the headquarters in time for supper.

On Wednesday the party visited Coventry by train. The morning was spent in inspecting the churches of the city, St. Michael's and the Holy Trinity, many of the members making sketches of various interesting architectural features which are to be observed. At both churches Mr. Fowler (of Louth) made explanatory remarks, pointing out the principal characteristics of the edifices, and those most worthy of the attention of the architectural student. At 1.30 the party sat down to luncheon at the Castle Hotel. The party then proceeded to St. John's Church, which, with the hospital adjoining, was inspected. The old timber houses in Well-street and the Free Grammar School were next visited. St. Mary's Hall and its treasures in the muniment-room came in for examination, and the visit terminated with a visit to Ford's Hospital, the visitors returning to Warwick by the half-past 6 train.

On Thursday the party left by break and omnibus to Wroxall, and inspected the conventual church there, and the site of the abbey, founded by Hugh de Hatton. Some of the features of this building, which have been excellently restored, were much admired. By the courtesy of Mrs. Dugdale, the pictures were seen and admired. This visit, in consequence of the connection of Sir Christopher Wren with the spot, was peculiarly interesting. At Bedlam's End, the old trees (patriarchs of the Forest of Arden) were noticed on the way to Knowle, where the sketchers had a rich treat in the church, hall, and in the many half-timbered houses of the place. The rood screen in the church, and the many details, though of a late period, were highly interesting. Half-an-hour was soon exhausted, and thence through pleasant green lanes, by rippling brooks and shady groves, to Temple Balsall, the old preceptory of the Knight Templars, Mr. Fowler pointing out the architectural features. The old preceptory was visited, after which the party left for Kenilworth, which they reached at 3.20 p.m. Here Mr. J. Tom Burgess again took charge, and conducted them over the ruins. The outworks, brays, and the chimney-pieces were visited, and then the party proceeded to the church, where the Norman west door and the corbels of the north transept attracted the sketching party. The communion plate, given by Dame Duchess Dudley, was exhibited, and the party then proceeded by Leek Wootton to Guy's Cliff.

On Friday the party went to Whitnash, and inspected the Church of St. Margaret's, and the old half-timbered Manor House, inhabited by Mr. Palmer. From thence to Tachbrooke, not forgetting the old chapel at Tachbrooke Mallory. Here again the gabled panelled houses attracted attention, as well as the simple piers of the nave of St. Chad's Church, its

twelfth-century north doorway and other early features. From Tachbrooke to Chesterton the Fosse-road was crossed, but here the work of Inigo Jones in the two mills, the bridge, and the entrance to the church were noted and sketched. At Harbury the timbered houses and the old school of the Wagstaffs were the principal objects of attraction. Southam, with its quaint houses and fine church, afforded a fine theme for Mr. Fowler, and excellent subjects for the pencil. Stoneythorpe was visited on the return journey, and in the evening, at the final dinner, Mr. J. Tom Burgess exhibited some of his water-colour drawings of Warwickshire houses, including the Rollwright Stones and Baddesley Clinton, together with other architectural features of the county. The members accorded him by acclamation a cordial vote of thanks, and expressed, through their president, the great gratification they had experienced during the visit from the beauty of the scenery, the interesting objects visited, and the graphic details and historic notes which had been given them by Mr. Burgess and others.

On Saturday some of the domestic buildings, the College, St. John's, and Leicester's Hospital, were visited.

ART FURNITURE.*

WE have before us a rather choice collection of designs for domestic furniture and decoration in the shape of a catalogue issued by Mr. William Watt, the well-known art-furniture manufacturer, of Grafton-street, Gower-street, W.C., and published by Mr. B. T. Batsford, of High Holborn. The designs are by E. W. Godwin and other artists, and display a decided taste for the truthful and simple in workmanship. In going over the twenty plates that have been photo-lithographed in a good style we come across one or two that have already appeared in the pages of the BUILDING NEWS. We note especially plate of an interior of a dining-room in the Old English style, which we published November 17th, 1876, and which may be taken as characteristic of many of the designs given. Every kind of furniture suitable for the hall, to the drawing-room, and to the church choir, is illustrated, from the simplest Old English to the Queen Anne and Anglo-Japanese style. The selection includes examples for every room in the house. Thus we have the hall-chairs and hat-stand; the buffet, couch, and chairs for the parlour; the sideboard and hanging bookcase for the dining-room; the cabinets, pianos, sofas, and ceiling and wall decorations of the drawing-room; the library and bedroom suites, from which selection the most captious taste may be satisfied. The designs for what is called "economic furniture" are appropriate and simple. The Japanese furniture is particularly light, open, and elegant; thus we see a useful writing table, wing cabinet, and escriptoire (plate 8), and a very pleasing sofa treatment, well adapted for a drawing-room; but we do not like so well the mantel-piece in the "student's furniture" (plate 4), which is rather too fanciful an adaptation of Japanese to our minds. The mantel-piece in plate 6 is far more English and sensible-looking, and adapted for a display of china. There is, we think, a danger in seeking to introduce the forms of Japanese to English wants, and a forced style is to be reprehended. The cabinet in the Queen Anne style (plate 12) is exceedingly good, and we find the sensible plan of raising the lower cupboard on high legs is resorted to in most of the furniture illustrated, so that the air may freely circulate underneath, and the housemaid's brush be brought into requisition. The fault of most modern, and indeed old, furniture is that there is little room for the brush, and the circulation of air is impeded. Mr. Watt has primarily studied this essential, and has given his furniture a light and wooden appearance, and one we cannot mistake for any other material. The buffets shown are generally light and simple-framed on the Japanese principle of not producing more solidity in the supports than

actually required. We may note the buffets on plates 4, 5, 6; the library furniture, plate 11, in a semi-Renaissance taste; the bedroom furniture, plate 13; and the drawing-room, plate 14, as containing suggestions. Ceiling decoration is illustrated, though we scarcely like the designs shown. The author's hints which preface the catalogue are suggestive and to the point. The importance of good light and plenty of fresh air is insisted on; and speaking of the dining-room the author protests wisely against the fashion of filling that apartment with heavy and dark sideboards and chairs, and suggests for all rooms the cleanly custom of having polished oak floors, or at least a margin of parquet, about 2ft. of it, round the walls. The stove should have as little iron as possible, and should be chiefly made of tiles or terra cotta; the walls should have a dado, and the paperhangings should get lighter towards the ceiling, which should be decorated in raised plaster work, paintings, or paper patterns. As regards the drawing-room, it is hinted that there should not be a strongly-marked contrast between the walls and furniture; and Indian matting, warmed up by a few Persian or Indian rugs, is recommended. For bedrooms, polished floors, and Hungarian or American ash furniture are to be preferred, and all furniture should be well clear of the floor, and flat-topped articles should be kept low enough for dusting. We recommend the furnisher of a new house to consult Mr. Watt's suggestive guide.

MOCCAS CHURCH.*

MOCCAS disputes with the banks of the Gwain, near Fishguard, the honour of being the birthplace of St. Dyffrys, or Dubitius, who lived about the year 470, began by being bishop of Llandaff, and afterwards Archbishop of Caerleon—the greatest representative of that ancient British church, which some have supposed was founded by St. Paul. The chronicler in the "Liber Llandavensis" describes Dubitius as dwelling for some time in a corner of the island of Eucidil, his mother's name, at Moeshæos, so called because an angel of the Lord appeared to him, and bade him build an oratory to the Holy Trinity, where a white sow was lying with her pigs. As it seems to me, a more suitable interpretation of the name than this convenient monkish legend would lie in the fact that the neighbourhood of Moccas is peculiarly favourable to the growth of the oak, and, therefore, to the feeding of large herds of swine—moch, in Welsh, signifying a pig, and rhos a large uncultivated space or moor. That which would seem to fix the dwelling place of Dubitius on the banks of the Wye, rather than on the banks of the Gwain, is the fact that four churches in Herefordshire are dedicated to him, and none in either Pembrokeshire, Monmouthshire, or Breconshire. As regards the date of the building of the present church of Moccas we have no record, and as the "Liber Llandavensis" is not considered trustworthy, any hints that might be gleaned from it are hardly worth explaining as far as fixing a date is concerned. I should rather prefer to leave the determining of its date in the hands of those who are able to form a judgment from the character of its architecture. You will find in the neighbouring church of Bredwardine traces of very early work, and an interesting Norman doorway. The original church of Bredwardine may have been built at nearly the same period as Moccas—the small round-headed tympana at the west end on its north and south walls would seem to be early; its basilical form and proportions have also been considered to point it out as Early Norman. At the time of the Domesday survey Moccas (spelt Moches) appears to have been divided between St. Guthlac's Priory (its site now occupied by St. Peter's Church, Hereford) and Nigel, the physician. Many explanations have been given of the Norman tympana; and De Caumont, who enters at some length into the question of sculptured tympana, remarks that they commonly manifest an Eastern origin. A tree of life or law in the centre, and monsters of various kinds on either side. There

* Art Furniture, from Designs by E. W. GODWIN, F.S.A., and others, with Hints and Suggestions by WILLIAM WATT, Art Furniture Warehouse, 21, Grafton-street, Gower-street. London: B. T. Batsford, High Holborn.

* A paper read in the parish church of Moccas, Herefordshire, before the Royal Archaeological Institute, by the Rev. Sir GEORGE CORNEWALL, Bart., on August 15th, 1877.

appears to be this tree of life in the tympanum over the south door, partly altered into a cross, to which human beings are holding when exposed to the attacks of the beasts. Mr. Bonnewell, who described it in this manner, was unwilling to extract any further allegorical meaning from this strange piece of sculpture. The north door, the door of the Evil Spirit, is also adorned with a tympanum, which is supposed to represent the Evil Spirit in the flames. Others have recognised Leviathan in the waters, or the wild boar rooting up the tree, but the first interpretation seems the true one, except that the tail of the beast terminates in what appears to be a crozier. The inserted Decorated windows contain fine canopies of stained glass, in which are represented the arms of de Fresne or De Frascino, Lords of Moccas. I discovered some years ago the site of the castle in which no doubt they dwelt. The remains of the moat are clearly traced, as also the causeway leading to it across the marsh. There is also an old tradition in the valley that the effigy in the church was that of a man who lived in the Meres, the site of the castle. It seems not unlikely that the effigy in the church was the same person who inserted the Decorated windows, and if it can be discovered to whom the arms in the window belonged it may be possible by this means to identify the knight whose effigy is in the chancel. The effigy is remarkable as regards armour, on which point I will leave it to Mr. Hartshorne to inform us. All I will add is that we have notices of three De Fresnes—Hugh de Fresne, who obtained a licence to erect battlements at Moccas in 1294; Walter de Fresne, member for the county of Hereford in 1307-8-9-10; Sir Richard de Fresne, 1375, after whose death the property was divided between his three sisters. I have also an account of the arms and pedigree of the De Fresnes, which Mr. Bayley has compiled, which I shall be glad to show to any one who is interested in the matter. I once met a Mr. Ashe, who claimed to be descended from the De Fresnes, and promised to send me his pedigree, but he never did so. The church was repaired in the beginning of the century by Mr. Westmacott. At that time the south window of the apse was like an ordinary cottage window, as I can show you by a drawing. He probably added the fireplace and chimney, and may have rebuilt the bell-cote. The church before it was recently restored by Sir Gilbert Scott was aisled, a semi-domical lath-and-plaster ceiling in the apse, and the effigy was then placed in the corner of the chancel. The chancel and the apse were both raised, and the windows of the chancel, which had been crushed and annihilated by the lowering of the walls, were restored according to their original design, there being little difficulty from the tracery which remained in determining the original design. The old glass was also restored. About half of it is new. There was great difficulty in procuring the travertine stone for raising the walls. About three waggon-loads were obtained from a wood of mine where this peculiar stone may still be seen in process of formation, and the remainder, through the kindness of Sir Thomas Winnington, who has a large block of it on his property. It is precisely the same stone as that of which the temples of Paestum are built. I have also seen it in process of formation at Tivoli and Terni. It is formed by a deposit of lime. As the water, strongly impregnated with lime, trickles over the roots and moss, the lime is deposited upon them, and hardens by exposure to the air. The chancel arches were terribly cracked, and had to be taken down and rebuilt. The porch was raised, and details imitated from the porch of Trevarton, about six miles off. Before the restoration the west wall was plastered up to a certain height, evidently for the purpose of a five-court. A very early sepulchral stone was discovered when digging round the church, which remains in the place where it was found. I cannot help pointing out, in conclusion, the admirable manner in which the interior fittings, chancel, stalls, &c., have stood since the work was completed. Thoroughly well seasoned oak is difficult to find, and it is to the credit of Messrs. Franklin, of Deddington, who executed the work, that I should point out to intending

restorers that it is possible to have work of this kind executed in a satisfactory manner. You will see that my object has not been to read an elaborate paper, but merely by a few rough notes to set before you the interesting features of this church. If I have succeeded so far, I shall have attained my object.

MYCENÆ AND ITS EARLY OCCUPANTS.*

IT was explained in this paper that the usual custom adopted by travellers and historians of describing ancient towns, as those of Mycenæ, Argos, Nauplia, &c., by the walls and other features peculiar to each, was not sufficiently comprehensive to convey an idea of the condition of society and military power in ancient times. They were seldom or never referred to by recent historians as parts of a kingdom, but rather as separate kingdoms, and their relationship to each other, except in cases of alliance or hostility, very seldom hinted at, and yet this was so partial a way of viewing the matter that it conveyed but a small amount of knowledge of those ancient times to which the Greek poets, as Homer, Æschylus, and others referred, and which poets were performed the first historians of those epochs.

These historians, however, if faithfully examined, would be found to deal with the question not only on a broader base, but one which was also a more faithful picture of facts. Thus Agamemnon was king of Argos as well as Mycenæ, and his kingdom would be found to have extended not only over those cities, but also to a great part of Corinth; while Menelaus, his brother, governed a large portion of territory in the Peloponnesus. The object of drawing attention to these points was to account for the number of minor Cyclopean works which were to be found on a careful inspection around the Argolic district, and which could hardly be accounted for on other grounds than by supposing they were used as outworks or garrison towns by the House of Atreus. Too small in themselves to be independent fortresses, they showed that even the larger ones were not independent either, and a military organisation and governmental rule were thus shown to have existed among a people referred to as a barbarous people, whose works and actions could only be explained by referring them to the mythological Cyclops. The particular features of some of these outworks were very peculiar, and the pyramid was a favourite form of those most remote from the centre of government. These pyramids the author had found east and west of the Argolic plain, at the extreme boundary of the Parthenium mountain, and as far almost as Epidaurus, while between them and the great fortresses bearing classic names was many an unnamed and unnoticed Cyclopean structure of considerably larger dimensions than the pyramids, yet bearing no comparison with the larger cities. These garrison forts, as he should venture to call them, were placed in most commanding positions, and evidently guarded the passes to the great Argolic plain. The discoveries made by Dr. Schliemann would be soon under their notice in his forthcoming work; he should, therefore, forbear touching upon them, as it was ground that that great investigator was exclusively entitled to tread first, whoever might subsequently support his theories, or enter the lists with him antagonistically. But having seen a very large portion of the articles themselves at Athens, having carefully examined the field of the operations at Mycenæ, and made a close comparison between Dr. Schliemann's labours at that place as well as Troy, he might, at least, add his testimony to that of others as to the great historical value and interest of the find and the enormous age of the treasure, exhibited more prominently in the condition of the articles of silver. There was a great deal yet to be learned of the Cyclopean cities of Greece, Asia Minor, and Italy, and it was remarkable that in the Trojan district a Cyclopean city of greater size and of the highest antiquity had attracted little or no notice in

* Abstract of a paper read by Dr. Phéné before the British Association on the 21st inst.

either ancient or modern times, that of Chigri, although many points about it answered the description of the locality of the Trojan city. In visiting the Island of Samothrace, as to the ascent of which, he believed, he was the only Englishman, at least of modern times, by whom it had been accomplished, he found a Cyclopean city larger than any he had seen on the mainland of Greece. The position of this large city of which we had neither record nor history, in an island most difficult of access, and having neither harbour nor anchorage, awoke questions of thrilling interest, especially as it was on the island on which the darkest rites of mystery, those of the Cabiri, were practised. With our present limited knowledge it was difficult to identify exactly the people who constructed these works, but that they came from the mainland, westward, into Greece, there was a general opinion; if so, Samothrace would probably have been occupied before the Peloponnesus, and this city would be a good deal older than Tiryns or Mycenæ.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BRIGHTON.—A discovery has been made at Preston, the northern suburb of Brighton, of the remains of a Roman villa. These were brought to light during the progress of excavations for building purposes, and were found at a depth of between two and three feet from the surface. They consist principally of a quantity of mosaic pavement, several large portions of which have been preserved intact, many fragments of pottery, of good workmanship, and a number of bronze and copper coins not yet classified. A small vase of reddish colour was found unbroken. The excavations are being proceeded with very carefully, and as they are not finished the area occupied by the place is not yet determined. The foundations of the walls already laid bare show that it was of considerable extent; the walls themselves, which are composed of flints and mortar, are painted in various colours, which have been preserved in all their brightness. Some months ago, whilst similar works were going on within about 50 yards of the site in question, a bronze coin, circa A.D. 160, was picked up, and it is hoped that, as the present works proceed, further relics will be unearthed. The site is within a mile or two of a well-known Roman fortified place (Hollingbury Camp), one of the circle of camps formed to guard the harbour of Portus Adurni, now known as Aldrington. Remains of a less extensive character, including cinerary urns, eosus, &c., have previously been found in the district.

CHIPS.

The Duke of Buccleuch has just had completed a series of works for the protection from further decay of the picturesque ruins of Piel Castle, which occupy part of a small island at the entrance of Barrow-in-Furness Harbour. The main circular staircase to the ramparts has been reconstructed, and so much of the battlements replaced as to give the visitor an idea of what the castle originally was.

The Local Board of Health for Willesden, N.W., has referred to a special committee to consider and report as to whether it is desirable or otherwise to take steps for the erection of permanent offices for the Board.

The English architect who is to superintend the fitting up of the British Section of the Exhibition has arrived in Paris, and the work is shortly to be commenced, as the building will be sufficiently advanced for that purpose by the 15th of September.

The foundation stone of a new Baptist chapel was laid at Normanton on Monday. The style of the building will be Classic, and it will accommodate 600 people, at a cost of £3,000. Mr. J. P. Kay, of Leeds, is the architect.

A new chapel of ease is about to be erected at the village of Littlethorpe, near Ripon. It will be of brick, with stone and moulded brick dressings, and roofed with red Staffordshire tiles, and consists of nave, chancel, vestry, and organ chamber, and is from designs by R. H. Brodrick, architect, of Ripon.

The restoration of St. Mary's Parish Church, Woodstock, is progressing rapidly in the hands of Mr. Groves, builder, of Milton-under-Wychwood. The work is being carried out from plans by Mr. Arthur Blomfield, M.A., of London, and will involve an outlay of £5,000.

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ILLUSTRATIONS.

"BUILDING NEWS" CLUB DESIGNS FOR SMALL VILLA—COTTAGES AT COLINTON—NEW SALT WATER BATHS AT SOUTHPORT—SEA-SIDE RESIDENCE AT OSTEND, FOR THE KING OF THE BELGIANS.

OUR LITHOGRAPHIC ILLUSTRATIONS.

SOUTHPORT SALT-WATER BATHS.

THESE buildings, of which we give an illustration, have been erected by the Southport Baths Company, Limited, on the site of the late Victoria Baths Promenade. They are faced externally with Burnley pierpoints, and Longridge stone dressings, and the walls internally are plastered. The principals of the large roofs are of cast iron, each in two pieces. The first-class swimming and private baths are lined with glazed tiles with ornamentation border, the bottoms being laid with glazed bricks, and the second-class swimming baths are lined with glazed bricks with glazed brick bottom. The water in these swimming baths is warmed by means of a copper steam pipe laid in a trench down the centre, and covered with perforated stone. The whole of the baths, dressing-boxes, and corridors, are warmed by means of steam pipes. The first-class private baths, in addition to the salt-water, are supplied with hot and cold fresh water laid on from the Water Companies' main, and the rain-water, from a considerable portion of the roofing, is utilised, being collected in underground tanks, and pumped into the supply tanks by a steam donkey pump. The first class private baths comprise hot, cold, shower, rain, douche, slipper, medicated, vapour, hot-air, and every description of hydropathic baths. The salt-water required is pumped from the sea through cast-iron pipes 9in. diameter, laid on the shore, down to low-water spring tides, a distance of 1,480 yards from the pumps, so ensuring a constant supply of water, except for a short period at extreme low-water spring tides. At the end of the pipes a cast iron cylinder, 6ft. diameter and 6ft. deep, is fixed. Inside this cylinder there is another 18in. diameter, and of the same depth as the outer one. In the small cylinder is fixed an india-rubber foot valve, resting on a cast iron grating. The space between the two cylinders is filled with stones and gravel. The outer cylinder is open at the top, whilst the inner one is closed, but has perforations in the lower parts of its circumference. Provision has been made for increasing the height of the strainer should the sand accumulate round it, by bolting an additional cylinder on to the top. The suction pipe from the pumps communicates only with the inner cylinder above the valve, the water thus passes through the stones and gravel between the cylinders, and rises in the inner one before entering the pipes. By this means a considerable portion of the sand is removed from the water before reaching the pumps, thus diminishing the wear and tear of the working barrels. A sluice valve is also provided, by closing which the suction pipe is kept full while the cylinder is being cleaned, and by removing the india-rubber valve, and then opening the sluice valve, the filtering materials can be washed by the water flowing out of the suction pipe. The suction pipe is carried from the shore through a culvert under

the esplanade, and thence into the buildings, where it is laid on the floor of the pipe corridor, the walls of the principal corridor having been carried down to a great depth for this purpose, thus rendering the pipes easily accessible in case of repairs. The pumps are placed in a dry well sunk under the engine-room, which, with the boiler-house and laundry, is placed so as to be accessible from the back streets for the convenience of getting in coals, &c. The pumps are four in number, two being of the bucket and plunger type, and two having plungers only. The total quantity of water contained in the swimming baths is nearly 230,000 gallons. There is upwards of 1,500 yards of cast-iron pipes of various sizes, from 9in. to 3in., in the building, exclusive of those on shore. The cost of the buildings, including engineers' work, was about £24,000. Messrs. Horton and Bridgford, of Manchester, are the architects; and Mr. C. H. Belve, engineer, of Liverpool, was intrusted with the machinery and hydraulic arrangements. The contractors for the building were the late firm of Swindells and Little, of Manchester. Mr. J. Clayton, of Preston, supplied the engines, boilers, tanks, &c.; Messrs. J. Varley and Co., of St. Helen's, the 9in. pipes; and the pipe-laying and culvert was done by Messrs. Fawkes and Yeland.

COTTAGES AT COLINTON.

THESE cottages have been erected at Colinton, near Edinburgh; each contains 2 public rooms, and 5 bedrooms, kitchen, scullery, wash-house, &c. The roofs are covered with Broseley tiles, the view over the surrounding country being particularly good. Galleries have been constructed on the gables under the projecting parts of the roof. The total cost of the two houses, including boundary walls, &c., is £2,500. Mr. R. Anderson, of Edinburgh, is the architect.

"BUILDING NEWS" DESIGNING CLUB—DESIGN FOR SMALL VILLA.

THIS week we give a double-page sheet of designs submitted to us in the above competition. It will be seen the selection we give comprises six of the best designs, numbered in the order of their merit, as we have placed them. "Mechlin," it will be noticed, has one of the most compact arrangements as regards area covered, though "St. Lucy" has, in some points, a more economical arrangement of interior, and provides a serving door between dining-room and kitchen. The fault of "Hampton" is, perhaps, chiefly the numerous breaks on the entrance side. It will be noticed that the cubic contents of each design is given, also the dimensions and scales to each, and we refer our readers for further remarks on these designs to our review of the competition, page 113. On the whole, it may be said that the designs received displayed a considerable amount of talent, and many of them are remarkably suggestive.

ROYAL MARINE RESIDENCE AT OSTEND.

WE give to-day further details of the seaside residence recently erected at Ostend for the King of the Belgians; a description appeared, together with five pages of illustrations, last week.

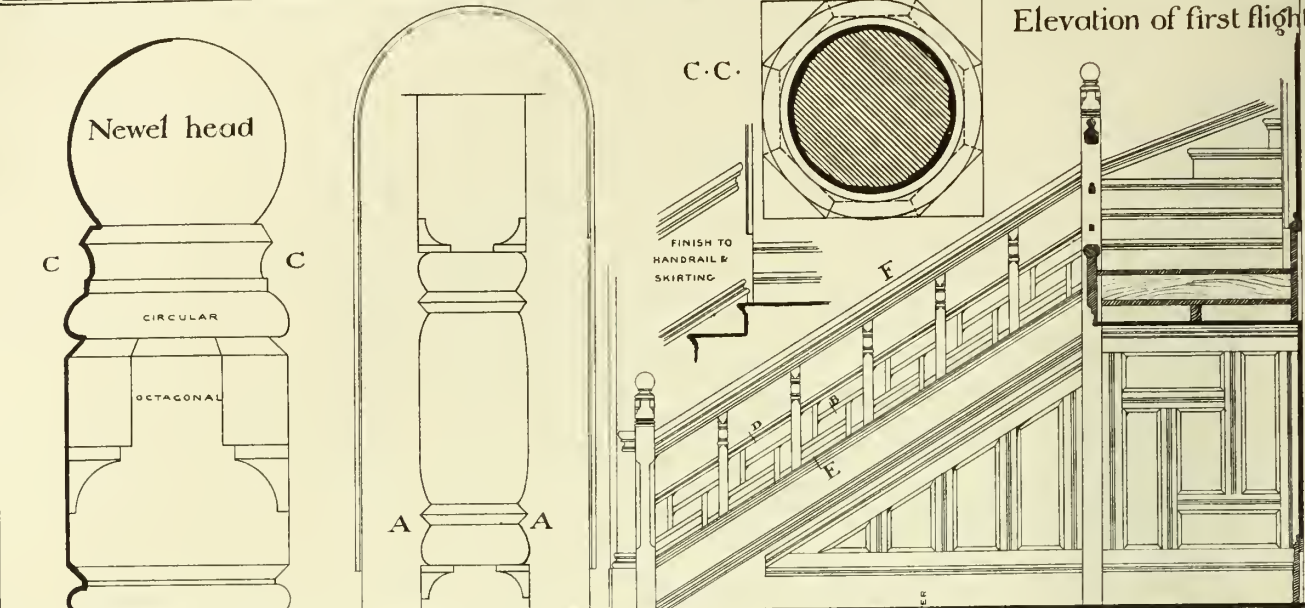
SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.

WE have had forwarded to us a printed statement issued under the auspices of the above Society pleading for the preservation of ancient buildings, and their protection from what is called "restoration," and as we are asked to publish it we here quote the main portions of the address. Speaking of the last fifty years of archaeological progress, the committee, which comprise the names of some of our distinguished artists and dilettanti, say:—"We think that those last fifty years of knowledge and attention have done more for their destruction than all the foregoing centuries of revolution, violence, and contempt. For architecture, long decaying, died out, as a popular art at least, just as a knowledge of mediæval art was born. So that the civilised world of the nineteenth century has no

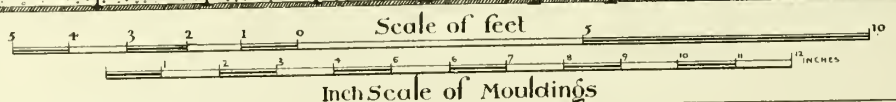
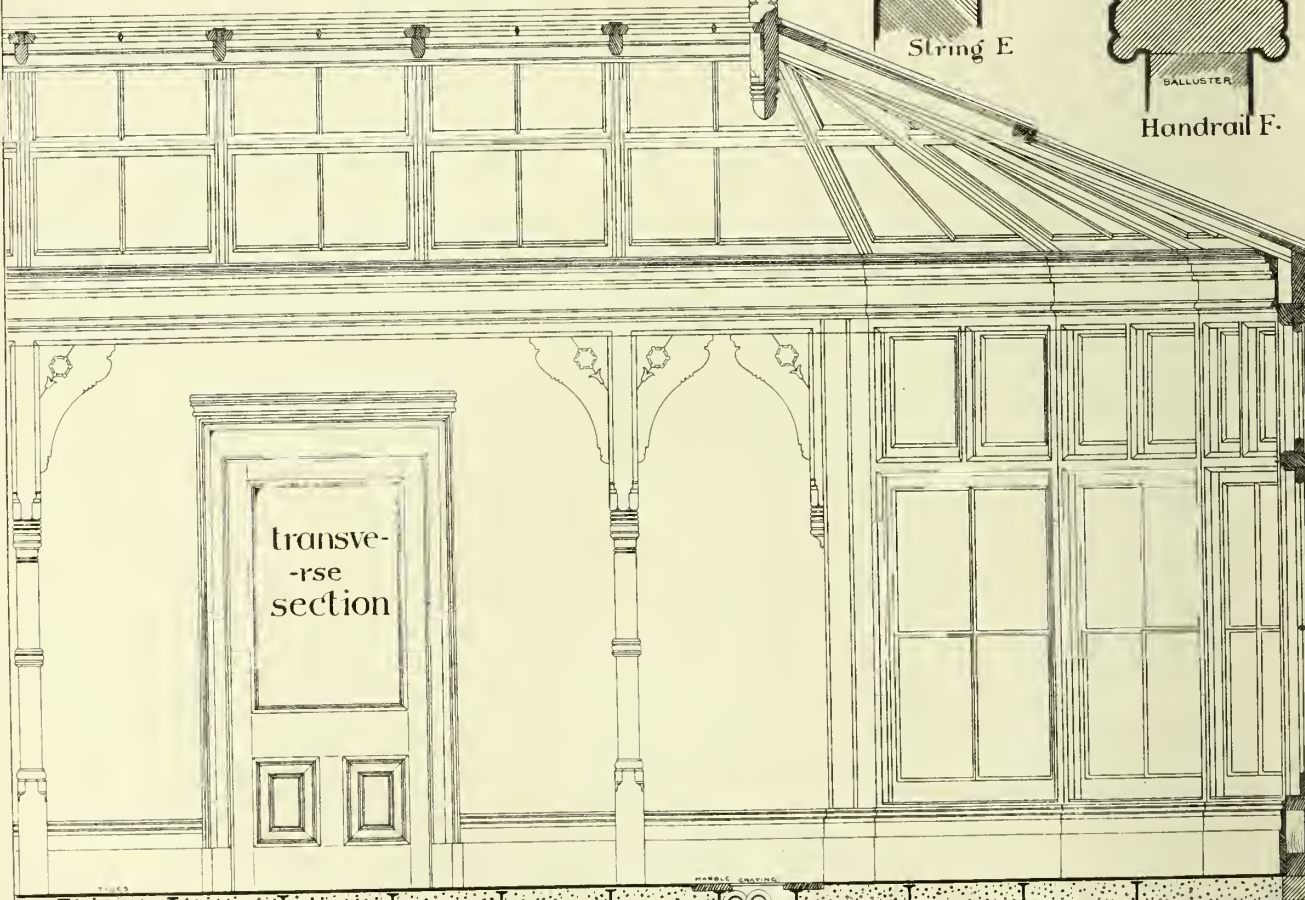
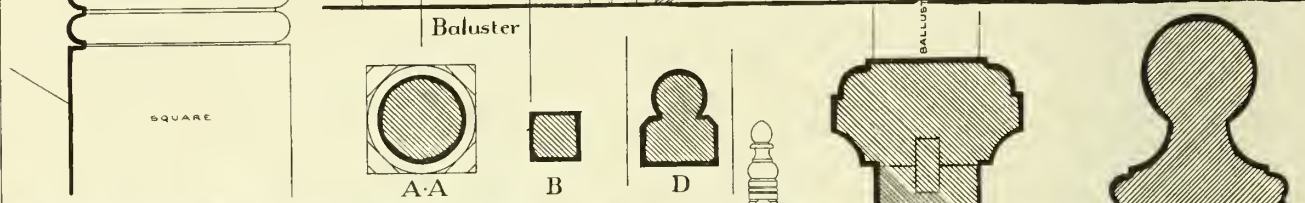
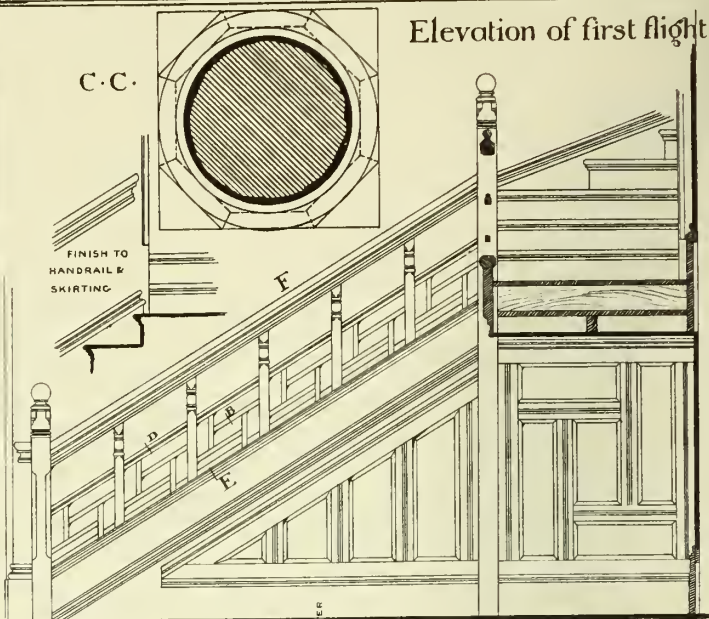
style of its own amidst its wide knowledge of the styles of other centuries. From this lack and this gain arose in men's minds the strange idea of the restoration of ancient buildings; a strange and a most fatal idea, which by its very name implies that it is possible to strip from a building this, that, and the other part of its history—of its life that is—and then to stay the hand at some arbitrary point, and leave it still historical, living, and even as it once was. In earlier times this kind of forgery was impossible, because knowledge failed the builders, or perhaps because instinct held them back. If repairs were needed, if ambition or piety pricked on to change, that change was of necessity wrought in the unmistakable fashion of the time: a church of the eleventh century might be added to or altered in the twelfth, thirteenth, fourteenth, fifteenth, sixteenth, or even seventeenth and eighteenth centuries; but every change, whatever history it destroyed, left history in the gap, and was alive with the spirits of the deeds done amidst its fashioning. The result of all this was often a building in which the many changes, though harsh and visible enough, were by their very contrast interesting and instructive, and could by no possibility mislead. But those who make the changes wrought in our day under the name of restoration, while professing to bring back a building to the best time of its history, have no guide but each his own individual whim to point out to them what is admirable and what contemptible; while the very nature of their task compels them to destroy something, and to supply the gap by imagining what the earlier builders should or might have done. Moreover, in the course of this double process of destruction and addition the whole surface of the building is necessarily tampered with; so that the appearance of antiquity is taken away from such old parts of the fabric as are left, and there is no laying to rest in the spectator the suspicion of what may have been lost; and, in short, a feeble and lifeless forgery is the final result of all the wasted labour. If it be asked us to specify what kind or amount of art, style, or other interest in a building, makes it worth protecting, we answer, anything which can be looked on as artistic, picturesque, historical, antique, or substantial; any work, in short, over which educated artistic people would think it worth while to argue at all. It is for all these buildings, therefore, of all times and styles, that we plead, and call upon those who have to deal with them, to put Protection in the place of Restoration, to stave off decay by daily care, to prop a perilous wall or mend a leaky roof by such means as are obviously meant for support or covering, and show no pretence of other art, and otherwise to resist all tampering with either the fabric or ornament of the building as it stands; if it has become inconvenient for its present use, to raise another building rather than alter or enlarge the old one; in fine, to treat our ancient buildings as monuments of a bygone art, created by bygone manners, that modern art cannot meddle with without destroying. Thus, and thus only, shall we escape the reproach of our learning being turned into a snare to us; thus, and thus only, can we protect our ancient buildings, and hand them down instructive and venerable to those that come after us."

While we fully sympathise with the efforts of this society to preserve and protect from spoliation and unnecessary renovation our ancient buildings, and while we also think many of our restorations have gone beyond the actual demands of the case, we cannot admit the principle the Society lays down of "staving off decay" by means unworthy of the age, such as "to prop a perilous wall" or patch a leaky roof, nor can we see the logical force of the suggestion which allows every century but the 19th century to add and alter. Such a doctrine is tantamount to the admission that the art we profess is unworthy of our age and of ourselves, that all our study of the past is worthless compared with that of our predecessors, and that really we have no history of our own to record. The result of this "leave alone" principle would be that in a few years the remains of ancient art would entirely disappear.

Seaside Residence at OSTEND FOR H.M. THE KING OF THE BELGIANS.



Elevation of first flight

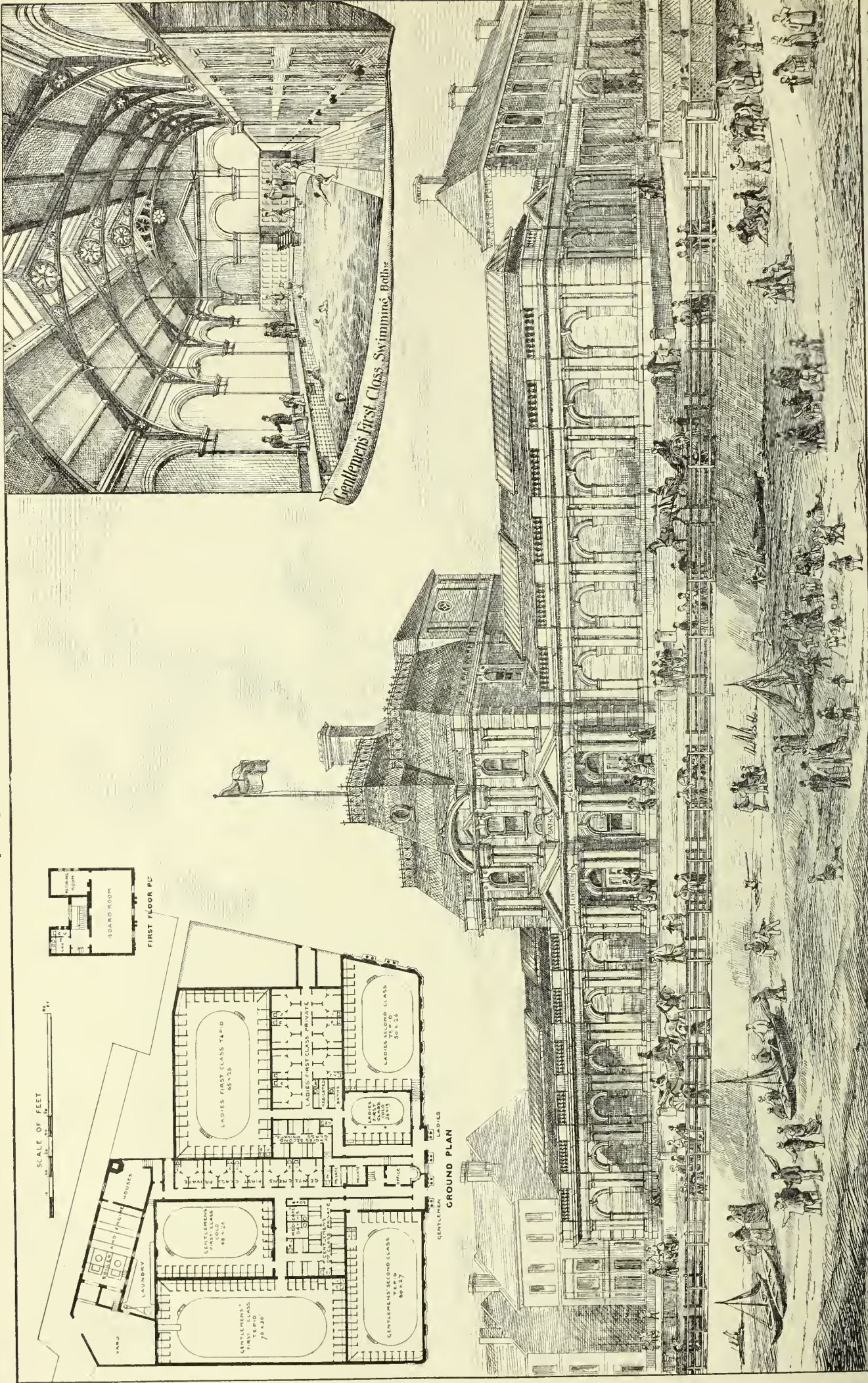


MAURICE B. ADAMS 611

Details of Conservatory and General Staircase. W.J. Green ARCHITECT

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

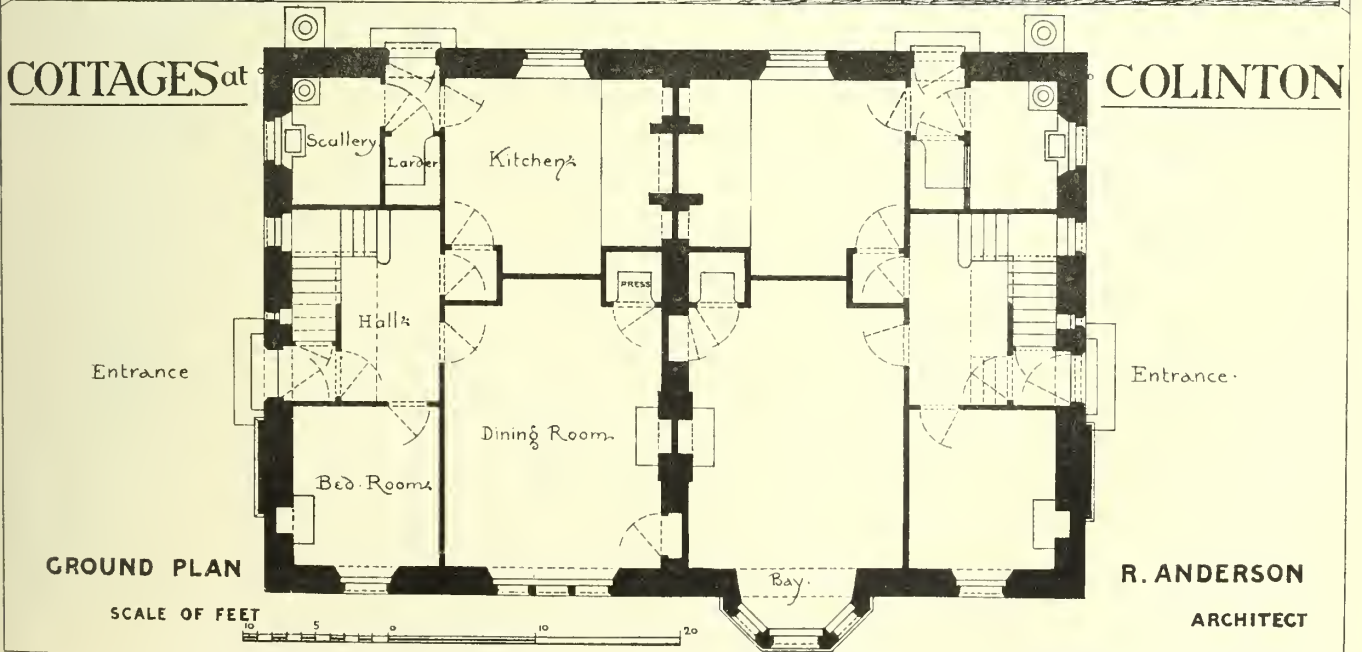
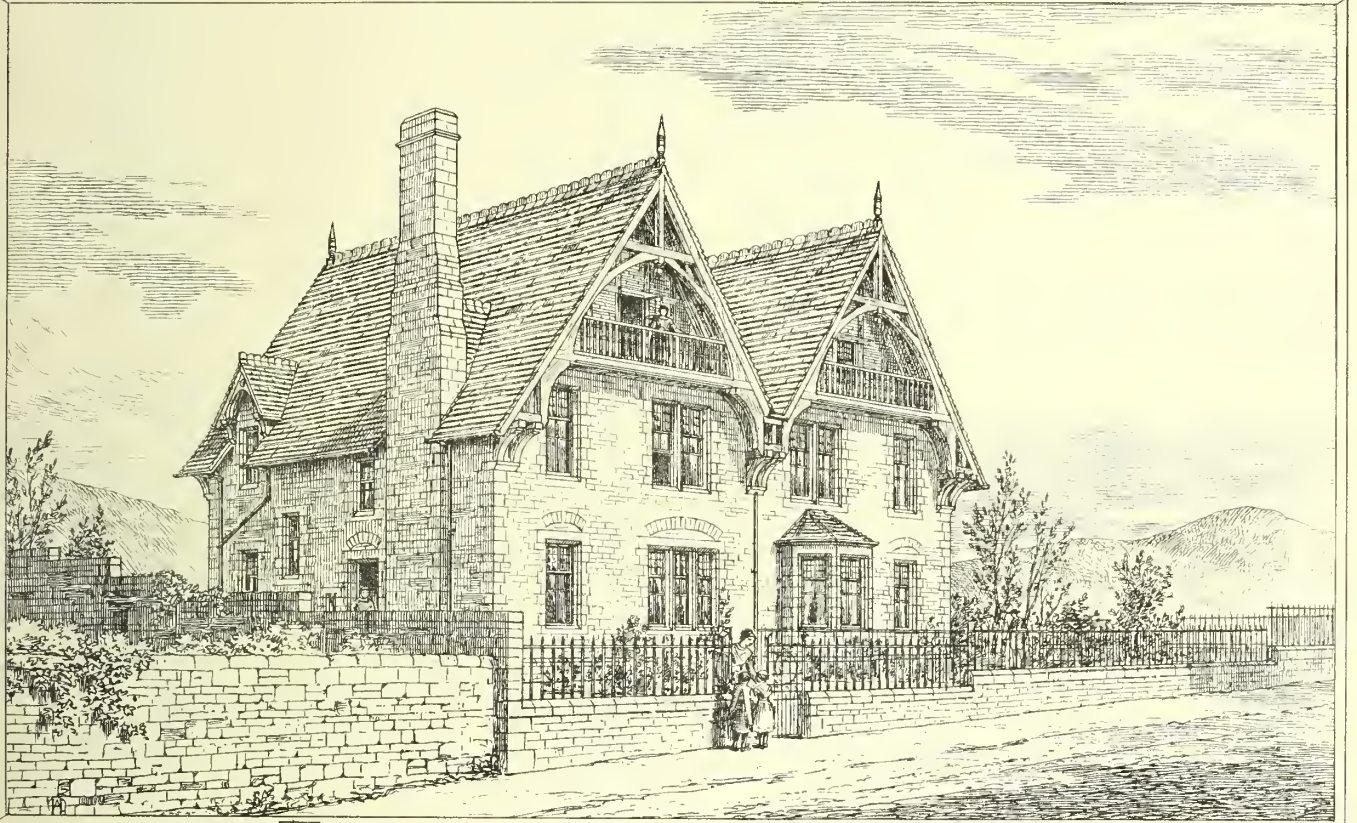
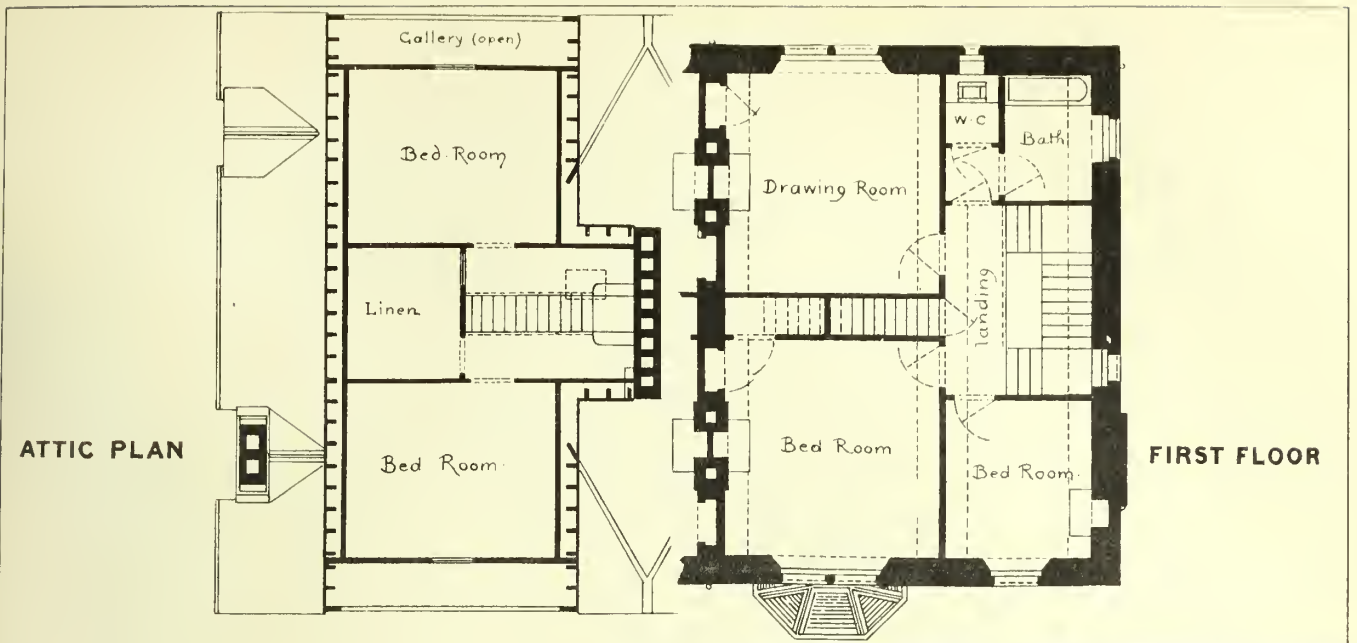
THE BUILDING NEWS, AUG 24, 1877.



NEW SALT WATER BATHS · SOUTHPORT · Perspective View from the Sea

Horton and Bridgford Architects Manchester

Photo Lithographed & Printed by James Akerman 6 Queen Square W.C.

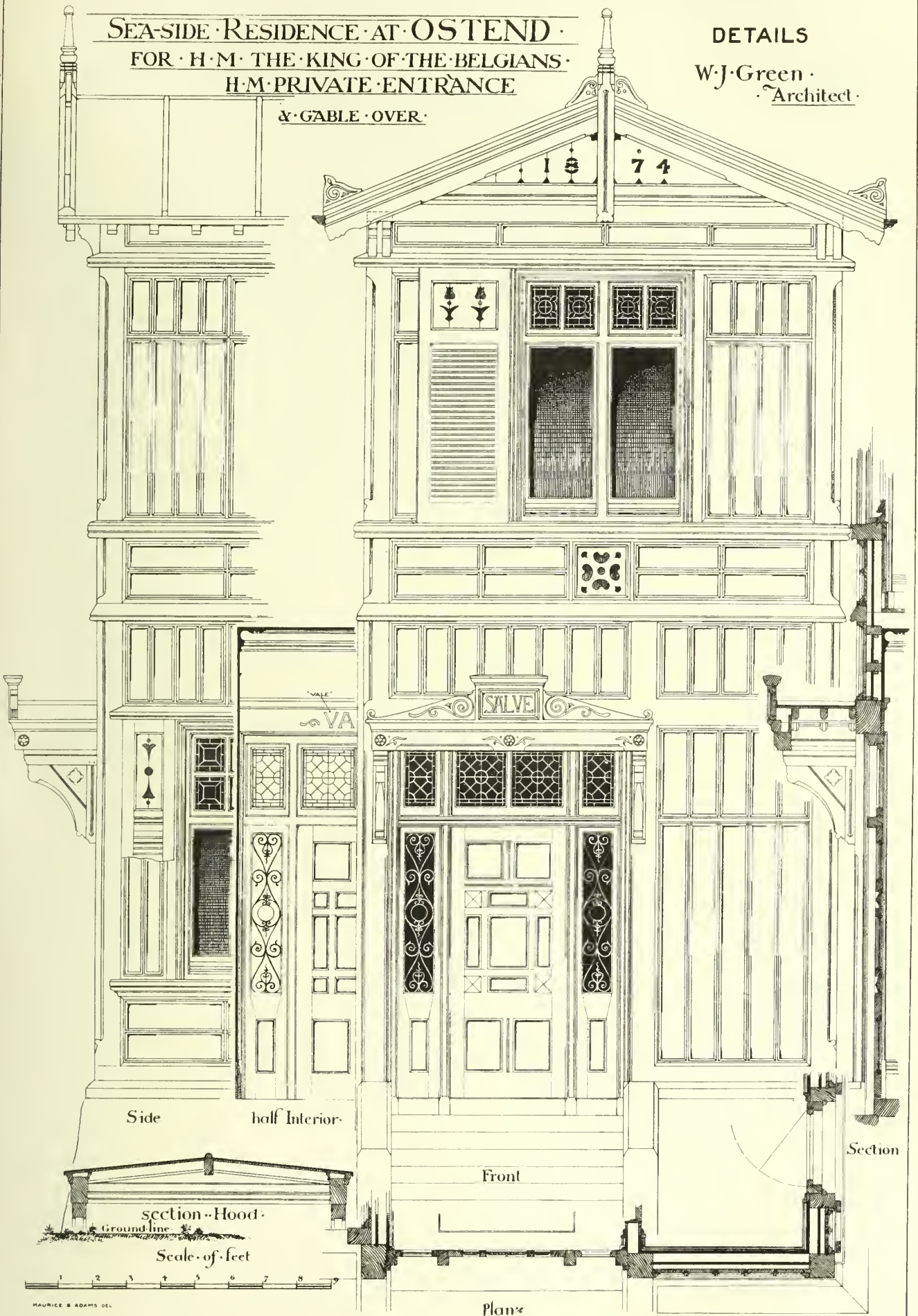


SEA-SIDE RESIDENCE AT OSTEND ·
FOR · H · M · THE · KING · OF · THE · BELGIANS ·
H · M · PRIVATE · ENTRANCE

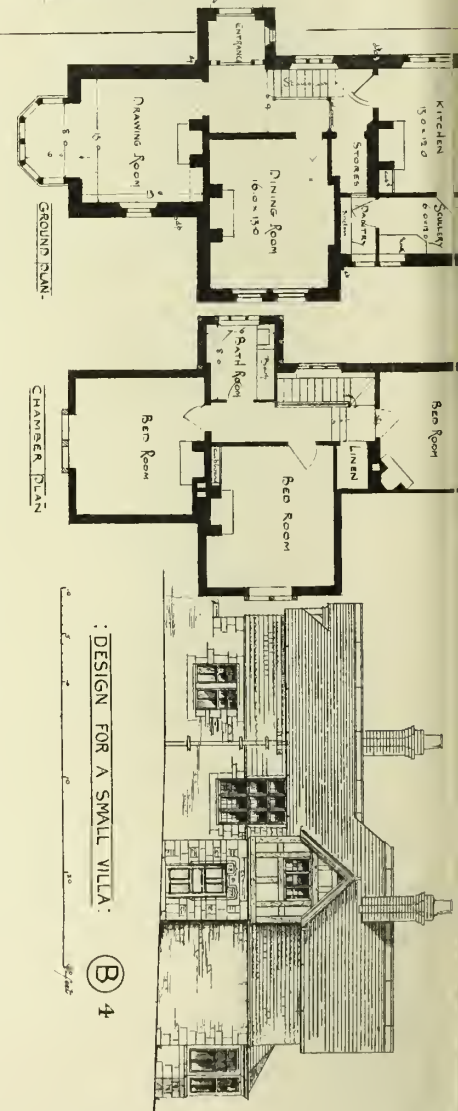
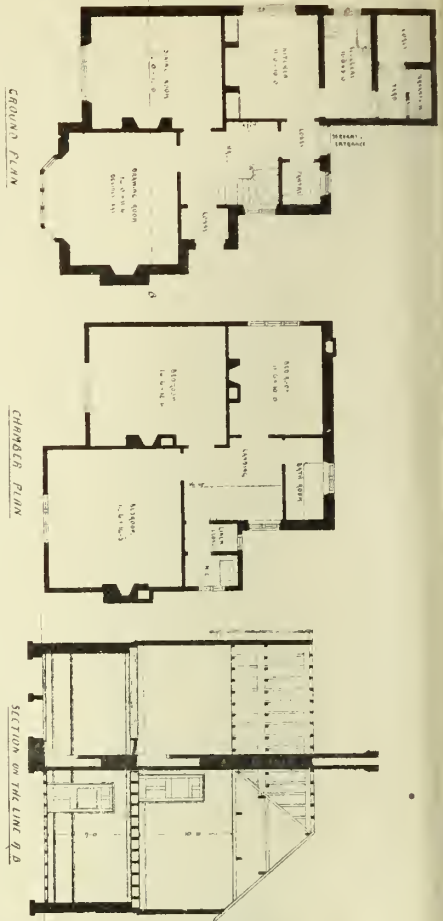
DETAILS

W · J · Green ·
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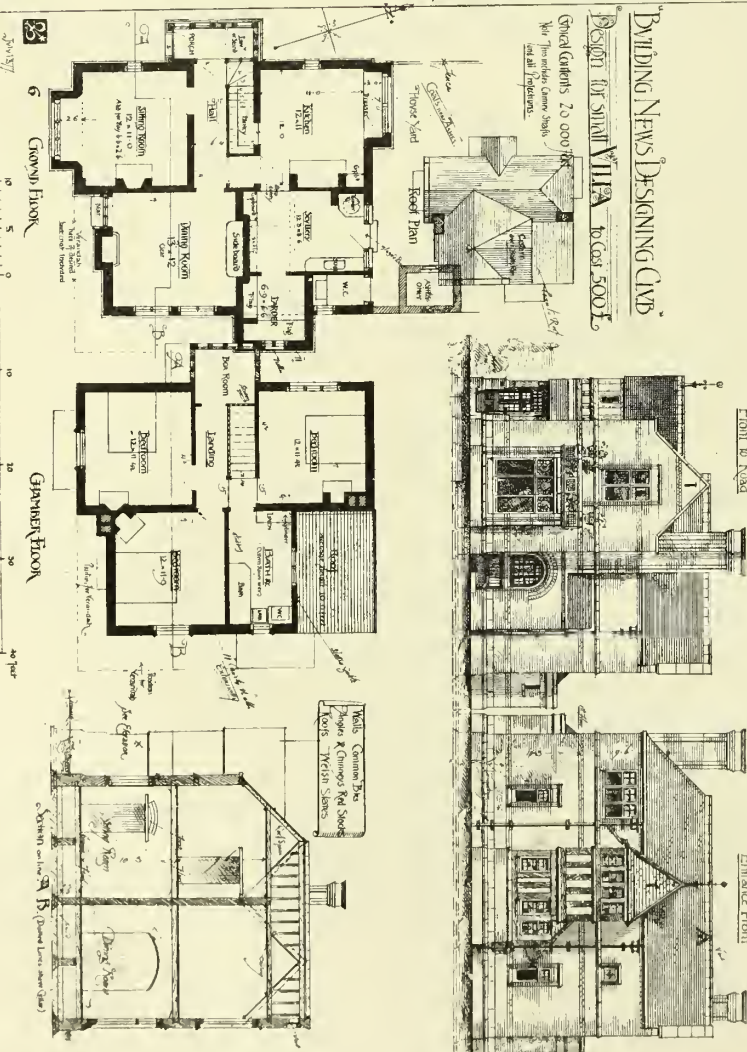
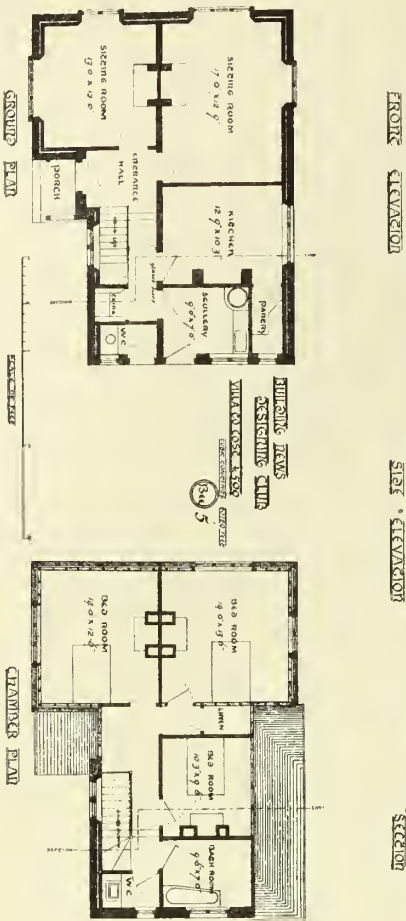
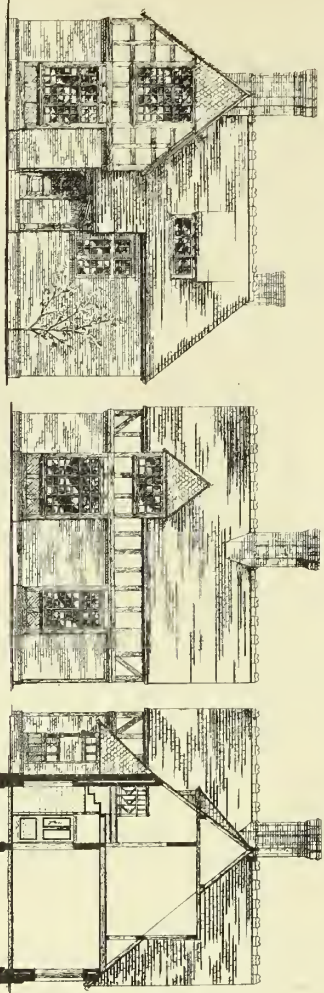


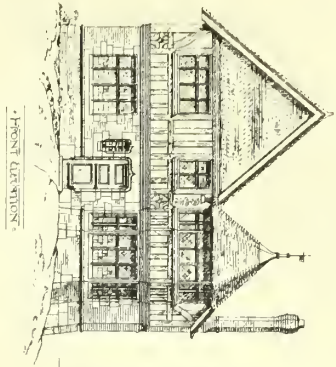




DESIGN FOR A SMALL VILLA

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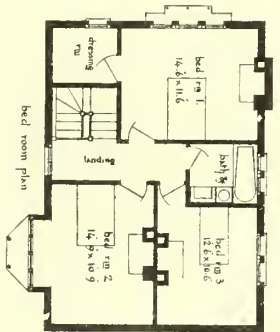
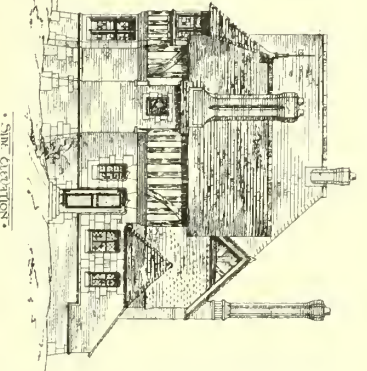




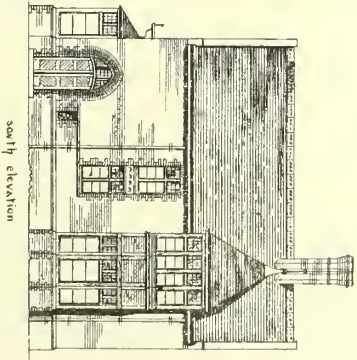
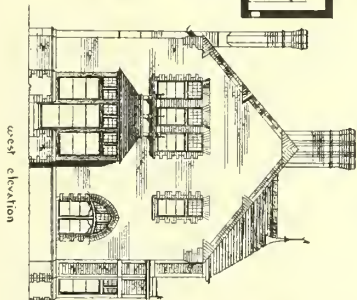
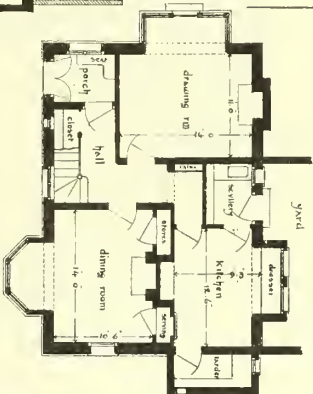
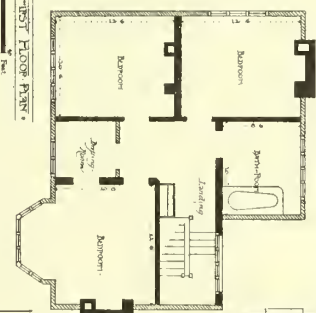
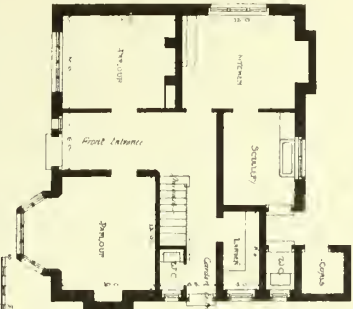
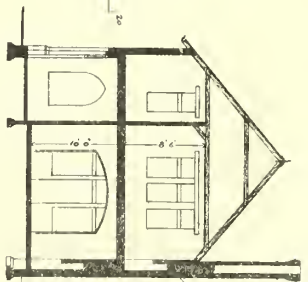
ON A GROUND 10,000 SQ. FT.
 27' 6" WIDE BY 451' 5" D.

• BUILDING NEWS DESIGNING CLUB.
 • DESIGN FOR A SMALL VILLA •

WICKHAM
 I

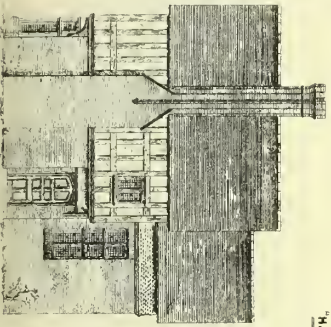
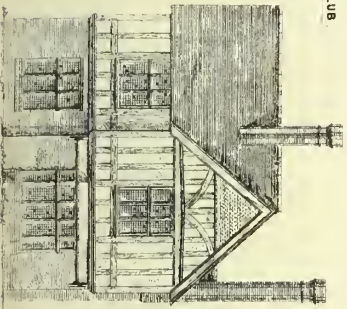


Building News Designing Club
 Small Villa
 2
 Dr. REEVE
 179 W. 7th St.
 contains 2020 cubic feet at 1500

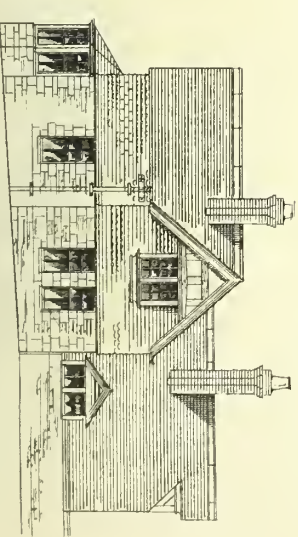
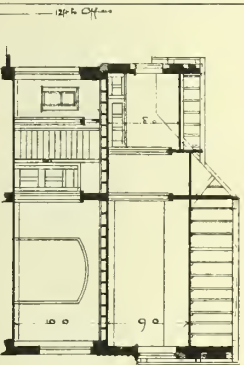


BUILDING NEWS DESIGNING CLUB

DESIGN FOR SMALL VILLA
 COMPETITION 2002 FT.
 AT 1500 • SEE P. 8.



"HAMPTON"
 3



A CHAPTER ON POSTS AND SHORES.

WHILE discoursing of modern woodwork, wherein fir has become the chief material, it may be pardonable to note the difference of "fir" and "deal;" since, when express terms exist for varied conditions of a substance, their indiscriminate use jars on the technical ear, and reveals a slight acquaintance with the subject. When the ox or the sheep has been converted into meat we dare not reject the distinctive word. Transitions are not, indeed, always attended with a change of name; and lamb remains lamb though turned into food. So, whether as a tree in the soil, or timber in a building, one word serves for fir—*aut arboris aut materiae*. New names often impart a new value, as the Dutch proved to us centuries ago, when they cut dull, unfigured, mediocre Rhenish oak into boards, and exported them under a name commemorating the place of operation. By this combination of mechanical skill and commercial adroitness, wainscot was endowed with the charm and wonder of a great discovery; and a widespread fashion for panelled walls and ceilings was created, to the prejudice of textile hangings, previously in favour. So anxious were architects to secure the correct sort, that "right wainscot" was long an item in their specifications.

A similar change took place elsewhere. Towards the centre of the great timber-bearing peninsula of Norway and Sweden, not far from that sixty-fourth degree of latitude, at which the zone of sylvan luxuriance is supposed to terminate, arises the river Dal, or rather the system of which East Dal and West Dal are the principal streams. In a course of more than 300 miles it traverses the entire breadth of Sweden, and connects the western border of Norway with the Gulf of Bothnia, southward of the port of Gefle. Like the Gotha at Trolhatta (which reminded Mr. John Barrow of the Rhine at Schaffhausen) the Dal has its precipitous descents. "We walked," says Mr. Horace Marryatt, "by the Dal river to the falls, which come tumbling over from the Fern Sö lake, glorious in the abundance of water." The exact and philosophic observer, Dr. Clarke, thought the Dal superior to the Gotha. "Close to the principal cataract," he says, "stood a sawing-mill, worked by an overshot wheel, so situated as to be kept in motion by a stream of water, diverted from its channel for this purpose. The remarkable situation of the sawing-mills, by the different cataracts, both in Sweden and Norway, are among the most extraordinary sights a traveller meets with. The mill here was as wide and as picturesque an object as it is possible to imagine. It was built of the unplanned trunks of large fir trees, as if brought down and heaped together by the force of the river. The saws are fixed in sets, parallel to each other, the spaces between them in each set being adapted to the intended thickness for the planks. A whole tree is thus divided into planks by a simultaneous operation, in the same time that a single plank would be cut by one of the saws." These mills, then, receive "fir" and give out "deal;" the matter it has been my endeavour to trace home. The word that originally signified a mere step in the process of conversion has become gradually confused with the nature of the wood, but by no means denotes a separate species. As well might the collateral term "balk," used where trees are simply hewn into square logs, be held to mean a special kind; it has no such pretension; but the laws of Sweden are classified into balks, and the name has attached to timber exported under fiscal rules; just as it is said to be "bracked" at Memel and other ports on the east side of the Baltic. Balk serves the carpenter for skeleton, or naked framework; and deal, because of its preparation, and more careful conveyance, is applicable to the finishings and fittings, in which joinery consists. Original distinction there is none; and but for the incident of the mill, the carpenter and the joiner, in their respective departments, might be consuming the substance of a single tree. The mills of the Dal, and other districts of Sweden, to which attention is confined, constitute, however, in spite of their rude simplicity, a really grand and powerful agency, supplying to this country alone from 3,000,000 to 4,000,000 deals per annum, beside an immense quantity of prepared flooring.

Posts.

Posts are upright supports or pillars, serving the office of columns, for sustaining the upper parts of buildings; and are themselves subject to compression. The best form is that presented by nature, in the round tree, because the substance is symmetrically arranged about the axis; but practically we have to do with material of foreign growth, squared before imported; and, partly at least, from this commercial circumstance, the cylinder commonly gives place to rectangular figures. A square pillar, however, has great stability of form, and suits a vertical position.

Under a pressure of about 4,000lb. (or less according to Mr. Laslett) on the square inch, fir is shortened, expanded, split, and burst. It would safely bear 1,000lb. per inch; but conditions of flexure soon supersede the question of crushing, and tend to complicate the simple

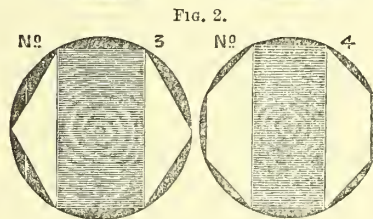
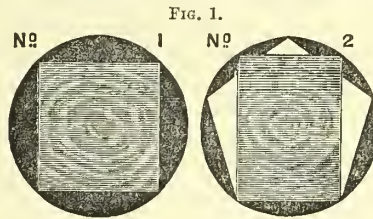


FIG. 3.

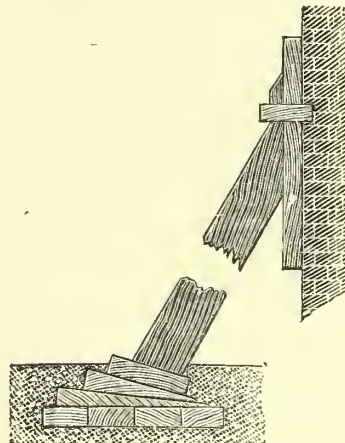
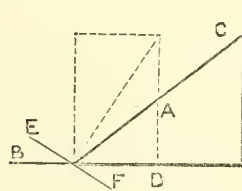


FIG. 4.



inquiry; for no task could well seem more elementary than that of fixing the size of posts; yet the tendency to bend governs, and keeps within very close limitations their applicability (whatever the sectional figure) as efficient vertical supports.

When it had been discovered that the power of a level beam increased with the square of the depth, it must have been seen that other rectilinear sections, obtainable from a given round tree, were stronger than the square though of smaller area. A parallelogram, having for its least side one-half of a pentagon, was for a time accepted; but further investigation substituted a face of the hexagon as the breadth of the strongest obtainable beam from a given tree. But, discarding that maximum relation, the same strength is reached, with a further saving of wood, as shown in the table of joists.

Whether stress be exerted upon a horizontal girder, or upon an upright post, flexure ensues. It is generated in different ways, and with some variation of form, but is a common property, making the two cases less dissimilar than they at first appear. A cross-strain causes bending in the direction of that strain; compression at the ends acts upon the diagonal. But inasmuch as a thin board from the middle of a tree would have the same diagonal as the largest obtainable scantling, the only reliable measure of strength in a part is the area of its base, and, in a figure, yielding support to the axis with tolerable equability. The sectional area, or base of a post, may be found by the following rule:—Multiply the pounds in the load by the decimal .002; and the square root of the product multiplied by the height in feet gives the area in inches. Let it be required, for example, to sustain a weight of 20,000lb. at a height of 20ft. $20,000 \times .002 = 40 \sqrt{6.3 \times 20} = 126$, which is the number of inches in the base or section of the post. A few other results with the same weight are set down, and it will be seen that they are in direct proportion to the height—if one be doubled so is the other; but every change of load requires a fresh calculation.

WEIGHT TO BE SUPPORTED, 20,000lb.

Height in feet.	Area in Inches.	Diameter of Circular Post.	Side of Square Post.	Rectangle.	Effective Power per sq. in. in lb.
10	63	9	8	10 × 6½	320
15	94½	11	9½	12½ × 7½	212
20	126	12½	11¼	14 × 9	160
25	157½	14	12½	16½ × 9½	128
30	189	15½	13¾	17½ × 11	107

Were the column of effective power here tentatively introduced, confirmed by experiment as above suggested, it would be of great value, because applicable to every height and every load.

The resistance of fir to crushing, by pressure on the side, is so nearly equal to that at the ends that sills and bressummers are not injured by posts of proper size charged with appropriate loads.

The form in which timber is imported, and the mechanical methods of conversion, make right-lined sections economical and convenient. In the annexed diagrams the cylinder is supposed to be 10in. diameter, and the area 78in. Inscribed square, 50in. Rectangle on pentagon base, 48. Ditto hexagon, 44. Heptagon, 40. Octagon, 37. (See Figs. 1 and 2.)

It appears so desirable that the behaviour of posts with these several bases under compression should be generally known, and the question seems capable of determination by modern apparatus with so much facility and precision as to induce the wish that some scientific body may institute an experimental inquiry on the subject. It might well, indeed, embrace and exemplify, on a reliable scale, all strains by which a material of such universal application in building as fir timber is ordinarily affected, and whose economic use is a point of general concern. When structures fail the consequences are often calamitous, and the lesson they teach is that, instead of regarding tabulated data as ample, due addition should be made to compensate for incisions in the process of framing; and with the strongest propriety as regards posts partly in the earth, or otherwise in unfavourable situations, against the agencies of decay.

Piles are distinguishable from posts principally by their association with underworks and preparations rather than with superstructures, and they claim little attention from the carpenter; but it is worthy of remark that, for this subsidiary purpose, a tree of the lowest general estimation is pre-eminently fitted. Dr. Horman, whose English is less easily deciphered now, perhaps, than before the Reformation, says:—"A quavery or mares and unstable foundacys must be holpe with great pyles of alder, ramed downe with a frame of tymbre called a crossandre;" and every writer, from Vitruvius downwards, pays the tribute of re-

cognition to the merits of alder, when wholly in the earth or wholly under water. If merely damp it rots away; if dry it is soon devoured by worms. Most of the fabrics of marshy Ravenna and the Rialto at Venice are based on piles of alder. Though soft, and in many ways so inferior to the oak, it is equal in toughness, and thus able to bear the percussive shock of the driving ram.

SHORES.

Shores are timbers used as props or temporary buttresses, for preventing injury to structures that are sound, or supporting such as are unsafe. The typical form is the oblique strut, called a "raking shore." Like the story post, it is in a state of compression, but, instead of acting as an erect bearer, it exerts a lateral thrust. It would do so with most powerful effect if set at an angle of about 40° with the horizon, but under the exigencies of fact the spread at the base is generally much less than would then be the case. The timber is often raised to an angle of 60°, or even 70°, at which last the height is upwards of 2½ times as great as the spread of the foot, while hardly one-fifth of the force takes a horizontal direction. The operator, therefore, in fixing the scantling must consider, not only the weight of the work to be supported, but the loss of power due to the ineffective direction. (See Fig. 3.)

The length, section, and slope of a shore being determined, an abutment is prepared at the top by an upright plank against the structure to be sustained. Through the plank is passed a strong stud that forms a projecting shoulder in front, and by penetrating the structure keeps the plank from sliding upwards. The head of the shore is then adapted, and the timber driven up with the required force by means of wedges comprised in the foundation of planking at the ground level. Care is to be observed that the foot of the shore has a perfect and uniform bearing, so as to avoid the leverage and wasteful strain that ensues when the pressure is uneven. It may be pointed out that, when a timber is compressed at the ends, its ability to resist a cross strain is impaired, and that consequently one shore should not be made a support for a second, as may too frequently be seen, but each should have its proper footing on the ground. The mechanics of shoring may be shortly stated with the help of Fig. 4. If a sloping timber, A, rest on the ground at the foot, and against a wall at the top, it will exert three forces. Were there no impediments it would descend in a vertical line, D, but, being prevented, it tends to slide along the ground, B, and, checked there, it seeks to overturn the wall, C. The pressure on the shore being uniform, the centre of gravity is at the middle of the length, and the several strains may be thus estimated. If a vertical line be drawn through the centre of gravity from the ground to the height of the shore, and that line be taken as the scale of the vertical pressure, the horizontal distance from the centre of gravity to the foot of the shore will be the proportionate measure of the lateral thrust against the wall at the top and the sliding force on the ground. Then an inclined line from the top of the vertical ordinate to the foot of the shore will have a medium direction between the two forces acting on the ground, and the foundation should be made at right angles to that line, and not to the actual direction of the shore. It illustrates in a simple way the process known as the "composition of forces," with which the artist in carpentry should be familiar.

THOMAS MORRIS.

NEW BOARD SCHOOLS AT PLYMOUTH.

[COMMUNICATED.]

SOME few months since the School Board for this town expressed dissatisfaction with their architects, Messrs. Norman and Hine, who were also the architects for the Town-hall and municipal offices, and ultimately resolved that for the next schools required they would resort to that panacea for such troubles—a competition. The board decided to offer no premiums, and seeing that without such inducements 33 architects have been willing to send in designs, probably they were little to blame for not spending the ratepayers' money.

The site is oblong, not quite a parallelogram, in round figures about 210ft. by 60ft.; the ground falls very sharply in the direction of the length. The accommodation required was for 250 infants and 300 girls, but provision was to be made for building half of the girls' school first—i.e., sufficient for 150. A curious rule seems to have been made excluding perspectives; probably the Board felt their education too "average" to comprehend such mysterious productions. Colour was not forbidden, although it seems to have proved a snarl where it has been used on the general drawings. The drawings sent in certainly show a great variety of ideas for dealing with the site; a majority of the competitors show the whole arranged on one floor, and amongst these again is a diversity as to the best mode of overcoming the difficulty of the sloping ground—some have stepped the buildings down, others have shown a basement triangular in elevation and very lofty at one end; some of these have utilised the basement as a covered playground, but in others it is not utilised at all. Several designers have separated the infants' and girls' schools, making two distinct blocks. Of course the one-story designs take up much more space, and further show in an aggravated form the difficulties of the sloping site. The favourite style appears to be Gothic, modified to suit the Board's pockets and requirements, though a very few are *outré* ecclesiastical; traceried windows and elaborate detail generally seem very unsuited to Board schools. One or two have tried a dwelling-house or warehouse style, but without success; a few others show a slightly Elizabethan character, and some, again, Queen Anne, who, though dead, yet speaketh. The drawings, stated to number about 200, make a very fair show. The estimates are very wild, ranging from £2,000 to £7,000 odd, and as is usual in such cases, there does not appear to be any reason for supposing that the ones to which the lower estimates are affixed can be built for less money than those concerning which their authors appear so apprehensive of great cost. The drawings most worthy of notice are those under mottoes—"Advance," "F. R. J.," "Utilitas," "Fodina," "Spero (B)," "Quis." "Advance" shows a very well finished set of drawings. Several alternative blocks are shown, and a ground plan for a one-story building—the complete design is in two stories. The buildings are exceedingly compact, and planned with an evident knowledge of the great ultimate value of all land in a town like Plymouth. The windows are square-headed, with stone mullions and transoms. Some very able details are shown, and although absolutely devoid of ornamentation it is probable the effect would be better than that of most of the other designs in the room. The estimate attached is £4,200. "F. R. J." also shows a well-finished set of drawings. These buildings are also in two stories. A covered playground for infants is shown, and a covered approach to the w.-c.'s. A residence for the school-keeper is attached. The details show that this is the work of an accomplished architect. The style is eminently utilitarian, but withal a modicum of picturesque effect has been attained; the small angle turrets show a little Stuart feeling. An open-timber gallery in one gable seems rather useless. The estimated cost is £5,000 for the whole, or £3,500 for the partial scheme. "Utilitas" show a well-finished set of drawings. A covered playground in the basement is cleverly managed—the arcade supporting the front wall comes out very well. The style is Pointed, and is coloured for brick-work with tiled roofs. This choice of material will probably somewhat injure the author's chance, as Plymouthians like their limestone to show, unless they have stucco fronts. The estimated cost is £3,500 for the complete scheme, and £2,600 for the partial one. It may be here observed that this design would certainly cost more to execute than "Advance," the estimates notwithstanding. "Fodina," a neat and economical plan well deserving of consideration. The buildings are in two stories. The elevations are fair, excepting the straw-like mullions to the large windows—a fault, by the bye, not peculiar to this architect. The estimate is £3,050, £2,230 for the partial scheme. "Spero" (B), two plans are shown,

one is very good. The infants' wing is in one story, the girls are in two stories, the upper story being intended to accommodate the seniors. The drawings are very good, the details sensible, and well finished. The estimates are £3,500 and £2,600 respectively. "Quis," a very good compact plan. The two-storied part has been placed on the highest ground, and the whole effect is exceedingly picturesque. The estimates are respectively £4,675 and £4,000. Of other designs which it would be unfair to class together, may be noted: "To Be or Not to Be," "Spero," "H. B.," "Playground," "Auxilium ab Alto," "Intersecting triangles in circle," "Perseverance," "Experientia," "Fidelitas," "Eddystone."

THE NOTTINGHAM CHURCH CEMETERY COMPETITION.

THE proceedings at the annual meeting of the Nottingham Church Cemetery Company last week were enlivened by some smart passages at arms and controversies, resulting out of the recent competition for a cemetery chapel. The directors' report stated that, in reply to advertisements in the Nottingham papers only, plans and drawings were received from nine competing architects, and those of Messrs. Clarke and Son, of Nottingham, were selected in February last as excelling "all others in amount of accommodation provided, purity of style, and generally in architectural character and beauty; but at the same time a greater latitude with respect to cost had been taken by them than by the other architects—Messrs. Clarke and Son's plan being estimated to cost £3,000." The report passed on to speak of an agitation raised against the acceptance of the plans, on the ground that the chapel need not cost more than £2,000, but resulted in the calling of a special meeting, whereat resolutions were passed annulling the directors' decision, and appointing a committee of nine shareholders to act with the directors, with powers to obtain designs for a mortuary chapel, not to exceed £2,000 in cost. Messrs. Clarke and Son declined to compete again, but all the previously unsuccessful competitors again sent in plans, and, says the report, "one of them who had been most forward in the agitation in opposition to the former selection, sent in no less than four different sets of designs for competition, under four different mottoes." The 39 designs were submitted to Mr. C. Hodgson Fowler, architect, of Durham, who placed three as first, second, and third, and commended two others. All five designs proved to be by London architects. The shareholders' committee finally adopted those of Mr. E. W. Godwin, F.S.A., of Victoria Chambers, S.W., which had been placed first in order of merit by Mr. Hodgson Fowler, who considered it carefully designed within the sum stipulated in the conditions. Since the selection of Mr. Godwin's design the directors had received a protest from Mr. Frederick Jackson, of Nottingham, one of the unsuccessful competitors; against all three premiated designs, on the ground that the spires were of wood, not stone as required; there were no provisions for heating, all largely exceeded the proposed cost, and were too much cut up for a Church of England cemetery. The directors, while holding that the decision of the last meeting was binding on the company, contended that the entire responsibility of the present selection of a design rested with the shareholders' committee. Mr. Allen said no one could doubt that in the first competition Messrs. Clarke and Son's design was the best, but as it could not be carried out for "£2,000 or thereabout," as the advertisement stipulated, it would have been morally wrong to have adopted it, however beautiful. If the present design (Mr. Godwin's) could not be carried out for £2,000, it should not be used at all. Mr. Jackson complained that his letter, which was a private document, merely written for the purpose of advising the directors, should have been given publicity. After a long discussion the directors' report was carried, but in the stead of the chairman and two other gentlemen on the board, three other shareholders were elected as directors, one of the retiring directors being elected to fill vacancy.

CHURCH ARCHITECTURE IN PORTUGAL.*

TO one who comes from Spain to Portugal a great falling off is observable in church architecture as in many other respects. The elements of grandeur and nobleness are exchanged for those of neatness and prettiness. Thus, instead of the rugged granite churches of Galicia, churches are seen across the frontier in the Portuguese province of Minho-Douro, built, indeed, of the same material, but dabbled over with plaster and whitewash, with the granite showing only in the mouldings, string-courses, and pilasters—a most unpleasant and unpicturesque admixture of colours. Greatly as the Spanish churches have suffered at the hands of the builders and carpenters of the Renaissance and later periods, this is even still more the case in Portugal, where the aversion to ancient and original work seems to have amounted to a positive mania. In addition to this, the cathedrals of Portugal are on a much smaller scale than those of Spain, and the rich overlaid Renaissance, which is tolerable in such a vast pile as the Cathedral of Santiago de Compostella, becomes simply contemptible in the smaller churches of Vianna, Braga, or Oporto. Though, however, the work of the Renaissance and later styles in Portugal is overloaded with ornament, and contrary to the principles of true art, yet of its kind, inferior though that kind be, the work is excellent. The Portuguese have a peculiar talent for carving figures in a life-like manner in wood, and, to a certain extent, also in stone. The principal church in the town of Vianna, at the mouth of the beautiful river Lima, has over the front a piece of sculpture of earlier date than is common—probably of the earlier part of the sixteenth century—which struck me as of unusual merit. The subject is the Baptism of Christ. The Saviour stands in the water, girt with a cloth around His loins, and St. John Baptist—a most admirable and life-like figure—pours water on His head from a shell. Two chubby, fair-haired angels stand by, holding a cloak for use when the ceremony is over. The city of Braga—whose Archbishop disputes with his brother of Toledo the primacy of all the Spains—contains a good deal to interest the ecclesiologist, although but very little early work has been spared by the destroyers of the Renaissance. In the *Sè*, or Cathedral, the ancient round-arched doors at the west and south have been spared, and that is all. Inside, the genius of the Renaissance has run riot, and has either destroyed or covered over all the old work. Nowhere is the essential Paganism of the Renaissance more clearly exhibited than here. Thus the gorgeous, gilded organs of the *Alto Coro* are supported by huge hairy satyrs, horned and hoofed, and the *azulejos* which line the approach to the same choir represent hunting and other sporting scenes, Juno with her peacock, and a lot of languishing Cupids. The “Alto Coro” itself, which is dated A.D. 1622, is of extraordinary richness, while the choir proper is almost beggarly in its fittings. These “Alto Coros,” which occupy the western galleries of so many Spanish and Portuguese churches, are at once in bad taste and destructive of decent ritual. I saw here the “Breviarium Bracharense” of Archbishop Ruderic Demousa Telles, printed at Braga in 1724, and a fine black letter “Missale Bracharense” (Lugduni, 1558). By this it appears that, like Sarum and Hereford, Braga had its own “use.” In a chapel to the north of the *Sè* is the fine altar-tomb of Archbishop Gonçala, A.D. 1348, which bears a colossal recumbent effigy of that prelate. An inscription, added in 1789, is curious. In the church of St. John, in a chapel with a groined roof, under the tower, is a curious “retable,” or reredos, and a “Pietà” carved in stone, with the coloured figures as large as life. In the church of St. Francisco are a series of fine “azulejo” paintings. I much regretted that the continued water-spouts of rain prevented me from visiting the pilgrimage hill of Bom Jesus, which rises above Braga. In its numerous chapels are represented the Ascension, Resurrection, &c., and the life-size figures of the various groups are said to be of most admirable execution. After all, the prominent characteristic of Portuguese

architecture is the universal and profuse employment of “azulejo” tiles, which in some instances give a very Arabian aspect to the buildings thus decorated. The entire fronts of many houses are frequently covered with them, and they are used in no less profusion in the interior of the churches, and this often with very good effect. In the latter case not only tiles with conventional patterns are employed, but a number together make up a scriptural or historical scene. Where not to use them is ludicrously exemplified in the Cathedral of Oporto. This much maltreated church possesses singularly beautiful cloisters in the First Pointed style. The material is grey granite, but the ambulatories have been lined, in most painful contrast, with blue-and-white tiles illustrating in the funniest manner the Song of Solomon. The bridegroom appears as a handsome young shepherd with wallet and crook, while the bride is represented as a stout, languishing lady, like one of Lely’s pictures of a court beauty in the time of Dutch William. In Galicia, and since in Portugal, I found the villages everywhere adorned with small erections whose use I found it difficult to conjecture. They are small buildings of an oblong form, constructed of granite with a sloping stone roof, numerous narrow windows at the sides, and a door at one end. They stand upon four or more granite pillars, and have a cross upon one gable and a pinnacle on the other. They resemble small chapels or coped tombs. On inquiry I found that these simple but picturesque buildings are used for the storing away of maize.

CHIPS.

A public park was opened at Limerick, on Monday, by the Mayor and Corporation of that city.

A drinking fountain is to be erected on the green at Shipton-under-Wychwood, as a memorial of the 14 emigrants to New Zealand from the village, who lost their lives by the burning of the *Cospatrik*.

The Great Yarmouth School Board opened, on Thursday week, a new school on St. Peter’s Plain, erected from plans by Mr. J. T. Bootle, their architect.—Foundations are being excavated for a new Military Depot to the west of the Marine-parade; and a new light line of railway between Yarmouth, Caister, and Ormesby, has just been opened for traffic.

The recently constructed Urban Sanitary Authority, of East Dereham, Norfolk, have appointed Mr. Nankerville as their surveyor and inspector of nuisances. It is probable that the board will very shortly take up the question of the desirability of erecting a suite of public buildings for the use of the town.

Various structural and other alterations have just been completed in the buildings in Philadelphia, Heigham-street, Quay-side, and Surrey-road, belonging to the Norwich School Board, by Mr. J. Dorming, Mr. J. W. Lacey, and Mr. James Young, contractors, in accordance with plans by Mr. John H. Browne, architect to the Board.

The Town Council of Brecon are of opinion that the gas company’s charges for lighting the town with gas are too high, and have entered into communication with Messrs. Bayley and Sons (who have successfully lit Winchester and Poole with paraffin), to estimate the cost of public oil lamps for Brecon.

Mr. William Belk, C.E., has been appointed resident engineer to the Hartlepool Port and Harbour Commission, vice Mr. Hawkins, C.E., resigned. Mr. Hawkins retains his connection with the harbour works in the capacity of consulting engineer.

Mr. William Tannoek, artist, has just died at Kilmarnock, at the advanced age of 84 years. Deceased studied at the Royal Academy, London, and won considerable distinction as a portrait-painter. He never, however, attained the celebrity of his elder brother, James, who died about fifteen years ago.

The memorial stones of a new Methodist school were laid at Liverpool on Monday. The building will accommodate 350 children, at a cost of £1,500. Mr. R. Roberts is the architect, and Mr. Lett the builder.

Memorial stones were laid on Saturday, the 18th inst., of a Church of England school, Bugsworth, Derbyshire, in course of erection by Mr. D. Drinkwater, from designs prepared by Mr. J. Lowe, F.I.B.A., Manchester. The building is of plain construction, accommodates 150 children, in accordance with the requirements of the Education Department, at a cost of about £600.

The death is announced, from Edinburgh, of Mr. Alexander Sinclair, the distinguished antiquary and genealogist.

Building Intelligence.

CHELMSFORD.—The council of the Essex Industrial School and Home for Destitute Boys recently received 12 tenders for the erection of new buildings on land opposite Admiral’s-park on the Writtle-road, Chelmsford. The plans have been prepared by Mr. Stock, the county surveyor, and comprise main school building, superintendent’s house, and entrance lodge, and house accommodation for 150 boys. The lowest tender—that of Mr. Parmenter, of Bocking (£10,347)—was accepted for the whole work, but as he has found that he could scarcely complete the work within 12 months as required, Mr. Fincham, of Chelmsford, has undertaken to erect the superintendent’s house for £1,330, Mr. Parmenter’s figure for that portion of the work.

IPSWICH.—A new mission church has been opened at West St. Matthew’s, Ipswich. The style is English, of the 16th century, the half-timber porch at the west end being a special feature. The walls are of red Suffolk bricks, with a range of five buttresses on each side, and bands of yellow bricks at the levels of the heads and sills of the windows, and yellow arches to the three-light windows in the east and west gables, the interior being likewise of red and yellow brick, corresponding with the exterior. The building consists of a nave, 48ft. 6in. long by 25ft. 2in. wide, with a centre aisle, a vestry at the east end, 24ft. 10in. long by 8ft. wide, and a porch at the west end, 5ft. 9in. by 6ft. The height from floor to pitch of roof inside is 11ft., and 24ft. from floor to apex. The seats will accommodate 240 persons. The architect for the building is Mr. E. F. Bishopp. The general contractors are Messrs. J. B. and F. Bennett. The tiles for the roof were supplied and laid by the Broomhall Tile Company.

LIVERPOOL.—On Sunday the new Roman Catholic Church of St. Thomas of Canterbury, Waterloo, Liverpool, was opened. Mr. Edmund Kirby, of Liverpool, is the architect, and the style is Early English. Mr. James Leslie was the builder, and Mr. John Francis the clerk of the works. Internally the principal feature is the use of polished granite of various colours for the columns which divide the nave from the aisles. The altar and reredos, executed by Mr. R. L. Boulton, of Cheltenham, are of alabaster, with Irish and Devonshire marble columns. The cost of the building has been about £4,500.

MARKET HARBOUROUGH.—On Thursday week Cardinal Manning opened a new Roman Catholic Church at Market Harborough. Mr. C. G. Wray, of London, is the architect, and Messrs. Halliday and Cave, of Stamford, the builders, Mr. Haines being the clerk of the works. The edifice consists of a nave, and a Lady Chapel on the east side. The entrance is from the south-west end, and the altar at the north-east. The building is in the flowing English Decorated style, and is built of local face bricks, with Bath-stone dressings. The nave is about 100ft. long, and the church will accommodate 350 persons. On the east side a spire, 90ft. high, with representations of the Evangelists at each corner, is erected over the Lady Chapel. In connection with the church, a commodious school has been erected, to accommodate 80 children, in the same style as the church.

PORTOBELLO.—There will be shortly completed various alterations and additions to St. John’s Roman Catholic Church, Portobello, from plans prepared by Mr. John Biggar, Edinburgh. They consist in taking away the west or front wall, and extending the church westwards by 20ft., so as to give room for about 100 additional seats. The new front is divided into three compartments, having corner and two middle pilasters, with moulded bases and Ionic capitals, with architrave, frieze, cornice, and pediment, surmounted by a plain cross. The new front is entirely built of polished stone from Grange Quarry, Burntisland. In the interior there has been erected a plain semi-circular dome-shaped apse, rising to the height of 19ft. from the floor of the church, with a Lady Chapel to the south, and a similar

space on the north, communicating with the sacristy. At the north-west corner of the church the erection of a spacious baptistry is contemplated, as also at the north-east angle of a commodious sacristy. Exclusive of the cost of these contemplated additions, and of the re-seating of the church, the cost of the work now in hand will be about £900.

RODMERSHAM.—The Parish Church of St. Nicholas, Rodmersham, near Sittingbourne, has been restored under the direction of Messrs. Morris and Stallwood, of Reading, by Mr. Lewis Shrubsole, builder, of Faversham. Very little has been done to the exterior, but inside the nave roof has been opened out, whilst in the chancel the western and eastern walls have been rebuilt and its roof re-cased. The nave and north and south aisles are divided respectively by fine arcades of three bays. The arches have been made good, and a new window placed in the south aisle. The main features of the church are Perpendicular. Decorated, but some interesting examples of earlier and later date remain. In the south wall of the south chancel aisle there is a unique Early English arcade of two bays, supported by carved capitals, and a good piscina (Decorated) has been opened out. The most interesting objects in the building, however, are the exceedingly rich parclose screen and sedilia in the two south bays of the chancel, the preservation of which has been carefully accomplished by Mr. Harry Hems, of Exeter.

WOLBOROUGH.—The old parish church of Wolborough, Devon, has, in the last ten years, been gradually improved. The high pews of all shapes have been replaced by open seats; the very interesting screen has been carefully restored, and the chancel has been re-arranged. Last Sunday the new east window was uncovered. The stonework is an exact copy of the old work, which has become too decayed to have inserted in it valuable glass, and three of the five lights have been filled with very beautiful glass as memorials by Messrs. Clayton and Bell. The subjects are the "Agony in the Garden," the "Crucifixion," the "Entombment," the "Resurrection," Our Lord saying, "Touch me not, for I am not yet ascended," and the "Ascension." The stonework of the window is the gift of the Earl of Devon. The two lights, as yet unfilled with stained glass, will, it is probable, not long remain in their present state.

CHIPS.

Boyle's Patent Self-acting Air-pump Ventilators were awarded the highest prize at the Manchester and Salford Sanitary Associations' International Exhibition of Sanitary Appliances, at present being held at Owen College, Manchester, in conjunction with the annual conference of the British Medical Association.

The purchase of the Beech-grove estate as the site of the Yorkshire College has been completed by the payment of the purchase-money—£13,000. The Archbishop of York has promised to lay the foundation stone on October 23rd.

Tenders for the erection of a new bridge at the Hythe, in place of the one washed away last winter, were considered on Thursday sennight by the Colchester Town Council. An objection was raised to the designs, which showed a solid plate structure, whereas some members of the Town Council suggested that a lattice-girder bridge would be not only stronger and more sightly, but would cost less by one-third. The matter was referred back for reconsideration.

Plans prepared by Mr. Hawkesley for waterworks for Wexford have been approved of by the Town Council of that borough, and will be carried out forthwith.

The first general meeting of the shareholders in the Newport, Pillewenny, and Maindee Building Society was held on Friday evening, when a report was presented, showing that the progress of the society during the twelve months it has been in existence, has been sound and satisfactory; the sum of £1,550 has been advanced on good properties. The tables had been prepared by Mr. Arthur Scratchley, actuary. The directors were thanked for the services gratuitously rendered during the year, and were re-elected.

The Eastbourne Local Board have decided to erect six additional groynes for the protection of the sea front, at a cost of £1,000.

The parish church of Filleigh, near South Molton, has been restored and enlarged from plans by Mr. Clark, of Newmarket.

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

To OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces. Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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A CONSTANT READER OF THE "BUILDING NEWS."
(Write to the Secretary, 9, Conduit-street, Regent-street, London.)

Correspondence.

A MODEL NEW CHEAP HOUSE.

To the Editor of the BUILDING NEWS.

SIR,—If "misfortune makes man acquainted with strange bedfellows," equally certain it is that their necessities sometimes force them to live in queer houses. I wish, Sir, to give to the public (through you) an accurate description of a small house in which I have had the misfortune to live for the last six months—a house not much better nor worse, I believe, than hundreds of similar houses hereabouts. Need I say that they are for the most part masterpieces of the speculating builder of the period?

The house in question is (with many of its fellows) built upon "made" ground—that is to say it stands above what was once an enormous hole, which has been filled in with rotten rubbish, ashes, vegetable garbage, gas refuse, brickbats, old laths and boards, shavings, old shoes, and other abominations, with plenty of the very stiffest clay, but positively no mould.

In digging up the ground at the back in a desperate attempt to form a garden, the stink was something awful as the putrefying mess was disinterred; and, as the house itself stands on just the same stuff, it gave a pretty good idea of the noxious exhalations continually rising up through the gaping chinks of all the ground floors.

At the same time interesting relics of the "British workman" were disinterred, among which were two decayed blouses, any amount of short pipes, and about a dozen of tin beer cans—once, no doubt, the property of some unfortunate publican.

The same cistern that supplies the house also supplies the w.c., and is placed directly over and in communication with the latter. The drains are not properly trapped, nor are the drain pipes laid with joints, sealed with

cement, mortar, or even clay. The sink is in close communication (through the drains) with the sewer, and so the house is constantly pervaded, more or less, but mostly more, with a perfect bouquet of sweaty stinks, only too palpable indications of the presence of sewer gas. Moreover, the mixed-up filth with which the ground was in part "made," is always giving off foul gases, which rise up into the house through countless cracks in all the floors. So much for the site!

In front the house has the usual "tasty" bay window, with its elegant ornamental columns, and a "neat" iron fence set in the stone coping of a dwarf wall; but the front door is built of unseasoned stuff, and the parts are all shrinking and warping away from each other. The mouldings round panels have never been fastened, but just stuck in with putty and a dab of paint, and now, of course, are dropping out. The door is flimsy and shaky, with a paltry latch; but, of course, has two panels of figured glass.

The floor of the "hall" is full of chinks and ridges, that can be plainly felt when walking over the floorcloth, and the ceiling is full of cracks; so are all the ceilings. In the front parlour the floor is equally bad, and would soon cut the stoutest Brussels to pieces; the door of the room is warped, split, and cracked; the sashes are paltry, and the Venetian blinds warped all out of shape. They don't work at all well, and when let down do not exclude a view of the interior from outside. The folding doors leading to back room are very bad, and there are two great cracks in the panels through which one can both hear and see plainly, while the bolt and latch are simply worthless (but yet quite new!), and fastened on with odd screws.

In the back room the floor is shrunk and ridgy, and a carpet cannot be put down because the door will not open over it. The room was papered before the walls were dry, and with the usual result.

Under the stairs are two cupboards, one of which is for food, and the door is provided with zinc panels at top—I suppose, to admit air. But as the door nowhere fits its opening by $\frac{1}{2}$ in., and is so hung as to project $\frac{3}{4}$ in. at top, and go inwards $\frac{3}{4}$ in. at the bottom, the cupboard gets plenty of air without the zinc panels, let alone the advantage of admitting the flies. The other cupboard is much the same.

The house has a side door fitted with a glass panel at top to admit daylight; but this is a useless luxury, as we get plenty of daylight through the wretched door itself. The kitchen is perhaps the worst of the lot. The room is low-pitched, the floor is as usual, the ceiling full of cracks, the range very paltry, and the chimney smokes, and, owing to its proximity to the scullery sink, the room is never free from a stink. The joinery is positively shameful, and one door is coming to pieces, all the cupboard doors are out of shape, and they don't fit at all. Locks, latches, and fastenings are alike bad.

The scullery is so bad at times that no servant can possibly stand and work at the sink. The effluvia is deadly.

The handrail and balusters of the stairs are most slovenly done, and the stairs rough. Upstairs the window sashes are paltry, the doors badly made, and coming to pieces, and full of cracks and chinks, and the joinery generally of the most paltry description, and latches and locks the same.

In a word, the entire house from top to bottom, and from back to front, is built by slovenly workmen, of inferior bricks, bad mortar, and paltry materials throughout; and is it uncharitable to say that it has been built so, not inadvertently or by chance, but deliberately, and of set purpose, as part of a nefarious "scheme"—a speculation on the necessities or the ignorance of the public, and with a cynical evasion of all obligations legal or moral?

What cares the speculator (or the idle, worthless, seamping lubber of a workman) that women who stay all day in such foul dens complain of headaches, and always feel tired and ill? What is it to him that children slowly droop and die of blood-poisoning? The men are mostly away in another air all the day, and

Intercommunication.

QUESTIONS.

[5092.]—Mortar Joints.—Rolled Iron Beam.—Will some of my fellow-readers be kind enough to answer the two following questions:—1st. What considerations other than that of appearance ought to govern the thickness of the mortar-joints in brick-work—both the bed-joints and side-joints? 2nd. A rolled-iron beam will carry with safety a central load of three tons; what weight per foot-run will it be safe to put upon it, supposing the span in both cases to be 10ft. ?—STUDENT.

[5093.]—Architectural Tour.—Can any of the numerous readers of your journal oblige us by giving the names of places containing examples of architectural interest around Buckingham, and which are within a day's drive of that town?—TWO BRIGHTON STUDENTS.

[5094.]—Measuring Chimney Breasts, &c.—I shall feel obliged if some correspondent will kindly inform me of the most correct method of measuring chimney breasts and flues' labour only? I let the building of brickwork and masonry (labour only) to a contractor, who agreed to build my flues at 9d. per foot rise; does that include chimney breast, &c., or must I pay for surface brickwork, in addition? If so, how measured? I also agreed to pay per yard for stone blockers, front of buildings, in which there are two large openings for bay windows—7ft. 9in. x 7ft.; do those measure in, or should they be deducted, and pay for plumbing quoins? There is also a rubble wall, in which there are two similar openings for bay windows, and an opening for shop-front, 12ft. x 8ft. I do not wish to be arbitrary, but it does seem to me unreasonable to pay for so many yards that were not built. An answer to this will oblige—ONE WHO DOES NOT KNOW.

[5095.]—French Polishing.—Will some one kindly explain the method of French-polishing, the materials used, and the time required? Also, how soon an article can be used after being French-polished?—ANGLER.

[5096.]—Board Schools.—In providing for a school to accommodate 500 children, what space should be allowed to each child? How must I calculate for sizes of school and class-rooms therefrom? What height should they be? If a mixed school (infants and older children), what difference will it make to calculations? Is there not a book published containing instructions and rules for schools of this class enforced by Government, and where can I obtain the book, if there is one?—PERPLEXED STUDENT.

[5097.]—Ceiling Light.—Will some one kindly show, by sketch or otherwise, the best mode to construct a ceiling light, made to open, and the best way for providing for the exit of water (caused by the breath of persons in the room) that will accumulate and run down the glass of the same?—PERPLEXED STUDENT.

[5098.]—Concrete Parsonages.—Can any reader of the BUILDING NEWS mention where any concrete parsonage houses can be found? Are they successful? If not, why not? What percentage is saved as compared with brick or local stone? Is there any recent standard book on the subject?—J. H. G.

[5099.]—Pitch Pine.—I have allowed first quality pitch pine to be substituted for Memel for the first and second-floor joists of a building of 24ft. clear span. Have I acted unwisely, or is there no fear of the ends sleeping away? Would the danger be lessened by letting a current of air into the cavity?—J. C.

[5100.]—Hollow Walls.—I should be glad to know which is considered the best way of building hollow walls, whether the 4½in. wall should be inside or out, and if inside whether the joists should be taken into 9in. wall, or merely rest on 4½in. wall, having a course of bonders immediately above the joists?—C. F. M.

[5101.]—Chimney Shafts.—Will some correspondent kindly inform me how I can build a chimney shaft of the following dimensions:—100ft. high from the ground, 6ft. diameter inside at the base, 4ft. diameter inside at the top; 1st, 25ft. from the ground, 3 bricks thick; 2nd, 25ft., 2½ bricks thick; 3rd, 25ft., 2 bricks thick; and the last 25ft., 1½ bricks thick, so as to insure it against cracking—a heavy cap in brick in cement on the top of the shaft? I ask for information because I have seen numbers of chimneys, about the size of that specified above, all very much cracked from the cap to about 50ft. down—no cracks below this point. I wish to know the cause of the cracking, and how to prevent it.—E. F. B.

[5102.]—Fair Wear and Tear.—I hold a house under a lease, containing the usual covenant to keep in repair; there is a crack in the brickwork of the back wall. At the expiration of the term could I be obliged to cut out the defective part and make good, or would it come under "fair wear and tear"?—ARTHUR VERNON.

[5103.]—Iron Bridge.—I am about to erect two wrought-iron girder bridges over a small stream running through an estate to be let out for building purposes. The spans of bridges between abutments are to be 30ft. and 40ft. respectively, to be one span, and capable of carrying a life load 2cwt. to the square foot, the roadway to be 20ft. wide in clear of

do not themselves so much feel the bad effects of this knavery. Often, too, they are utterly ignorant of all sanitary matters; and so the women droop and the children die, and the "enterprising" builder pockets his profits, and (in this world at any rate) runs little risk of getting what he so richly deserves.

This house I have tried to describe is no exceptional one. Hundreds like it are already "run up," and hundreds more in process. Right opposite is a big hole (the remainder of our hole) which is being filled in, and the ground being "made," the process consisting of shooting any kind of "muck" into the hole, and as fast as it comes to a level so-called "houses" are pithforked together atop. Surely all this is an evil that legislation already existing can reach?

Some may say "that it is our fault to take such houses. There they are in the open market, and we can take them or leave them." Not so. To many of us it is essential to be near the City, and that fact compels us to a choice; and here in Peckham, out of every hundred of small houses built—perhaps the above description (*mutatis mutandis*) would be not inapt as to ninety of them. It is thus a case of Hobson's choice.

Meat, fish, and other food is exposed for sale in open market, and the public is not forced to buy any particular article. If it is unfit for human food no one compels us to buy it. But here the law sternly protects the public, and comes down heavily on those who expose the bad things for sale. Why should a man be permitted to deal in stinking houses any more than in stinking fish?

In both cases the offence is much the same, essentially. In both, for the sake of making a sordid (and also an unfair) profit, articles (food and houses) are offered in the market utterly unfit for human use; and in the case of small houses the general public is as incapable of protecting itself as in the case of unwholesome food.

I believe that there is law to meet the abuse, if only it were put in force. Why, then, do not the district surveyor and the sanitary inspector do their duty in the way that the food inspector does his?

Food, unfit for consumption, is condemned and destroyed. Houses unfit for human occupation should be also condemned, and pulled down!

The above description is in no one thing exaggerated or untruthful, nor is it given by an ignorant outsider. Any fact here stated can be verified by you if you choose. I enclose my card.—I am, &c., B. X.

INDIVIDUALISM IN ART.

SIR,—Believing your journal is open to suggestions made expressly for the benefit of architectural art, I hope that you may deem the following worthy of insertion. It is generally acknowledged by appreciative students, that what is called individualism is a strongly marked and most important characteristic of mediæval art, and it appears to some of us that a revival of this individualism is essential to the artistic success of modern architecture. This revival need not be at variance with the usages and customs of the present age; but it would simply be that freedom of artistic individual skill which gave its characteristic life and freshness to old work. This, it appears, is what the architectural journals are continually asking for, especially in the reparation of old buildings. The true spirit of the mediæval work, we always hear, is wanting. If this spirit is to be revived, the present system of automatism must be superseded. There is little real artist work developed now by individual skill; the hands are always working without any proper sympathetic action of the brain. Might not this be changed? Are there not among the various art associations some who are impressed with the importance of this subject, and who have ability to bring it forward for discussion? The new movement for more systematic technical instruction is a good one, but it overlooks the want of freedom in the workman. He may study carefully some decorative branch of mediæval work until he can produce artistic work almost as good as that of the old workmen; but automatism gives him a stencil plate, or a dull model, as

his guide; or, in some other way it binds him, totally neglecting the essential "spirit of the old," which was expressly founded on originality, and not copyism. It may be said that freedom will foster error, that there was indifference construction, bad anatomy, and crude design in the old work, and probably these all would be repeated. But for the lesser evil we should not forego the greater good, remembering rather that it is this long-neglected individualism which has always given the greatest value to material.—I am, &c., A WORKMAN.

NON-SURVEYING ARCHITECTS.

SIR,—"Clamans in Deserto" still maintains, against all experience, that the architect who prepares his own quantities has no inducement to take excessive quantities. But let us mark the reason he adduces. It is this: that the architect is anxious to keep the cost down to the amount of his own estimate, which is generally low. If this principle actuated the architect it would lead him to the alternative of easing the contractor, and he would soon be powerless to exercise any authority. This evil would be, if anything, worse than the other. But as my experience is so opposed to "Clamans in Deserto" in this matter, and not mine only but several others, and your correspondents, it does not appear of any benefit to discuss the matter further. With one who is bold enough to make such a reckless assertion that "the architect who does not take out his own quantities is powerless to protect his client," it is of little use to argue further, though all I care to affirm is that the doctrine is one that certainly opposes all the Institute has done to make the architect an independent factor. I may add that, speaking to a borough surveyor of a large town a few days ago, he strongly maintained the opinion herein expressed in relation to his connection with public business.—I am, &c., CONTRIBUTOR.

THE QUANTITIES QUESTION.

SIR,—There are, I consider, very grave objections both to architects taking out their own quantities, and the employment by them of the professional surveyor. The old plan of builders taking out quantities, either individually, or, in a large competition, collectively, I hold to be best for all parties.—I am, &c., M.

THE SETTING OF KITCHEN RANGES.

SIR,—Of a somewhat erratic turn, and wedded to the "close range," I have been at the expense of fixing many, and have invariably found Mr. Mason had to be frequently called in to remedy the evil of flame being visible in its route round the oven, and draught affected—various kinds of cement, plaster of Paris, &c., all proved failures. Twelve months back I tried what the more learned in the craft told me was bound to fail, as the flame would quickly destroy my intended "stopping." If the fissure was entirely filled the flame would, by reason that the face of the range would be colder, most certainly not be drawn there. I argued. My theory has proved most perfect, and the remedy effectual. Wherever a joint in the mortar of brickwork gave me a chance I thickly studded it with tin-tacks, then I administered a coat of paint, and when dry, well putted and smoothed it down, where the mason would have worked cement. The putty soon hardened, and of course I gave it a coat of paint. The heat has given it the hardness of stone, and having been done a year and no cracking, it may be looked upon as a permanence.—I am, &c., ONE UNCONNECTED WITH THE TRADE.

The annual meeting of the Sussex Archaeological Society was held at Hove on Thursday week.

The Hastings School Board has adopted plans prepared by Mr. Elworthy, of St. Leonard's-on-Sea, for schools in three departments for 306 children, to be erected at Silverhill at an estimated cost of £2,000.

A new Wesleyan chapel was opened last week at Thornbury. The building is erected in the Early English style, and will seat 250 adults. The materials are native sandstone and Bath stone dressings. Mr. E. Curwin, of Liverpool, is the architect, and Messrs. Stebbens and Bastow, of Bristol, the builders. The stone carving was executed by Mr. J. Sheppard, of Bristol and Nottingham.

Last week the memorial stone of a new Congregational church was laid at Prescott. The building is Gothic, and has cost £2,000, accommodating 350 worshippers. Mr. Ridsdale, of Rainhill, is the architect.

Our Office Table.

girders. Would any reader of the BUILDING NEWS kindly give me the formula for calculating the depth, thickness of metal, &c. of the main girders, either web or lattice; also how far apart, and the dimensions the cross girders carrying the corrugated iron platform should be? What are the minimum and maximum thicknesses the road metal should be? What size should the piers be for girders to rest upon—they are to be built with brickwork in cement? What kind of stone is best for the templates for girders to rest on, and what size should they be? How am I to ascertain that the bridge is capable of bearing the load stated (exclusive of the road metal) when it is completed—that is, how can I test it? A practical reply will oblige.—A SIX YEARS' SUBSCRIBER.

[50104.]—Lead Flats—Can any correspondent give me information about lead flats—so laid as to be always immersed in water—for the purpose of protecting the lead from the effects of heat and cold?—B. W.

[50105.]—Patent Silvered Glass.—Having fixed some patent silvered plate-glass in wood framing, with 1/2 in. wood back, against a newly plastered wall, I find the silvering is coming off the glass through the damp. I was under the impression that the patent silvered plate-glass was damp-proof. Can some kind reader tell me how to prevent the remainder from being spoilt?—J. H.

REPLIES.

[5088.]—Cement Floor.—In reply to "Field Rye's" inquiry, I should think the cause of moisture complained of on basement floor to be due to the condensation of moist atmosphere which is always present in a new house, and will make its appearance on the surface of anything cold and non-absorbing, until the house is thoroughly dry. The best remedy is to have the windows and doors open as much as possible.—R. J.

[5088.]—Cement Floor.—I should recommend "Field Rye" to dig a trench on one side of the basement outside the wall, and lay in tile drains, giving them a fall to the best outlet. The fact is, the soil is retentive, and probably the tile drains under the cement floor do more mischief than good in bringing in the soil water.—G.

[5089.]—Rolled Wrought-iron Girders.—"Ignor" does not state the bearing he wants his girders to be, but if they are, say, 15ft. long, beams of 10in. depth with 5in. breadth of flange, would be sufficient. A 10ft. bearing would require a beam of 5in. deep.—W. G.

[5091.]—Window Tracery.—The simplest method of drawing tracery is to reduce the tracery bars to their central lines, and then to carefully find the centres for striking the arches, circular parts, cusplings, and measure the several radii. An outline sketch of the window, showing the centre lines, should be first carefully drawn, and afterwards figured in; this being done, the glass openings clear of the tracery should be measured and drawn, after which the filling-in of the mouldings will present little trouble. If "Alpha" proceeds on this plan he cannot err.—STUDENT.

[5091.]—Window Tracery.—Get Billings's "Infinity of Geometric Design," and you will have fine practice at window tracery. Batsford, of Holborn, has a copy, I think.—GEORGE B.

The foundation stone of the new parish church, Parracombe, Devon, is to be laid by the lord of the manor, J. Pyke Nott, Esq., on the 12th proximo. Mr. W. C. Oliver, of Barnstaple, is the architect.

New Board Schools were opened at Over, on Wednesday week. Mr. J. W. Tronson, of Stonehouse, Devon, was the architect, and Mr. Eli Pickstock, of Over, the builder. The cost was £2,700.

St. Mary's Church, Tunstall, was reopened, after repairs and additions, on Sunday week.

A new mission-room has been erected in Hotwell-road, Clifton, by Mr. Thomas Young, from the design of Messrs. Foster and Wood, architects, of Bristol.

The parish church of Claybrooke has been restored at a cost of £2,500, from designs by Sir Gilbert Scott. Messrs. Roberts and Son, of Weedon, were the builders.

Ipstones Parish Church was reopened on the 9th inst., after repairs, at a cost of £1,200, under the direction of Mr. G. Gilbert Scott, M.A.

Mr. John F. Van Camp, a builder, of Trebovin-road, Earl's-court-road, Kensington, was fined 30s., and £1 13s. 6d. costs, on Saturday, for using a furnace not constructed to consume its own smoke.

Mr. W. Morris, the poet-decorator, has promised to deliver in the metropolis next winter a series of lectures on the history of decorative art, under the auspices of the Trades' Guild of Learning.

The Primitive Methodist chapel at Hessele has been restored and enlarged at a cost of £281, from the designs of Mr. R. Potts de Reader, M.A.A., of South Shields.

The Tay bridge will probably be ready for the passage of the first locomotive by the middle of next month, and if nothing occurs to retard the work it will be open for traffic by October.

THE directors of gas and water companies, when communicated with by local authorities as to the terms on which they will consent to the transfer of their duties of control, management, and receipt of dividends, are usually suspected, and occasionally with some show of reason, of a disposition to strike very hard bargains with the ratepayers, and an antipathy to parting with either powers or property. It is not often, however, that they are accused of such neglect of the art of polite letter-writing as is conveyed in a resolution unanimously agreed to by the Birkenshaw Local Board of Health last week, which recommends "that, after the insulting correspondence from the Gomersal Waterworks Company, the committee take no further notice of the matter;" this "matter" being the previously-projected purchase of that portion of the waterworks company's property laid within the district. The aggrieved and offended local board has instructed its committee to leave correspondence with the Gomersal Waterworks Committee, and to make "the best possible arrangements" with the Bradford Corporation, who, it is to be hoped, will treat the members of the Birkenshaw Urban Sanitary Authority with that respectful courtesy which a regard for the high and important functions they are called upon to discharge will indicate to be due to them.

An inscribed stone, dating from the stormy days of the Civil Wars of a couple of centuries since, has just been noticed at Nottingham "Castle," where it had been built into one of the walls. It is about 12in. by 7in. on the face, and the inscription is surrounded on three sides by a border, the lower part having been broken away. The writing is nearly effaced, but Mr. Hine, the author of a monograph on the castle, assisted by the Bishop of Lincoln, reads it as follows:—

NE : INTRES . IN . IVDICVM
CVM . SERVO . TVO . DOMI
NO . QVIA . NON . IVSTIFI
CABITVR . IN . CONSPECTV . TVO . OMNIS
VIVENS . SCRIPTVM . PER . ME . IOANNEM
SPOR . WOD . DIE . IOVIS . NONODECIMO . DIE
MENSIS . ANNO . MILESIMO . SEXCENTESI
MO * * * * * QVADRAGESIMO

The history of the Civil War would give warrant for believing that this is the work of an unfortunate Royalist, John Sporwood by name, probably one of Prince Rupert's officers, and that it was executed on Thursday, the 19th January, 1643.

St. MICHAEL'S CHURCH, at Marblehead, Massachusetts, which, according to the *American Architect*, is the oldest edifice of the Episcopal Church in New England, was erected in 1705, the frame and all the material used in its construction being carried from England. The building retains many of its original features: the ancient reareds, with its credo and decalogue; the ancient chandelier, "the gift of John Elbridge, Esq., of ye city of Bristol, 1732," which, on special occasions, is used to illuminate the church; the original lock and key with which the doors were fastened by the church fathers; and the same old pulpit, of a wine-glass pattern. It is a boast of the old parish that its second rector, Rev. David Mosson, performed the marriage ceremony for George Washington and Mrs. Custis.

On Monday, under an arrangement made between the Vestry of St. Luke's and the owners of the property, one of the most important social and sanitary improvements which has been carried out since the demolition of "Tiger Bay," Ratcliffe-highway, was successfully completed. Acting under the provisions of the 57th of George III., which empowers vestries and other local bodies to acquire property for the purposes of social or sanitary improvements, the Vestry of St. Luke's and the Metropolitan Board of Works decided, at a joint cost of £100,000, to widen Golden-lane from Old-street to the City boundary to a span of 50ft. (the City authorities under the Artisans' Dwellings Act carrying on a similar widening of that part of the street within their jurisdiction), and at the same time drive a new street, running at right angles to

Golden-lane, through Bridgewater-gardens to Aldersgate-street. In carrying out this portion of the improvements, the vestry determined to include a block known as Cupid's, Bell, Vine, and Robin Hood Courts, and Barber's-yard, lying between Playhouse-yard and Bridgewater-gardens, and described by the sanitary inspector for St. Luke's, Mr. James Neighbour, as "the most infamous den in the metropolis—a hotbed of filth and contagion, consisting almost exclusively of houses of ill-fame of the lowest type, and occupied by the most desperate section of the criminal classes, both male and female." The street is to be the width of Cannon-street, and the congregation of the Welsh chapel in Jewin-crescent, lately pulled down to make way for City improvements, have secured the most favourable site for their new chapel.

A GOOD many sensational statements are going about just now as to the extravagant profits being made by brickmakers, and a paragraph has been going the rounds of the papers this week emanating from the brains of some ingenious London correspondent, in which the rise in bricks is ascribed to the unanimity with which unfortunate capitalists, debared from investing their money in Turkish loans and other profitable foreign securities, have rushed into the speculation of building houses in the suburbs of London. As a matter of fact, not nearly so many suburban houses are building at the present time as were being put up, say five years ago. Except perhaps in the North, the suburban house-building has been rather overdone, and until a few more of them are occupied or have tumbled to pieces, the speculative builder must rest a little on his laurels. The rise in bricks is due mainly to the increased cost of fuel and labour, and the great demand caused by the great engineering and railway works in progress during the past few years in and around the metropolis.

THE old parish church of Poulton-le-Fylde, near Preston, has been partially restored internally. One part of the restoration consists of a new pulpit and reading-desk. On the removal of the so-called old pulpit from the place in which it had been deposited during the alterations, one of the outer panels gave way and revealed a very fine and much older oaken one. It is octagonal in shape, and three of its sides are in very good preservation—a fourth had been much injured when the covering was put on. Each panel is richly carved, square-cut, out of the solid. The main division in each contains a very beautiful Norman arch, and each of the lower divisions is filled with a representative head in the centre, surrounded by a floral design in one case and foliage in another. On the frame-work round the top is cut, "Crie aloud, spare not, lift up thy voice lyke . . ." Here the text ends, which leads to the supposition that the fifth panel has been either lost or destroyed. The pulpit in which it was encased (hitherto called the old one) is made of deal, and the colour and panelling correspond with the north and south galleries; these were erected about 140 years ago. One remarkable thing in connection with the pulpit is that it has been removed, in its encasement, no fewer than three times within the last 55 years without the slightest suspicion of the presence of such a valuable relic. The oldest inhabitant never heard of the merest tradition of its presence.

A new Merchants' House has been erected at Glasgow at a cost of more than £32,000, from the design of Mr. John Burnet. The style is Italian.

St. Paul's Church, Devon-square, Newton Abbot, is temporarily closed for internal renovation, executed by local workmen. It will be opened on the 6th prox.

The Congregational chapel, Lapford, Devon (rather a commodious building for the size of the place), is to be re-seated and re-decorated under the superintendence of Mr. R. Cruwys, of Barnstaple.

Messrs. W. and J. J. Kier have been entrusted with the execution of the historical stained glass windows for the Merchants' House, Glasgow.

A vestry, fresh entrance, and porch, are being added to the Chapel Royal, Savoy.

The foundation stone of a Convalescent Home was laid on Wednesday at Hunstanton, Norfolk. It will be of brick, with stone dressings, and will hold 40 patients.

THE BUILDING NEWS.

LONDON, FRIDAY, AUGUST 31, 1877.

ARCHÆOLOGY AS A STUDY.

JUST now the meetings of the archaeological societies are busy, and attracting a large share of public attention. The Royal Archæological Institute has recently terminated its visits and labours in one of the richest and most interesting of districts, a full and special report of which has appeared in our columns; the Worcester Diocesan Archæological Society has been engaged in a like pursuit, and this week the British Archæological Association is holding its annual Congress in the romantic town of Llangollen, a full report of which we publish. For a different object, the British Association has discussed various questions of scientific interest, which are just now absorbing the study and attention of our foremost scientists. The somewhat opposite character of these meetings—one pursuing the past, and the other the present phase of knowledge—is at least indicative of the activity of our national thought, and the scope of our progress. It has been said architecture died out *just* when archæology began to be cultivated as a study; and it certainly is a somewhat singular coincidence, suggestive to the reflective mind, that the wealth of our literature in art—our museums and galleries, our photographs, our sketches—has accumulated almost simultaneously with the loss of our originality or invention as artists. One society, indeed, has founded upon this concurrence of things its claims as an organised body for the protection of our ancient buildings, and its chief article of faith is that we have no style, and that architecture has “died out.” To say the least, it is not very flattering to the modern architect that he is called upon to renounce all invention, and to go back to the origin of art as a mere reader of its secrets. But has this doctrine of the archæologist the claim it is said to have? Or has not archæology rather stepped beyond its bounds in setting up its own test of art? There is some reason to fear that the latter is the case. The true domain of archæology is to trace out, decipher, and classify the remains of past art: if it does this systematically, it may certainly lay claim to the dignity of a science. But if we mistake not, the archæologist believes his special knowledge is the unfolding of architectural principles, or that his discoveries are the only road to architecture. In this view, we believe, the modern student of antiquity is mistaking his proper aim. Archæology has a close relationship to language and religion, and both these latter have been found by that great ethnologist, Professor Max Müller, to be intimately related. The three great centres of language—the Aryan, Semitic, and Turanian—have been discovered by Max Müller to be those of well-marked religious beliefs, and the ethnologist can trace in the words of certain languages the modes of thought and religious life of those races. Thus the names expressive of the Deity have clearly indicated the kind of worship of those primitive races. Now, archæology, if it teaches anything, should similarly indicate the social habits of bygone nations or epochs, their states of industry, and their modes of worship, and to arrive at these results the scientific archæologist should have recourse to all those facts which may enable him to form or verify any hypothesis. To be able to distinguish the dates of a few windows, to trace the genealogy of a certain founder, to give a date to a tile or painted window, to detect the symbolic meaning of a piece

of sculpture, or to ransack ancient M.S.S. for the purpose of discovering the object of an effigy, are useful enough when some hypothesis is before us which the several discoveries help to corroborate or refute, but, regarded as mere details, they are of little interest to the science. Studied apart from a general acquaintance with architectural classification and nomenclature, archæological investigation leads to the raising up of a class of students who ignore the work of the architect, while the architectural student is influenced unduly by such teaching if he have an archæological penchant at all. There is, nowadays, a considerable danger of architecture being influenced by archæological conservatism. It has, probably, already operated to check our progress. To instance a few matters. Our church-restorers have been healthfully restrained by the influence of archæological societies, but the idea of knocking off all the plastering from our church walls with the notion of reverting to a certain age has done infinite harm to progressive ideas of church-building. Again, a recent society has found out that their predecessors went too far, and that the 16th and post-Reformation additions and monuments have as much an historic charm as the 13th century had. We are bid, therefore, to leave things as we find them—not to restore at all. Now, there is no question both these doctrines proceed from the archæological temper being at utter variance with modern art; and not only this, but its going beyond the direct objects that archæological science has in view.

A personal acquaintance with some of that highly-respectable body has tended to confirm our idea that they are exceedingly opinionated, and that the modern architect is regarded as little better than an ignoramus in the art he professes. The tendency of antiquarian research is unquestionably exclusive, somewhat dogmatic, and inclining towards an esoteric view; this it is, perhaps, almost necessarily. The very habit of tracing well-authenticated data and types from a long-continued series of observations on old buildings, the following of traditional history, and the hunting up of legends, constitute a kind of study in which the student may bury himself in the past, taking no heed of the present. There is something of an infatuation in the pursuit of this kind of discovery, in bringing to light crumbled sculptures, in deciphering the chronicles of antiquity, and in reconstructing from a few disjointed fragments an abbey or a ruined castle. Conjectures are all based on previous facts or some tradition. The average archæologist has but a very slight knowledge of architecture, much less of building, and this fact has gone a long way towards estranging the two. One has studied art objectively—his knowledge of style and constructive peculiarities is derived solely from existing remains of ancient buildings; while the architect has studied it both from actual buildings and from his own experience—both analytically and synthetically. In examining an old building, the student of antiquity looks upon it as a relic, but the architect sees in it a method and a plan. This disagreement is probably the reason of the want of accord between the archæologist and architect, and until the strict line of demarcation is drawn we must not expect to find any sympathy between the followers of the two classes of study. Thus the discussion of the round and pointed arch has been based upon very opposite considerations. One party swears by the dates between which the round arch prevailed in England, and another regards its existence as due to constructive exigency. Recent investigations have rather favoured the idea that the pointed arch was not introduced as a feature but as a neces-

sity of vaulting; the archæologist has been slow, however, to accept the latter doctrine, despite the evidence of certain French examples. Again, the terms Saxon and Norman were indiscriminately applied at one time to the round-arch style, as it was thought to have been introduced at the establishment of Christianity among the Saxons, in the 6th century, and continued to about 1135. The question of Roman or Norman has been another fruitful source of controversy; Colchester Castle has been pronounced Roman by one set of archæologists, and Norman by another—the crucial point being the existence of masonry that bears a strong resemblance to Roman. It has been found, however, that the Normans used the thin bricks and the coarse mortar, considered distinguishing features of Roman work. One set of archæologists long disagreed as to the dates of certain types of fonts and towers, and even to this day the arrangements of conventual buildings afford ground for various conjectures. The advancement of the study of ecclesiology, as a distinct branch of archæological study, has considerably helped to settle, however, many points of doubt in ecclesiastical and monastical arrangements, such as the position of the refectory. To the late Mr. Edmund Sharpe we owe much for having directed his extensive and critical knowledge of buildings to archæological investigation. Again, much is due to Mr. J. H. Parker, Mr. Mackenzie Walcott, Mr. Bloxam, and others, for having laboured to place the study on a somewhat rational basis. There are so many different branches of the study—some relating to pre-historic and Celtic monuments, some to monastic remains and churches in their several subdivisions of architecture, monuments, glass, sculpture, &c.—that it would be vain to expect from one a thorough acquaintance with the subject. It would, however, be extremely desirable if the various societies that yearly make inspections of our antiquities were to unite in laying down the bases of their investigations—that is to say, to categorise their labours, and deduce therefrom some general conclusions in relation to the several subjects of their visits and inquiry. A long and elaborate paper on some castle or abbey is read, full of detail and of intense interest to many, guesses and conjectures are set forth, and a discussion sometimes follows of a very incoherent kind. In a few years after the same antiquity is visited, and another theory probably broached, but archæology gains little. Only an extensive and critical observation by various minds, directed to one point of inquiry, can solve a doubt, and it would be of great value to collect the various conjectures, discuss them at a biennial or triennial congress of the societies, and publish the results for future use. We are doubtful whether the desultory and fragmentary literature of our archæological societies has done much, or is of any value except as containing the individual guesses of a few. But before such a method can be inaugurated the objects of archæological inquiry must be fixed; and, as regards buildings, the archæologist must be so far acquainted with architecture as to be able to bring such knowledge to bear upon any subject of inquiry; he should be acquainted also with the geology of the localities he visits, and be able, in a word, to bring as many lights as possible to his task. It is desirable, in fact, that annual visits should always be accompanied by the architect; and we fear at present there is not that cordiality of sentiment between them as there should be. The papers of Sir Gilbert Scott on our cathedrals have a thoroughness in them which the mere antiquary could not impart. Hence, too, Mr. Blashill, the other day, corrected a general impression that the grand western

arch at Tewkesbury was in reality nothing but a tower archway which carried the inner wall of a west tower now destroyed. Only a knowledge of masonry could have shown such a conjecture to be ill-founded. We do not mean to say that an architect would be necessarily right in his conjectures, but the probability is that in the majority of instances a technical or practical consideration readily determines a doubtful point which a band of antiquaries might have disputed till doomsday. An antiquary can only base a conjecture on a well-established precedent or a general concurrence of certain types and workmanship with a certain date, or on tradition; but the architect can bring his building knowledge to aid his architectural. A general concurrence of types with certain dates must not be too implicitly relied on in the absence of other facts or collateral evidence, and, like the reasoning of the scientist, the archæologist should verify his hypotheses, and no one should be adopted till this verification has been carried so far as to give predominance to it.

MARKETS, WAREHOUSES, AND SHEDS.*

THESE unpretending classes of building have at length found an author. Architects have been too much intent upon the more pretentious kinds of structure to find time or inclination to publish designs of such commonplace structures, though many are ready enough to find fault with our modern warehouses and markets that have been left in the hands of engineers or borough surveyors. Mr. Alexander Friedmann, C.E., councillor of the city of Vienna, some time ago published the results of his labours and designs for proposed markets and warehouses for that city, and Mr. E. H. d'Avigdor, B.A., C.E., member of the Austrian Society of Civil Engineers and Architects, has translated the original work into English, and has presented it in a dress rather unusual to English readers. The size of the work is a large folio, and the sheets and plates are loose in the usual French portfolio form. Glancing over the first few pages of this work we find that the novelty of Mr. Friedmann's ideas consist in the disuse of cast-iron columns for these structures, and the substitution of wrought-iron framed columns, the angles being united by lattice work. The designs comprise a large variety of constructions from simple sheds to central market halls and warehouses, with details and calculations of the constructive parts. There are 27 plates, which have been reproduced by photo-lithography. The author's aim has been to solve the difficulty of covering large areas by wind- and weather-tight roofs, having few breaks, and avoiding valleys, and to obtain light from vertical windows rather than from skylights. This he does by forming a series of parallel slopes or aisles on each side of a central nave, and combining them together for any required purpose or idea. These are either simple parallelograms of from 3 to 5 or 7 aisles, the central being the widest, with a span roof, or two or more parallel blocks of this kind, united by cross buildings of lower elevation. Various alternative designs are shown for various problems, but the same principle of construction is exhibited throughout—namely, square open lattice-columns of wrought iron, carrying roof principals of the same kind, placed at flat pitches, and tied together. To give our readers some idea of the method of construction adopted by Mr. Friedmann, we may allude to the principles as stated in the

general remarks. The author says:—"For very low buildings cast iron may be used, although such sheds have frequently given way when the climate is very severe, as for instance, last winter at Bucharest. The columns suddenly snapped, either in consequence of uneven settlement of the foundations, or by the lateral thrust of a violent storm, or possibly by the crystallising action of extreme cold on cast iron." As the author observes, cast iron offers a safe resistance to steady vertical loads in compression, but no security against tension and torsion, such as those caused by violent wind. "In the latter case we can no longer consider the absolute resistance to fracture of the material, but the dynamical effect or 'work' it has taken up before and until the fracture, which 'work' is a function of the pressure multiplied by the space which the different molecules move through. This space is equal to the extension of the material at the moment of fracture; and this possible extension is much smaller for wrought iron than for cast." Rolled iron has then an immense advantage. Speaking of the section of column adopted, the author observes: "I propose to divide the material which supplies the real resisting power over the four angles of the square or rectangle of the section, and to unite these by lattice work." These angles are really angle-irons placed at the required distances apart, joined by four lattice webs, which do nothing else but keep the angle-irons at the proper distance from the centre of gravity or neutral axis of the horizontal section; so that the strength of the isolated column is obtained by placing the material of resistance as far as possible from the central axis thus increasing the moment of inertia of the column. This open web column has undoubted advantages over the solid plated or tubular columns, designed by Mr. Krantz for the Exhibition of 1867, or that adopted by Mr. Henry Schmidt for the Vienna building; for, in case of lateral pressure, only two of the opposite plates resist the strain, and the other two are of little use. The system of Mr. Friedmann is no doubt the most economical, and it also allows of a larger base or cross section; but he is in error in thinking that he was the first to have thought of this open form of column, which has been used in America for years, and has been also largely adopted in England. But we give the author the credit of having first published a series of designs showing the application of this system to the construction of large buildings. It must be remembered that the greater the span the greater is the weight of ironwork per square of the area covered: while the shorter the span the greater is the number and weight of the supports. These considerations lead us to adopt such a span as will combine the advantages, if possible, of both; and the height of the columns becomes the primary consideration, and this is regulated by the span and height of building. As regards the area or site, the author states, as a general rule of some importance, that the cost of the foundations will be less, if the longitudinal axis of the buildings is parallel to the direction of the strata, than if it is at right angles.

The first design is the construction of a market covering an area of 220,000 square feet, and proposed to be erected in the city of Vienna for 5,000 horned cattle. The site or plot of land is shown by a detailed plan, with sections or contours. It forms a slope, formerly one of the banks of the Danube, and the author proceeds step by step to solve the problem. The pig market is placed on the lower or alluvial part of the ground, where the stratum is less firm, and the main structure on the higher part. Three alternative plans are shown, and the reasons which induced the author to depart

from the first are given. The study of the construction of the buildings is fully explained, and is interesting. In two alternatives the roof is divided into three classes of trusses. The first covers the central nave, and is the highest; the second covers the main aisles, and the third covers side galleries at right angles to the centre line. There are no V-roofs or interior gutters like those of the Paxton roof. The climate of Vienna and the snowfalls preclude such a mode of construction. During severe frosts the water in the valleys freeze at the mouths of the down pipes, and a long valley or V-roof would be choked up, if not rendered dangerous. A third alternative design shows a parallelogram with a central longitudinal building of three avenues and lateral aisles or wings abutting at right angles to it—these latter consisting of smaller repeats of the main central structure. A fifth alternative shows the entire avoidance of the lateral wings, and consequently of valleys, the plan being an immense parallelogram, 230 metres in length (754ft.) by 102 in width, divided into seven longitudinal aisles by rows of hollow lattice columns. The roof consists of a central span of flat pitch covering the nave, 26 metres to centres of columns, and three aisles on each side, measuring respectively from the centres 13m., 13m., and 10·80m. The roofs of these are slightly more sloped, and have three tiers of clerestory lights on each side, the nave having a raised lantern along its ridge for ventilation. Though the ridge is 88ft. 6in. high from the ground, the author does not fear the height of the building, nor the effect of its larger cubic capacity, for it is not the volume of air contained that has to be considered as regards warming, but the surfaces of the building exposed to cooling. The area exposed to heat or cold is the question, and not the cube contents, and it was found that the area of this design is smaller than that of the previous design, though much higher, and therefore that this plan is most economical in the retention of the warmth from the cattle in winter time. The lighting is by vertical or clerestory windows, and sloping skylights are avoided; thus the expense of badly-fitting roof-lights is obviated. An interior perspective is given, showing the effect of the immense structure. Speaking of the ventilation, it is proposed that the velocity of the fresh air which enters should not be too low, and the total area of openings for the fresh air multiplied by its velocity must be equal to the total area of the ventilators or louvres multiplied by the velocity with which the foul air passes through them, and the greater this velocity is the better. It therefore follows, that the ventilators should be as high as possible above the floor, and that the ingress be as near the floor as possible. It is consequently proposed that all the clerestory lights be closed, and that the ingress openings be made only so much greater than the ventilators as the speed of the outrushing air is greater than the incoming air. For the above reasons open sheds are, on calm days, more unbearable than closed ones with lofty ventilation and with well-distributed openings near the floor. These latter should be placed higher than the height of a man so as to avoid friction. The length of the stalls, including the 4ft. path behind, is 3·79 metres, the distance between the principals being 7·62 metres. The paths are in the centres of the three main naves; thus the market is divided into blocks of stalls by five longitudinal passages, as in the Paris market, of which two are used as footways. There are two cross passages. At one end the longitudinal passages lead to the slaughter-houses, and at the other to the roadway. As regards the details, the principals are of double

* Designs for the Construction of Markets, Warehouses, and Sheds. By ALEXANDER FRIEDMANN. Translated by E. H. D'AVIGDOR, B.A., C.E. London: E. and F. N. Spon, Charing-cross.

lattice girders, to agree with the columns, and the whole weight is calculated at 100lb. per square yard. The tension bars to the main roof trusses connect the principals with the columns—and, in fact, cross the main tie-rod of the truss, uniting the ridge of the main principals with the columns at their junction with the aisle principals. The angles between the columns and principal rafters have also brackets of open lattice-work. The outer principals rest on shoes, on which they can slide to meet the alteration of length due to temperature. The covering is zinc, laid on boards, which rest on longitudinal timber purlins. The wind pressure calculated is 100 kilogs. per square metre—this is a maximum, the total horizontal pressure being calculated at 20lb. per square foot, and the total vertical load of same at 5·2lb. For rafters which are subject to vertical pressure 15·5lb. per square foot is assumed, and an additional 12·4lb. per foot of the horizontal plan of roof for the components of the wind acting vertically. The calculation of the details is minutely worked out and fully described. The other designs illustrated show sheds with curved roofs, and an adaptation of the old ironwork of the Vienna Exhibition of 1873. The latter idea was a suggestion by the author to the municipality to use the materials in the construction of a central market, and several plans are worked out with this object. We certainly cannot accept the design on Plate XV. as a successful work architecturally. The front elevation with the two segmental pediments of the main aisles is very weak; the continuous roof alternative is much more pleasing. Chapter III. treats of the construction of warehouses for harbours and estuaries. Various designs are given, all more or less ingenious and suggestive, showing warehouses on the water side, warehouses with American vaults, and giving full details of the construction. Many of these designs display considerable merit. In each case the adaptation to the site, and other conditions of the problem, are fully entered into, and various practical rules are given that will be found of much value to the engineers of our docks and harbours. Most of the examples given, it is true, have been designed with reference to the requirements of the Danube, near Vienna, but they will be found to admit of easy modification adapting them for any similar position. The principles of construction laid down by Mr. Friedmann are sound; and though we cannot accept many of the designs as being architectural solutions of the problems presented, we have no hesitation in saying that the English and American engineer will find his work a useful addition to their libraries. In our Indian colonies also the method of construction proposed adapts itself admirably as little more is required than skilful riveting of the parts.

Mr. Doswell, of Frome, has been elected surveyor and inspector of nuisances to the Ashford Local Board.

The restoration of Malton Priory Church is being proceeded with, under the direction of Mr. Jones, of Malton and York, by Messrs. Keswick and Sons, builders, of York.

An interesting discovery has just been made at St. Alban's Abbey during the laying down of gas pipes for the purpose of lighting up the cathedral portion of the building. It has been considered by many authorities that the ancient chapter-house, which was destroyed, to fix the latest time, at the early part of the eighteenth century, stood on the south side of the slype, and this conjecture has been confirmed by the discovery of the responds and of the northern, western, and eastern wall. The responds are deemed the most elaborate zig-zag traceries Norman mouldings yet found in this country.

The workmen in the employ of Messrs. Robert Wilkins and James Hill, builders, of Ashley-road, Bristol, had their outing at Weston-super-Mare on Saturday.

THE CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT LLANGOLLEN.

[FROM OUR OWN REPORTER.]

THE first Congress of the British Archæological Association in Wales follows very appositely that held in Cornwall last autumn, for each partakes of the character of an examination of the hills and fastnesses to which the earliest inhabitants of which we have records were driven by the successful invaders from the Continent. The field to be traversed is in both cases an unusually wide one, and the buildings and other objects to be examined are not scattered over it with great profusion; but the programme for the series of meetings which opened on Monday at Llangollen shows a larger proportion of mediæval to "pre-historic" objects than was the case in Cornwall. Barrows and earth-mounds exist in both cases in sufficient number and variety to afford exercise for the profoundest antiquary, but in place of the cromlechs and sacred circles that were so frequently puzzled over and discussed during the excursions from Penzance at the close of the Congress for 1876, there are in north-east Cambria the shattered fragments of castles of every date, that denote a border district, and several abbeys of the Cistercian order, all in a greatly ruined condition. These castles and abbeys have a close relation to events with which extant history renders us familiar, and afford in their internal evidences of dates of erection and enlargement, together with the too scanty documentary records relating thereto, tangible subjects for investigation, and are, therefore, of general interest. In both districts the natural beauty of the scenery is, undoubtedly, the chief attraction to many of the members, and in this respect the neighbourhood in which the congress is now being held is unequalled in South Britain. To the archæologist North Wales associates itself with the fortress boroughs of Chester and Shrewsbury, for although both are thoroughly English towns, each has been intimately connected for ages past with the Marches over which they once held guard; each has played a prominent part in the making of the history of the Principality, alike in commerce and in warfare, in the disputes and in the bargainings continually going on in mediæval days between the sturdy Cymri and the ever-encroaching men of Mercia. An added charm in the eyes of the ponderer on the past, both to Pengwern and to Deva, is that as yet the obliterating march of progress has not passed over them to any large extent, as each retains very many of the characteristics of a fine old English county capital. Thus each yet possesses a castle, encircling walls, and gates, recalling to memory the occasional sieges and the border frays innumerable witnessed in each. Each has an abbey or minster, remains of conventual buildings, and numerous parochial churches. Each is remarkable for the picturesque beauty and variety of the half-timbered and gabled mansions built by its merchants and traders over their places of business. With these stores of specimens of domestic, ecclesiastical, and civil-military architecture, an archæological programme of peregrinations in the Principality of Gwynedch would scarcely be deemed complete unless it included a peep, hasty though it necessarily would be in a week's excursion, at one or other of these towns. The Rows and Cathedral of Chester will probably be seen on the closing day of the Congress, as the city is to be passed through *en route* to Mostyn and Basingwerk. An unavoidable omission from the arrangements we remedied personally by availing ourselves of the opportunity, on the way to Llangollen, of glancing at

SHREWSBURY.

The Castle at once attracts attention from its excellent position on the highest point of the promontory formed by a bend of the Severn. It is so close to the railway station as literally to overshadow it. Chiefly Edwardian in the character of its keep, and the squared polygonal mass of towers and buildings surrounding a bailey, it yet exhibits in an arched gateway, and parts of the massive structure, some of the handwork of Roger de Montgomery. From it the town wall can be easily followed

nearly round the town, and on the west side is one of the gates, a low square embattled structure in two stories, with narrow loopholes. The red sandstone, of which these fortifications and most of the churches are built, is very deceptive, its crumbling surface suggesting an earlier date to edifices than their architectural features warrant. The peculiarly soft outlines given by this partial disintegration, where exposed to weather, has rendered Shrewsbury, like Chester, peculiarly attractive to the sketcher. The chief feature of the town is, however, its half-timbered houses, of which numbers remain in the principal streets. A noteworthy group is that at the corner of High-street, and the square known as Ireland's Mansion, and now forming several shops and residences. The massive oak framing is freely carved, and the overhanging upper stories, projecting gables, and tiled roofs, all add to the effect. Opposite is a house 60 years later in date, for it has inscribed on its front, 1592, in which all the gable posts end in carved figures, and the quarterings are cut into quatrefoils. The timbers of all the houses are tarred, the plaster between being frequently lime-washed. The great variety in these timber constructions has not been sufficiently taken into account. Every man building a house, while adhering pretty closely to the common model of the framing, has so individualised the treatment and the arrangement of the quarterings and decorative features that there are no two houses alike. In the centre of the Square is the old Market House, a good example of the style that prevailed in the later days of Elizabeth; its fantastic enscolled parapet and odd gabled openings and niches being in keeping with the tiled roof, handsome chimneys, and the pillars on which it stands. Under a canopy on the chief front stands the small statue of Llewellyn removed from the Welsh bridge in 1791. Another inscription between contemporary coats of arms of England and Shrewsbury informs us that this hall was "begonn and covered in by ye yen baylifles in 1596." More pronouncedly Tndor (in accordance with its slightly earlier date of erection) is the Grammar School. Several of the nine churches are of interest—those of St. Mary and St. Alkmund have very lofty spires. As in several other cases in the adjacent counties, the towers to which these slender spires were added, about the end of the fourteenth century, are not themselves sufficiently high to appear good in proportion. In a churchyard are two bays of the bishop's chancel of the collegiate church, erected in 1493 on the site of the Saxon church of St. Chad, founded A.D. 780. No part of the existing structure, the rest of which fell in 1780, appears of earlier date than that of the second foundation; but the mouldings and tracery are treated with much grace for so late a period. Traces of monastic institutions crop up on every hand. Following a narrow thoroughfare close to the Welsh bridge we come upon remains of a small house of Austin Friars, the outline of the chapel and some of the domestic buildings being clearly distinguishable, although now used for the storage of timber. Crossing the wooden but picturesque English bridge we visit the Abbey of SS. Peter and Paul. Only the nave and its aisles of six bays remain, fragments of the transepts and indications of the chancel existing in the churchyard. The form and mouldings of the piers of the central tower, now external, and those of the arcade, and the circular-headed doorways, exhibit fine work of the latest type of First Transitional. The small piece of a north transept wall, yet erect, contains an Early Decorated west window almost perfect, and traces of successive alterations abound. In the fifteenth century the roof pitch was lowered, the aisles being simultaneously raised and filled with large windows; and, at a still later period, a heavy tower of three stages was added at the west end; this was left unfinished, and in the days when the rage for inexpensive restorations had infected vicars and their churchwardens a red-brick parapet was added by way of finish. Some of the quaint buildings in the Foregate having been noted, we resume our journey after an afternoon of archæological recreation, the more pleasant, perhaps, because "not on the programme."

LLANGOLLEN.

The town itself presents few attractions to the archæologist other than is afforded in the rounded and forest-clad mountains by which the narrow vale is inclosed, and in the miniature cascades of the river Dee as it leaps and dashes in foamy shallows over the ridges of rock in its slaty bed. Indeed, the view presented from the railway station suggests that the charms of mountain, vale, torrent, and lake has had as much influence as antiquarian considerations in inclining the council of the association to select Llangollen as their head-quarters for the Congress of 1877, and although the architectural features of interest are almost confined to the parish church, the narrow-arched, steep-pitched, heavily-buttressed bridge, spanning the Dee (in former days, and before it was widened and made of easier gradients, considered one of the Seven Wonders of Wales), and the fragments of Castle Dinas Brân, which break the sky line of a lofty conical hill on the opposite side of the river. The parish church stands in the centre of Llangollen; it is a large but very plain structure, consisting of nave and chancel, with continuous north and south aisles to both, and west tower of three stages. It has been recently restored and reseated. The best feature is the hammer-beam nave roof, which has figures of angels on the corbels; the ceiled space between the two easternmost principals is filled with richly-carved oak panelling. As usual in Wales the roof is said to be brought from elsewhere—in this case from the Castle on Dinas Brân, but it has evidently been framed and designed for its present position. In the eastern bay of the north aisle is the canopy of a tomb, of very late 14th-century work, with cinquefoiled cusping and deep moulding; to this has been added a very stiff label, decorated with the rose ornament, and flanked by crocketed pilasters. The church as a whole seems to be of 14th-century work, but in the recent restoration some windows and arcading of at least a century prior in style have been inserted, with what authority it is not easy to see. The church is dedicated to the ancient British saint, Collen. A temporary museum has been arranged in the Assembly-rooms, consisting of a small series of antiquities found in the vicinity of the localities to be visited during the Congress. Amongst the exhibits may be specially noted a massive silver salver, lent by the President for the year (Sir W. W. Wynn), which has very skillfully set into its border, so as to display both obverse and reverse, 128 silver coins of the earlier Roman emperors, found at Wynnstay. The President also showed a mammoth watch, a relic of the Armada; it is about as big as a Bath bun, of great weight, and still "goes." A number of bronze implements and celts, dug up near Corwen, were contributed, and many other specimens of pre-historic date were arranged in the room, in addition to the objects exhibited by members of the Association from London and elsewhere.

MONDAY.

PUBLIC RECEPTION AT LLANGOLLEN.

The proceedings of the Congress commenced on Monday afternoon at 5.30 at the County Hall. Here the members were officially received by the local committee. Mr. Theodore Martiu, C.B., LL.B., as their chairman, offered the members of the British Archæological Association a very cordial welcome on behalf of the committee, the local board, and inhabitants generally. They would see by the showers of the past few days that Wales, like other wayward beauties, had her tears as well as her smiles, but it was to be hoped that these members would also see the Principality in a sweeter mood during the week, which promised to be one of very busy investigation. There were in the neighbourhood some magnificent ruins of old castles and abbeys about which he had hitherto not been able to obtain very definite information, and he trusted that the result of this Congress would be that he (speaking personally) should understand more accurately the history and character of these remains than he had done hitherto. However, he would not longer detain the members, as he believed they were about to pay a visit to the house once inhabited by the "Ladies of Llangollen," and he hoped they would derive some pleasure from looking at the more per-

manent relics with which these remarkable women enriched the little box in which they dwelt.

Sir W. W. WYNN, Bart., M.P., as President for the year, acknowledged the compliment, and proceeded to deliver the inaugural address. A specially interesting feature of the district to be visited during the week would be the different descriptions of castles by which it was once defended, from early British to the most recent period. Near Oswestry, he believed, they would see one of the former class, while close at hand, at Chirk, was a castle of a more recent date—one which was very much injured in the wars of the Commonwealth, but now restored, and changed from a place of warfare into a very comfortable gentleman's house. On the Dee they would probably see the very early castle at Caerwys, near Newmarket, where there is a gold mine, and from near which place a gold torque of great beauty was dug up. He hoped to procure it from South Kensington Museum as an addition to the temporary loan museum. On the morrow they would see another very early fortress at Castle Dinas Brân, and also the Abbey of Valle Crucis. The chronicles showed that the monks may have been diligent in performing their religious duties, but they also knew how to take care of themselves, and were very well informed as to good fish and the abbot's ale. Near Wrexham, in the detached portion of Flintshire, known as Maelor, might be seen Bangor-y-Coed, the site of an ancient establishment of monks, and a yet earlier city; now the buildings have disappeared. The church has been so often rebuilt as to be no longer the same, and the only trace of the city's extent is the name of "Porte," borne by the farm-houses that occupy the situations of the old gates. Within two or three miles of Bangor-y-Coed were remains of three ancient strongholds. Several sites had been suggested as that of Owen Glydwr's House. He understood it was at Llangedwyn, near the southern part of Denbighshire, and although it was now destroyed, and a modern house built on the site, he hoped many of the members would accept his invitation to visit the place on Tuesday week.

Mr. MORGAN (hon. treasurer) proposed a vote of thanks to Sir W. W. Wynn for his address, and this was carried by acclamation, renewed when Mr. G. R. Wright (hon. Congress secretary) explained that the council had accepted the invitation of the President and Lady Wynn to arrange to make an additional day's excursion at the ancient town of Oswestry, and at Sir Watkin Wynn's seat at Llangedwyn. The members then visited

PLAS NEWYDD,

A cottage *ornée*, situated on a hillside, about half a mile from the town. Here Lady Eleanor Butler and the Hon. Miss Ponsonby, known as the "Ladies of Llangollen," lived during the close of the last and earlier years of the present century, in retirement from their friends. With many eccentricities of dress and manner the ladies appeared to have earned the goodwill of all, and were frequently visited by members of the aristocracy on their way to and from Ireland, as the London and Holyhead road ran through Llangollen till Telford's day. Lady Butler died in 1829, aged 91, and Miss Ponsonby two years afterwards, aged 76, and both together, with a faithful servant, Mary Carroll, rest under one tomb in Llangollen churchyard, marked by a triangular pillar. The little house is a mass of old wood carving, both inside and without, collected from old English chests, church doors and pews, and mansions, with some choice specimens of Hindoo, Cingalese, and Chinese workmanship. The walls and ceilings of the low, dark little rooms, are veneered and wainscoted with their unique collection of woodwork; while outside and on the porch are more examples. The house now belongs to Lieut.-General Yorke, C.B., who courteously received the members, and told the simple story of the ladies' strange life of seclusion and benevolence in the principal room. The ladies had been disappointed in love, and had made a vow never to sleep out of Plas Newydd; on one occasion, however, they were on a visit to his father's at Wynnstay, and the weather was so rough that they could not be permitted to

return, and the ladies resolved, therefore, to sit up throughout the night. In this room is some sculpture in marble and ivory, and wood-turning, executed by General Yorke, also a number of relics of the ladies, and other curiosities, and the windows of the house are filled with ancient Flemish and other stained glass. In the garden in the front of the house are two octagonal thirteenth-century fonts, said to come, the one from Llangollen parish church, and the other from Valle Crucis Abbey. In the evening an inaugural public dinner was held in the Assembly-rooms, Llangollen.

TUESDAY.

On this, the first excursion day, a combination of climbing, walking, railway and carriage travelling was arranged for, and was generally enjoyed, the weather proving better than our fears, although it must be admitted that the pleasure consisted rather in the beautiful hill scenery and bracing open-air exercise than in successful archæological research, for beyond a couple of early hill-castles and a pair of fine fifteenth-century churches little actual work was accomplished.

CASTLE DINAS BRÂN.

Notwithstanding the heavy showers of the morning a considerable number of members climbed the very steep conical hill of Dinas Brân, and were rewarded for their exertions by an extensive prospect up and down the Dee valley from its summit, and of the evanescent rainbows painted on the distant hillsides to the north-west. The "castle" consists of a number of walls and arches, roughly masoned, of slates quarried from the surrounding moat, and arranged around a central oblong space. All the freestone dressings have been taken away for building purposes, and therefore no mouldings exist to suggest a date, but the characteristic pointed archways, each with the span-drel of a lower curtain wall appearing through the head of the arch, appears to give authority for fixing the period of erection within the reign of the third Henry. The long, dark, vaulted passage yet remains in a nearly perfect state, and the stones in which the grooves for the drawbridge and portcullis were cut are still set in the wall outside. Mr. LOFTUS BROCK read a paper under shelter of the remaining walls of the dwelling apartments, in which he said that the original castle must be considered as one of a series defending the valley of the Dee. Chirk, a few miles distant, is evidently a support to this, and higher up the valley, at Corwen, is another fortified post, remaining in its original condition, and not obliterated like this, by a building of antiquity, it is true, but of moderate age in relation to the original occupation of the site. All these have the peculiarity so common in Wales, commanding a view down two valleys. He was disposed to ascribe very high antiquity to the occupation of the site, by an earthen or rude stone enclosing wall, with an external ditch, probably not much larger than is now occupied by the ruined castle of 13th-century work. There was, however, no foundation for the tradition that it was the abode of the renowned Brennus, who made successful war with the Gaulish armies against the then youthful city of Rome, although the story gave some indication of the remote antiquity of the fortress. The most probable meaning of the distinctive name Brân, was from the little streamlet on the hillside. The walls of the present castle enclose a parallelogram 296ft. x 133ft., with an additional extension to the east. The entrance has been at the north-west corner, where the bases of the semicircular towers can clearly be traced. The path was carried round the hill in an ascending spiral, so as to render it almost impregnable. Traces of the drawbridge can be seen by the moat, and within was a portcullis, defending the existing circular passage, which again had holes in the roof for throwing projectiles on an enemy beneath. The keep was in the eastern projection, and was, probably, a square tower, divided from the enclosing walls by an inner block of buildings; on the east side was the large hall, and in its inner south-west angle are indications of a chimney, and there is, beside the connecting tower, a staircase in the thickness of the walls. A deep hollow on the east of the enclosure was once the basement of some demolished build-

ing, and it was to be regretted that it had never been cleared out. There were the usual stories attaching to the castle of subterranean passages of great length and extent. Many memorials of the later owners of the castle are, added the lecturer, on record. It was the seat of the Lords of Yale; the founder of Valle Crucis Abbey resided here; and later, in the reign of Henry III., its owner died here of grief and shame. The castle, like that at Chirk, at present belongs to Mr. R. Middleton Biddulph. The rough material of the walls renders it difficult to assign its date, but Mr. Brock pointed out that the mode of construction, of a rough slaty stone, with dressings of freestone, agreed almost exactly with that of Valle Crucis Abbey, and suggested it might have had the same founder—Madoc ap Grafydd Maelor. The peculiar rectangular arrangement of the plan was like the English type of castles of a still later date, forming the supposition that it was derived from a different source: but the so-called Edwardian castles owe much to those of France of contemporary date. Mr. Hartshorne has adduced evidence of a castle here having been burnt in the 10th century; and Mr. Brock asked if the fact that much of the mortar contains pieces of burnt slate did not indicate that it was a rebuilding with the *débris* of that fire? The moat around two sides is greatly filled up, and should be cleared. The members having made the circuit of the walls and moat, descended to Llangollen station, and proceeded by train to

WREXHAM.

There the noble church of St. Giles attracted immediate attention, as much by the graceful and octagonal turrets and the groups of pinnacles by which its lofty tower is crowned as by its cathedral-like size. As it stands it is a magnificent specimen of the Perpendicular type of church, and the carved and panelled roofs over nave and aisles, octagonal piers without break or mouldings, and spacious windows, each contribute a share to the effect of the church. Mr. Adams read a paper in the church prepared by Mr. Benjamin Ferrey, F.S.A., who has been professionally engaged in restoring the church. The church, he said, was rebuilt, with the exception of the tower, in the reign of Edward IV. The plan consists of nave, north and south aisles, and chancel. It is remarkable as one of the very few choirs of the Perpendicular period having a chancel with an apse. It originally terminated with a square end, where the chancel arch proves by the remains of its ancient tracery the old east windows to have been. The present roof to the apse is of a later period than the walls; it was probably intended to be groined. The windows and sedilia are handsome. The nave consists of six bays, and is separated from the north and south aisles by octangular pillars, carrying handsome and boldly-chamfered arches of two orders. These are singularly fine in proportion. The north and south aisles have good Perpendicular windows of four-centred arches, and are roofed in the usual low-pitched manner—they have been subject unfortunately to modern innovations. The clerestory and aisles are of later date than the arcade itself, which latter probably formed part of the earlier chancel said to have been burnt in 1457. Corbels of the earlier church are still remaining on the spandrel walls of the nave, considerably below the stone brackets of the present roof; the effect of the earlier church with its pointed roof must, in the lecturer's judgment, have been far superior to that of the present building. Further improvements are said to have been made in the time of Bishop Birkhead, 1513-18. A subsequent Bishop Parfew or Wharton resided much of his time here, and endeavoured to procure a license to remove his see, or cathedral church, to Wrexham, of which Leland wrote about the same time, that it had a "goodlie church collegiate, one of the fairest in North Wales," but there were no prebends attached to it. In Elizabeth's reign the church was enlarged by the addition of the south aisle, the roof of which is said to have been formed out of the timber of a gallery which ran along the north side. During the Commonwealth it was desecrated by being used as a prison, or a stable according to some authorities. The piscina of the Puleston chapel yet exists at the

east end of the north aisle. The external architecture of the church is of the usual Perpendicular type, having roofs of low pitch, the clerestory and aisle walls being surmounted by embattled parapets separated by buttresses and pinnacles. Inside the porch at the west end of the north aisle is the effigy of a mailed knight, probably removed from the earlier church. The recess under the apse, approached by a winding stone staircase, is somewhat novel. No doubt it was caused by the fall of the ground at the east end, to which this undercroft gives external height. The great feature of this church is the western tower, justly celebrated for its beautiful proportions and details. It is styled one of the "Seven Wonders of Wales." When it was commenced is not known, but it was completed in 1506. Amongst the numerous examples of grand Perpendicular towers which abound in Somersetshire, there are none to be compared with that of St. Giles's, Wrexham, for massiveness and good proportions. The defect in the Somersetshire and Gloucestershire towers is the overhanging character of the perforated parapets and pinnacles, giving them a light and somewhat insecure effect. This is obviated in the composition of St. Giles's Tower, where the graduated angular buttresses rise and unite with the octangular turrets at the four corners of the summit in a graceful and beautiful manner. The manner in which the lower stage is covered by traceried paneling in low relief somewhat detracts from the simple massiveness which should belong to the foundation of such a lofty structure, and it is doubtful if the faces of the buttresses would not have been better without the paneling. The subsidiary buttresses dividing the sides of the tower, containing niches still furnished with slates, are not successfully arranged. There are very few towers which can boast such a number of niches still filled with unutilized statues as that which you have just been examining.

Mr. LOFTUS BROCK drew attention to the splendid brass eagle lectern which he was glad to point out was made for and presented to this church, and not (as popular tradition asserted) brought from Valle Crucis Abbey. Mr. Bloxam described the monuments in the church, drawing special attention to that of Bishop Hugh Bellot, of Bangor, and afterwards of Chester, who is represented in a bishop's robes, with the doctor's robe and furred hood above. Only two other examples of such a combination of episcopal and academical dress exist on monuments in the United Kingdom. Some frescoes on the inner wall of the south porch Mr. Bloxam pronounced to be of the fifteenth century. It is in very good preservation, and gives in rude outline the cross, ladder, whips, and other emblems of the crucifixion. Before leaving the churchyard we glance once more at the long battlemented nave and aisle parapets, at the well-proportioned tower, and, having read the strange epitaph on the tomb of Elihu Yale, the founder of the world-celebrated Connecticut College, we pass out through the churchyard gates—themselves finished specimens of wrought iron of Queen Anne date. After luncheon at the Town Hall the members proceeded by carriage to

GRESFORD CHURCH,

Another grand edifice, chiefly rebuilt in the Perpendicular style. The mass of pinnacles and statues upon the top of the lofty tower give a rich appearance, but are too nearly of one height to be altogether satisfactory. The panelled work below, and the buttresses, with niches still occupied by statues, add greatly to the effect, and with the long unbroken ranges of clerestory and aisles, surmounted by embattled parapets, make Gresford noteworthy amongst the fine churches of the immediate vicinity. At the east end of the churchyard is an enormous yew tree, of great girth, and, presumably, of very remote antiquity. On entering the church the fine proportions and unbroken lines of nave, chancel, and aisles, are at once apparent, and the eye rests on the carved woodwork and stained glass. The roof is in one span, and affords an example of a flat yet effective treatment of the ceiled surface, by breaking it up into panels, the squareness of the intersections of principals and cross-beams being taken off by cross-

shaped applied ornaments in oak, having prolonged foliated extremities. The chancel is divided from the nave by a large screen of oak, and both this and the parcloles striking off the east ends of the aisles into chapels, are very elaborately, and, indeed, delicately carved, with free pierced parapets. The five columns supporting the arcades are not, as at Wrexham, plain octagons, but deeply fluted so as to form clustered shafts—a treatment indicative of a much earlier period of erection for these piers. The windows of the aisle-chapels and the great east window contain some ancient stained glass; that in the last-named window was repaired (and completed where destroyed) with great skill by Clayton and Bell, a few years since, when the church underwent restoration at the hands of Mr. G. E. Street, R.A. This window, which is of great size and width, is divided into seven lights by perpendicular mullions of the Perpendicular period. The superior half contains representations of the Trinity and the Virgin Mary enthroned; the lower portion is occupied by angelic and saintly figures arranged in groups of three to a light in five tiers, a portion of the "Te Deum" being inscribed under each. These are supposed to have reference to the dedication of the church, which is to All Saints. In the representation of these half-length figures, more than a hundred in number, a great deal of nearly clear glass has been employed for the faces and drapery. While this throws up the richer tints of the upper part, the result is not altogether pleasing, as the normal relative positions of light and shade are thus reversed. Still, as a whole, Gresford east window is a fine specimen of glass painting, to be borne in mind when designing in 15th century style. Beneath the chancel is an undercroft, now utilised for the storage of hot water apparatus. Mr. Loftus Brock gave an address in the church. When they drove up to it they were, no doubt, prepared to find within a fine example of one period of work, the 15th century, but a little closer inspection had already revealed that in this edifice they had preserved records in stone of the common history of a church—a small structure built at a remote period, gradually enlarged, and at last almost replaced by a much grander building. As they looked at the tower arch they could see distinct traces in the masonry of the steeple-pointed gable of a smaller building, re-used as the inner wall of the tower. The tower arch below exhibited another change of style, and showed that the base of the tower was built as it stands about 1350. Then the south aisle was thrown out and its west window had still a beautiful flowing tracery of the 14th century. Then that on the north side and the arcades and clerestories were added. About a hundred years—perhaps rather more—afterwards all these aisle windows (except that south-west one before noticed) were taken out and replaced by large four-light ones, the old mouldings and buttresses being left as witnesses of the change. Why good windows, only a century or so old, should be knocked out to make way for others of different shape is one of the problems of church history. In order to separate a ritual chancel from the nave the very fine screen was subsequently raised, and the aisle-ends were converted into chantry-chapels—that on the south being known as the Trevor, the north one as the Madox chapel. The great east window, dating from the 15th century, was one of the most magnificent in the kingdom; those in the chapels were very fine, although defective specimens of Perpendicular work, and in the small tracery lights of the aisle windows—the greater part of which had been now filled with modern glass—might be seen other fragments of old work. The peal of twelve bells in the tower were another of the "Seven Wonders of Wales," of which they had already so much. Mr. Bloxam then explained the monuments in the church. The most important is a sadly-battered figure of a knight in chain armour, placed in a recess in the south aisle. An inscription, now almost effaced, is said to have recorded it as that of Madoc, illegitimate son of Llewellyn ap Griffith, who aspired to the principedom of North Wales, and died in 1351. A mural monument of marble in the Trevor chapel at the end of the same aisle is divided into three compartments; in

the centre is a slab stating in Welsh that it is to the memory of one Trevor Trevellyn, Lord Lieutenant under Henry VIII., and that he died in 1589. The end compartments are occupied, the one by a sculptured head and bust, the other by the feet, as if of a recumbent figure partially concealed by the inscribed stone. Under the tower arch are two images of a priest and female saint said to have been brought from a church eight or ten miles away. Resuming our carriages we are driven across the river Alyn into Flintshire, to

CAERGWRLE,

A hill fortress much resembling that at Dinas Brán, visited in the morning, but set on a more isolated hill, and one withal commanding views of the city of Chester (the square tower of the cathedral looming large under the direct rays of the western sun), the Dee estuary, the tall chimney stacks, and pinnacled tower of St. Mary's-at-Mold, while behind are the modern spires of Wrexham, contrasting well with the octagonal turrets of St. Giles's to their left. Of the castle itself nothing remains, except two masses of solid masonry of great thickness and considerable height of square stones, and with wide joints of Henry II. or Henry III.'s time. Upon one of these broad walls many of the members clambered, and grouped themselves to listen to a discussion between Mr. Edlesbury, of Wrexham, and Mr. Brock, as to its age, the former suggesting a Roman origin, while the hon. secretary said he could see nothing of earlier than the Norman period, although the site, as its name, and the relics found in the neighbourhood suggested, has been occupied first by the British and then by the Romans. A paper had been prepared relative to this fortress by Mr. W. Thompson Watkin, but could not be read till a subsequent period of the Congress, owing to the lateness of the hour. We give here in its proper order an abstract. That the castle at Caergwrle was originally a Roman walled castrum, which, in mediæval times, was repaired, added to, and otherwise adapted to the necessities of the period; that it also was designed to afford protection to a Roman town, built in its immediate neighbourhood, was, he held, a now established fact; as in all other Roman stations, excavations were needed, not only to define the exact dimensions, but to throw light, by further finds of inscriptions, on its name and the nature of its garrison. From discoveries of Roman remains, including a hypocaust, bricks, inscribed tiles, and coins, made in that vicinity, it is nearly certain that it was originally erected by the 20th Legion, and that a large Roman town existed in the vicinity. As to its name in those days the author suggested that it was probably the Sandonium, said by Ravennas to have existed between Conovium and Deva (Caerleon and Chester), and immediately preceding the latter station (as if close by). Several Roman roads led from Caerwys, and can yet be traced in places through the surrounding villages. From this point the members returned by road to Wrexham, and thence by special train to Llan-gollen, where an

EVENING MEETING

was held at the Assembly Rooms; Captain Attwood Fisher in the chair. Mr. THOMAS MORGAN, F.S.A., hon. treasurer, read a paper of an historical character on "North Wales as shown on a Map of the Thirteenth Century," in which he showed how much light was thrown on the history both of England and Wales by a map drawn in the reign of Edward I. and contemporary chronicles. In a M.S. of the same century the following monastic institutions are recorded as existing in North Wales:—"Santi Asaf—Abbatia de la Pole Sanctæ Mariæ, monachi albi; de Valle Crucis, do., do., de Com, do., do., de Hudland, moniales albe. Bangor—Abbatia Abercon-wach, monachi albi; de Kemer, do., de Basingwerk, do., et de insula Heuli, do.; prioretus de Ennis enoc, monachi nigri."

Mr. J. TOM BURGESS read a paper on "Offa and Offa's Dyke," opening by remarking on the numerous footprints of our forefathers which remain on the hill-tops and in the valleys of the land, the only witnesses of a past which has no written history, and on the fact that these rude earthworks and rough mound-and-dyke

fortresses have proved more substantial and permanent memorials than more finished types of architecture. He considered it a mistake to ascribe all mounds and hill defences to an invader, for the early chieftain would naturally take the strongest and most secure position in a district, and one from which he could best defend his territory from enemies. Passing on to his more immediate subject, Mr. Burgess related Offa's life history, and showed the course of the dyke attributed to him, which can yet be traced pretty completely across one hundred miles of border country from Chepstow-on-Wye to near the estuary of the Dee. Parallel to this, at the northern end, was another similar ditch and mound known as Watt's Dyke, and separated from Offa's sometimes by 500 yards, at others by an interval of 3 miles. These converged towards the sites of the Roman cities on their route, whereas Offa reigned but a century antecedent to Alfred the Great and ages after the Roman occupation. The lecturer, therefore, argued at considerable length that the dykes were probably parts of the great system of military entrenchments, thrown up, as is well known, in all parts of England, but nearly effaced in cultivated districts. Offa probably repaired and strengthened the western dyke on the Marches, and subsequent generations gave him the credit of having designed the work.

Mr. W. DE GRAY BIRCH, F.R.S.L., followed with a paper on "The Welsh Seals of English Sovereigns."

WEDNESDAY.

On Wednesday the principal feature of the day's proceedings was the visit to Valle Crucis Abbey. We shall give further particulars next week, and meanwhile append a paper read by Mr. E. Loftus Brock.

VALLE CRUCIS ABBEY.

Mr. BROCK remarked on the beauty and seclusion of the site as in themselves suggesting that the establishment was for monks of the Cistercian order, doomed to silence except while engaged in the performance of their simple ritual, and a single half-hour's converse with each other on the Sunday. In many abbeys of this order we have little more historical record than that of the foundation and dissolution. The foundation of Valle Crucis and its date have been matters of much doubt. Dugdale, on Leland's authority, rightly ascribed the foundation to Madoc ap Griffith Maylon, Prince of Powys, and assumed that this was about A.D. 1200. We are indebted to Mr. Morris C. Jones, the hon. sec. of the Powys Land Club, for a discovery of no small importance in reference to the abbey's history. By a process of close reasoning he has demonstrated that one of the charters supposed by Dugdale to have referred to another building, is in reality the foundation charter of this abbey, granted by Madoc. Hence we learn that Valle Crucis was an offshoot from the less celebrated but parent abbey of Strata Marcella, and that a few monks from that house were the first occupants here. The charter is, unfortunately for us, undated; but the first prior's name is given as Philip. The spot was known then and later by the title of Llan Egwistle, and one of the latest extant seals of the abbey (early sixteenth century), now in the Herald's College, has this name as its legend. In 1870 Mr. de Grey Birch published for the first time two manuscripts in the Cottonian Collection at the British Museum, which had previously been scarcely noticed. The first appears to be a contemporary transcript from some central registry of foundations of almost all the Cistercian houses in Europe. The second is another transcript, in many respects confirmatory of the first, and apparently made towards the close of the first half of the thirteenth century. The second has this entry under the date 1199—"De Valle Crucis in Cambria;" but the first list under the date 1200 reads, "v. kal. Februarii abbatem de valle crucis." The old Welsh chronicle, "Brut y Tywysogion," is one of the most valuable works published by the Record Commission, teeming as it does with references to almost contemporary events and buildings, and is not yet so generally known in the Principality as it deserves to be. Under A.D. 1200 is in it the following record:—"The same year Madog, son of Graffudd Maelon, founded the monas-

tery of Llanegtwistle, near the Old Cross in Vale." We have thus, in this important entry, not only the year of the earliest record of the old name Llanegtwistle, but direct reference to the Old Cross (Ehseg's Pillar), whence comes the modern name of Vale of the Cross. The date 1199, recorded by the second Cottonian MS., probably gives the date of Prior Philip's election; the later and more precise date of the first MS. that of Madoc's charter. The abbey buildings afford a perfect model, as far as they remain, of the arrangements of a Cistercian house. The church is of the usual cruciform type, an aisleless presbytery having transepts with two chapels forming an eastern aisle to each (there has been a low square tower over the crossing), and a nave of six bays with two side aisles. The extreme length is 165ft.; length of transept from north to south, 98ft.; width of nave and aisles, 67ft. 6in.; width of chancel and of transepts, 30ft. The east and west gables are all but perfect, and the north and part of the south walls of the chancel remain, also those of the south transept, with part of the vaulting of its two chapels, and there is also left the lower portion of the walls of the north transept and of the north aisle of the nave. The south nave wall is almost perfect, but is hidden by the luxuriant ivy. The bases of the nave piers are traceable, thanks to a careful clearance of the ruins made in 1854. The east end and the transepts are designed in a severe style of First Pointed. The peculiar plaster buttresses of the east end are more curious than beautiful. The Principality is full of examples, as here, of peculiar treatment of architectural details, both in Early and Late work. The lofty eastern lancets spring from a level remarkably little above that of the pavement; over the two upper lancets is just a trace of a moulded arched label, which probably indicates the line of the boarded or vaulted presbytery ceiling. The corbel table around the presbytery and transept walls is bold and peculiar, consisting of two patterns. The west end of the chancel appears to have been covered with a sloping roof, but this would only have been prior to the erection of the central tower. The slit on the south side is from a curious little room and passage at the back of the monks' dormitory, concerning the use of which many guesses have been made. It was the sacristan's apartment, from which he could watch the perpetual light of the sanctuary at night. The high altar stood as at Fountains Abbey, from the east wall. The ambury in the south wall has a semicircular arch, and has been double. The bases of the four altars of the transept chapels are very apparent. Each has a piscina; that of the northern altar of the north transept being on a detached pillar. The remaining arches of the transepts are designed in a very severe style, and the capitals are a tradition of some building of earlier date. The three orders of the arches are simple rectangles, without even a chamfer, but the effect is excellent. In the sheltered stonework of these chapels it is observable that the whole surface of the wrought stone has been covered with a film of plastering, on which coloured decorations are still traceable here and there. This use of colour, which may also be seen at Old Cleeve, was forbidden in Cistercian houses. The doorway for the passage of the monks from their dormitory into the church, for the service of matins and vigils, remains, but the stairs are gone, and were therefore probably of wood. The remains of the piers of the central tower are of much interest. Those on the south side indicate the systematic way in which the shafts of the bearing arches were carried on corbels, in order to allow the whole of the wall surface of the piers to be free for the monks' stalls. The cracks indicate trouble for the safety of the central tower; and here, as at Furness and elsewhere, the builders had to take vigorous measures to keep it standing. The eastern bay of the nave has been walled up with solid masonry to afford greater support. The west window of the transept has been removed, and its space built up, and several other works of buttressing are very evident, including a curious reduction of the width of the east arch into the south transept. These efforts to save the tower were successful, for if Churchyard's poem be literally taken,

the tower was still erect above the ruined building in the days of Elizabeth. There is a very charming piece of Early carving below the corbel which supported the south-east arch of the tower. The north transept door has many circular mouldings rather than shafts. This is usual in Wales, but here they spring not from bases, but from a line of foliage. No trace, except part of the western wall, remains of the ritual choir; and this and the rood-loft are probably of the date of the works for the support of the tower. The base of a nave altar still remains on the south side. The broad piers of the nave are the only traces of the nave arcade, but the recent excavations have brought to light several fragments of capitals, plainly shaped rather than carved—probably they are those of the nave piers. There is evidence of the existence of the clerestory of single lancets, and a corbel or a nave principal remains, proving that it was covered by a timber roof. The west front has three windows of similar pattern. Above a small rose window in the gable is the inscription, "Adam Abbas fecit hoc opus i pace quiescat amē." The deep splays of the windows add greatly to the amount of light derived from them, and the telling design of the mouldings is worthy of careful study. The effect of what cannot be called elaborate execution is most excellent, and unlike much modern work. There is a staircase on the south angle of the nave; whether only intended for access to the roofs, or to monastic buildings, it is impossible to say, for no evidence remains. We find the whole of the conventual buildings occupying the east side of the cloister quadrangle remaining. Next the south transept is the slype, still retaining its circular barrel vault, and having its arch of opening from the cloister of very early type. Next is the chapter-house, vaulted in nine square compartments, and still further southwards was the cemetery entrance, and beyond this the common parlour. Over all these buildings extends the dormitory, 60ft. long and 22ft. wide, approached by the monks' day stairs, which still remain. It was paved with flagstones, and lighted by a series of small single-light trefoiled windows with wave mouldings. Although the walls have not been plastered, yet the windows were once rebated for glass, and there is the unusual luxury of a fireplace, with chimney of elegant design externally. At the south end of the dormitory is a small apartment opening from it, which has been covered with a pent-house roof; it was probably the sleeping apartment of the custodian of the dormitory. At the back of the dormitory fireplace is a narrow room, parallel with the former; this was probably the muniment room, while to the sacristan may be assigned another small apartment at right angles, since it communicated by a passage over the vaulting of the south transept chapels with the niche before alluded to. The cloister space has no trace of the cloister buildings, but from the position of the corbels for the roof timbers, and the absence of remains, it is probable that, as in other instances, the cloisters were formed of wood. It has sometimes been stated that all the buildings are of the same date, but a small amount of inspection will assure us that the east end is the oldest—say of a date within the first 20 years following that of the foundation; the transepts are a little later, and the west front was built about 1260. The ground floor of the conventual buildings is of the same date as the transepts, the style possibly older, but the dormitory floor is at least about 150 years later than the foundation, since to it cannot be assigned an earlier date than the middle of the 14th century. The square-headed doorways have the same flowing mouldings as the windows. At this time the arches and flowing tracery of the chapter-house were added in the olden openings. There are traces of the use of earlier stonework in the buildings. The fire-place in the muniment room has an inscription which shows that it was part of a tombstone, and the sill of a little unglazed niche looking from the room at the end of the dormitory into it has also been part of an ancient slab. The western lancet of the south transept is filled in with fifteenth-century tracery. The present rough roof of the dormitory is modern, but the water tables in the south transept gable show that it

is of the same pitch as the old one. An unusual feature is the door on the south side of the refectory, probably opened out for the passage of articles which could not be brought up the narrow day stairs. The recent excavations revealed a few geometrical tiles, but in such small numbers as to afford additional evidence of the scarcity of this mode of decoration in the churches of the Principality. They were probably imported, since the same patterns have been met with in Strata Florida Abbey and at Aston Burnall, Salop. It is a peculiarity attendant upon the demolition of Welsh abbeys that every feature of importance in the neighbouring churches is spoken of by local tradition as being a portion of the destroyed building. Thus, we hear that the roof of Llangollen Church came from Valle Crucis, but that is unlikely, since the slope of the roofs is so different. Again, the lectern at Wrexham is said to have the same origin, but it is dated 1528, and there is a record of the name of the donor. The elaborate candlebra of the fourteenth century is said to be in the Church of Llanamnon in Yale, where is also the effigy of Gruffudd ap Llewellyn ap Ynyon, brother to the Llewellyn, Bishop of St. Asaph, who was buried at Valle Crucis. Another tomb, that of Jeva of Meredydd, is said to be at Bryn Eglwys, and another (a fragment) at an old house at Pengwern, near Llangollen, is that of Gronwy ap Ierwerth. In closing, Mr. Loftus Brock pointed out that the old name of Llanegwistle pointed to the existence of a church in the valley long prior to the foundation of the monastery.

Yesterday (Thursday) a large party left Llangollen at 10 a.m. for a carriage excursion to the site of Owen Glyndwr's house, mound, and farm, and an address was given on the site by Mr. G. R. Wright (hon. Congress secretary). From thence the members proceeded to Corwen Church, and then to the little chapel of Rug, where a few remarks on its history were made by the Rev. W. Richardson. After ascending the Gaer, one of the series of ancient British encampments defending the Dee, and taking luncheon at Corwen, the members returned to Llangollen in time for an evening meeting.

To-day (Friday) visits to Dolgelly and Cymmer Abbey, Bala, the manor-house of Rhiwaldog, Palé, and Llanderfel Church are arranged for. On Saturday Denbigh Church and Castle and some churches in the vicinity are to be seen; on Monday an excursion will be made to Mostyn, Basingwerk Abbey, and Holywell; and on Tuesday the Congress closes with a visit to Oswestry and Sir W. W. Wynn's seat at Llangedwyn. We shall continue our special report next week.

A NOVELTY (?) IN CONCRETE BUILDING.

AN experiment in concrete building, mis-called a "novelty" by the *Birmingham Daily Post*, is just now being tried by Mr. Edge, architect, of Bennett's-hill, at Richmond-hill, Harborne. The materials used are gravel and lime, and the method adopted of dealing with them has been successful in an eminent degree. Some time ago Mr. Edge acquired some building sites at Richmond-hill, and found that before he could proceed with the architectural plans which he had formed, a large quantity of gravel must be removed. The existence of this large quantity of gravel led to the inquiry whether or not it might be utilised, and Mr. Edge entered upon a number of experiments in the direction of its employment in the making of concrete. The gravel consists of pebbles, red sand, and a certain quantity of marl, and it was found that if a lime concrete was to be made, the two latter constituents must be got rid of. The pebbles were accordingly washed, mixed with ground lime, which is unslaked, and then water added. The lime has an affinity for the silica of the stones, but not for the clay and earthy matter, and when the mixture described is allowed to rest for a few hours it sets into a mass much more solid than brickwork, and nearly as hard as stone. Mr. Edge is now building a house of a superior class, containing three sitting-rooms and nine bedrooms, in which the concrete plays a very important part. In order that the house may ac-

cord in style with those near it, it has a facing of red brick, but only to the thickness of 4½ in. Inside this is a wall of concrete, giving a total thickness of about 15 in. The object in the case of the present building is not so much that of cheapness as of increased substantiality, it having been found that 9 in. brick walls, in the case of several neighbouring houses, have been insufficient to keep out the damp. There is, however, no necessity for any employment of brick at all, as is shown by the construction of several interior walls of only 4½ in. in thickness; and, as will be further demonstrated in buildings yet to be erected, even in the construction of the flues the concrete is amply sufficient. So confident is Mr. Edge in the steadfastness of his material that he has not hesitated to employ it in the construction of arches for the cellar vaulting. One arch being simply a slab of concrete has 12 ft. span, and the centreing was removed in a few hours only after it was made. It is estimated that a cubic yard of the concrete work, where the gravel is on the ground, will cost 11s. 9d., the amount being made up as follows:—Washing gravel, 2s.; two bags lime, 4s. 6d.; labour, 3s. 6d.; as contrasted with 25s. to 28s. a yard for brickwork.

AMERICAN CLIFF AND CAVE DWELLINGS.

THERE have been just added to the South Kensington Museum six models (the gift of the United States Government), illustrating the cliff houses, cave dwellings, and lowland settlements met with through the district where the States of Utah, Colorado, Arizona, and New Mexico join. They are reduced to different scales, the cave dwellings being of smaller scale than the lowland dwellings, since with the former the surroundings are given, while with the latter they are not. The district, which may be called that of the San Juan basin, was surveyed in 1875, and last year some attention was paid to the ruins of ancient dwellings that had been previously noticed. The area examined was 6,000 square miles. The general aspect of the country is that of a semi-desert. Yet there is a bountiful evidence that at one time it supported a numerous population; there is scarcely a square mile in the whole 6,000 examined that would not furnish evidence of occupation by a race totally distinct from the nomadic savages who hold it now, and in every way superior to them. The ruins of the region are those of stone structures, but the remains are not so perfect as to show to what extent wood and adobe were used. The only known traces of the people besides their dwellings are flint and stone implements, tied bundles of stick, fragments of matting, pottery, and pictures cut into the walls. A number of burial-places were noted, but of the graves examined few yielded further evidences of occupation than small quantities of charcoal and bits of painted pottery. As regards the buildings, the parallelogram and the circles are the predominant forms. A greater part of the ordinary structures are square or rectangular; while attached to each group, and sometimes without indications of contiguous buildings, are the circular ruins frequently resembling towers. The models, which are coloured, give a good idea of the structures.

The parish church of Ashby-de-la-Zouch is about to be restored at a cost of £8,000, from designs by Mr. J. P. St. Aubyn.

The new Roman Catholic Chapel of the Immaculate Conception, at Stonehaven, was opened last week. Mr. Mackenzie, of Aberdeen, is the architect.

A new Board School has been opened at Bentley-with-Arksey. The cost was £2,200, including master's house. The buildings are of pressed brick, with Ancaster stone dressings, and contain one large room 46ft. by 20ft., with class-room about 15ft. square for boys and girls, and a room 22ft. by 20ft. for infants. The mixed school, with class-room, will seat 105 children, and the infant room will accommodate 50 infants. Mr. Micklethwaite, of Westminster, is the architect, and Mr. Johnson, of Doncaster, the contractor.

A new Board School, at Dudley, was opened on Monday week. Accommodation is provided for 350 children, at a cost of £5,855. Messrs. Austin, Johnson, and Hicks, of Newcastle, are the architects.

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ILLUSTRATIONS.

THE GRANGE, EAST SHEEN—OLD OAK CHEST AND CHAIR—
FORD'S HOSPITAL, COVENTRY.

OUR LITHOGRAPHIC ILLUSTRATIONS.

FORD'S HOSPITAL, COVENTRY.

FORD'S HOSPITAL is a timber building, erected in 1529 by the founder, William Ford. The general plan of the building is a parallelogram, having a central open court, 39ft. by 12ft., with a passage way through the building at both ends of the court; from one angle of the main parallelogram buildings extend irregularly at the back some 40 or 50 feet, with a passage the whole length on the ground floor, called "the cloisters;" this part of the building is also of timber construction and probably of the same date as the rest. The whole of the building is divided into small apartments for the inmates. The best portions are the west—or street—group and the inner court; the former is entirely in its original state, with the exception of a few of the traceried window-heads; the two small spandrels over entrance door, which are probably not even copies of the original ones, and the finials to the three gables, the present ones being evidently copies of what appear to be the original ones shown in Pugin's "Ornamental Gables." One or two of the spaces between the uprights of this front have been made into windows by glazing into the groove intended originally for the plaster filling in; these are so evidently modern that they are omitted in the drawing of this front. Part of the first-floor towards the west front is said to have been the chapel; the ceiling of this part is divided into panels by wooden ribs, and there are a few fragments of stained glass in the windows. The elaborate traceried heads of the windows throughout are cut out of a thin piece of wood, and the glazing runs up square behind the tracery. The timber framing averages about 4in. in thickness, the plaster filling in being solid and flush on both sides. The whole of the external timber work is now coated every two or three years with boiled oil.

OLD OAK TABLE AND CHAIR.

WE give an illustration of an old oak side table and chair in the possession of Mr. John Colson, architect, of Winchester. The table is very strongly framed and massive, and the two front legs are turned; it is simply but effectively carved on the top and three sides, the back being quite plain. The chair is also massive, with turned legs and knobs, and the carving is similar to that on the table. The history of them is not known as they came into Mr. Colson's possession through a country broker.

THE GRANGE, EAST SHEEN.

WE regret that the description forwarded with this illustration has been mislaid. We trust, by the courtesy of the author, to give it next week.

THE FAMINE IN MADRAS.

MR. T. B. POTTER'S interesting letter in the *Times* this week on the real cause of the occurrence of periodical famines in India contains an allegation, which, if true, is a serious one against the Indian Government. He asserts, on the authority of a resident in Madras during the last thirty years, that the old water tanks erected in bygone days by Hindu and Mohammedan rulers are insufficient for the water storage now called for by an increased population, and that the British Government, although it has kept up and enjoyed the revenue of the old ones, has erected, comparatively speaking, no new tanks or reservoirs. Mr. Bailey Denton has been showing us for years past the necessity of a more adequate means of water storage in England; but in India its neglect is attended with far more serious consequences than here. To us at home the reckless waste of water which goes on year after year, means at the worst pecuniary loss, and a measure of inconvenience seldom amounting to privation; but in India it is the real cause and foundation of the terrible misery which hundreds of thousands are now succumbing under. The cost may be heavy, but if the new Empress of India is to emulate the fame of her predecessors, her Government must at least copy their useful actions as well as imitate their pageants and titles.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.—The annual meeting of this society commenced on Tuesday at Cirencester under the presidency of Earl Bathurst. After the inaugural meeting the members, under the guidance of Professor A. H. Church, proceeded to the Corinium Museum, and examined the various objects of interest contained therein. The members afterwards visited the Barton, to inspect the pavement; and the site of the attack on the town by Prince Rupert in January, 1642, was pointed out. Passing along Barton-lane, the hospital dedicated to St. John, situate in Gloucester-street, in a place called the Paen, and founded by King Henry I. about 1135, was seen; after which the members proceeded by Grove-lane to inspect the remains of the town wall as far as the New Mills, whence they were taken to see the recent excavations in the new road, and thence to Mr. Brewin's pavement in Querns-lane. At six o'clock the dinner was held at the King's Head Hotel, and subsequently there was a meeting for the reading and discussion of papers. Among the papers down for reading were "Some recent Roman Finds in or near Cirencester," by Professor Church; "Local Names near Cirencester," by the Rev. G. H. Moberley; and "Notes on some Ancient Church Plate at Cirencester," by Mr. W. Cripps. On Wednesday there was an excursion, which included visits to Calmsden Wayside Cross, Chedworth Church and Roman Villa, Stowell Church and Mansion House, returning by the Foss Way, and yesterday Fairfield Church was visited.

DURHAM AND NORTHUMBERLAND ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY.—A party of the members of this society visited the south-east portion of the county of Durham last week, the excursionists first visiting Castle Eden, where, after an inspection of the church and surrounding objects of interest, they proceeded to Hart. The weather was so utterly wretched that the excursion was not only shorn of much of its attractions, but thinned the number of visitors to a very narrow compass. There were among the party the president of the society, the Rev. Canon Greenwell, of Durham; Canon Consitt, of Gateshead; and some of the leading clergy of the cathedral city. After their visit to Hart, the company proceeded in carriages to Stranton (the parent parish of West Hartlepool), where they were conducted to the ancient parish church of All Saints by the Revs. J. Rudd, vicar, and J. B. Brynard, who pointed out the leading objects of interest, notably a "Mary" bell, of pre-Reformation date, and the very ancient register of the church, dating back 500 or 600 years. The visitors then proceeded to Hartlepool to

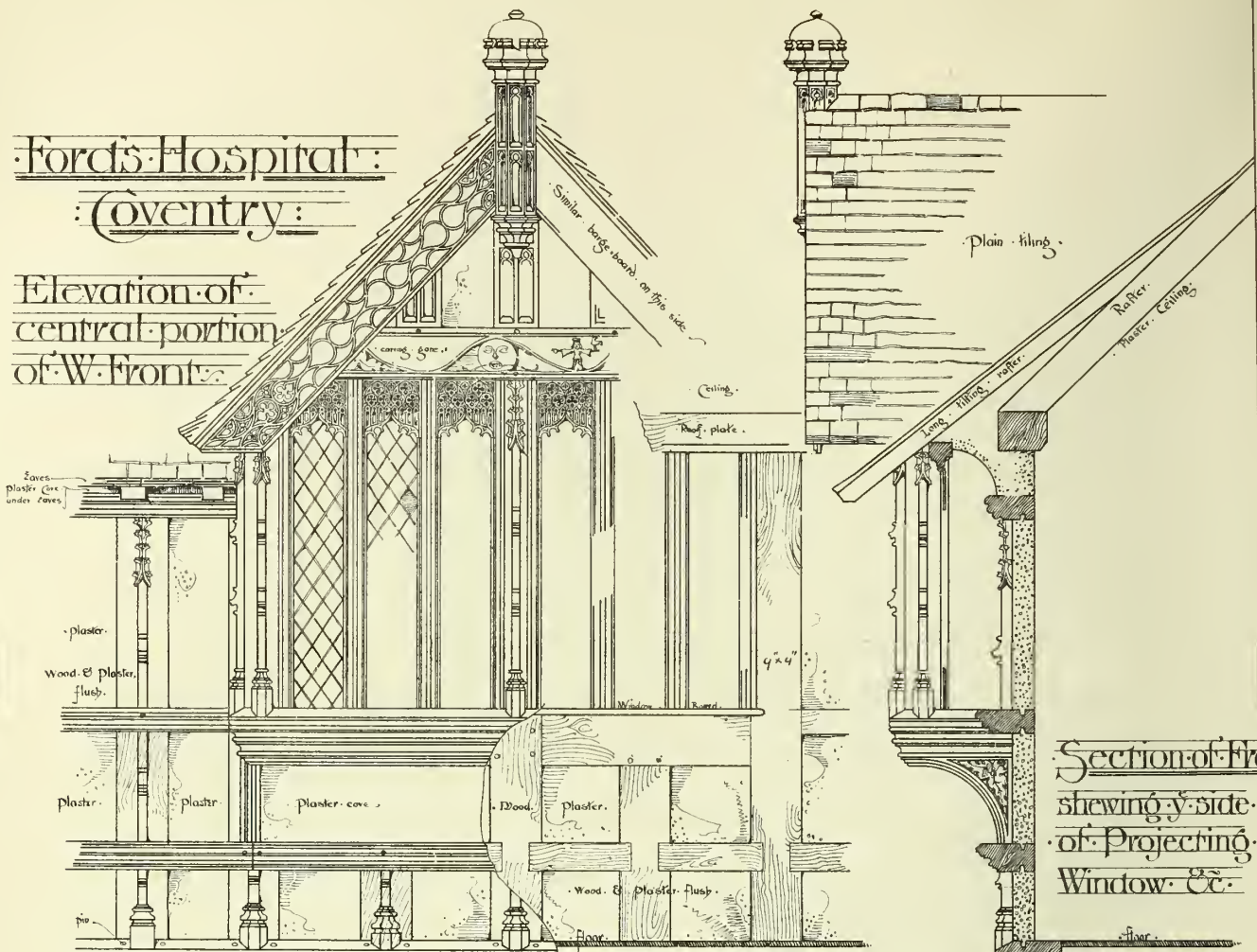
inspect the beautiful church of St. Hilda—one of the oldest and grandest edifices in the north of England—and afterwards partook of luncheon at the Cleveland Hotel.

MIDLAND INSTITUTE.—The last excursion of the season of the archæological section of the (Birmingham) Midland Institute was made on Thursday week, when Castle Ashby, Earls Barton, and Northampton were visited. Arriving at Castle Ashby at ten o'clock, the church was first visited. It is a structure of the 14th and 15th century, and consists of a nave, chancel, north and south aisles, north and south porches, and western tower. The north aisle is of the 14th century work, and the nave, church, and south aisle of a later period. The north porch has a very fine enriched Norman door, but no other portions of Norman work are to be met with. In the chancel floor is a very fine brass, of an ecclesiastic arrayed in a cope, and bearing on his breast a shield of arms, which identifies him as William de Evreunyn, rector at Ashby, from 1356 to 1357. At Earls Barton the great attraction was the Saxon tower of the church, one of the few remaining structures of that period. It is of four stages or stories, and has a more recent embattled parapet. The upper story has on each face five semicircular-headed openings, divided by columns formed as balusters, and at the west there is a small semicircular-headed doorway. The walls are divided into panels by projecting strips of masonry, and the whole is, perhaps, the most perfect example of Saxon work still remaining. From Earls Barton a pleasant drive brought the party to Northampton, at about three o'clock. After dinner, St. Peter's, St. Sepulchre's, and St. Giles's churches were visited. St. Peter's is a small structure, but of most interesting character, as it is nearly all of Norman work, and richly decorated, the capitals of the north and south arcade being especially noticeable, and the western tower, with its Norman circular buttresses and arcade-work, was much admired. Near St. Peter's is the site of the ancient castle, part of the outer wall of which is all that remains of what was once a large and important structure. St. Sepulchre's is one of the four round churches of England, and, like the Temple Church in London, has the circular nave of Norman, or rather Transitional work, and a later chancel and aisles, but here there is a western tower and spire of 14th century date added. The interior view, looking from the western entrance, is very fine—the massive round columns, bearing early pointed arches, of the circular nave being highly interesting. This completed the day's proceedings.

SHROPSHIRE ARCHÆOLOGICAL SOCIETY.—The inaugural excursion of the Shropshire Archæological Society was held on Monday week. Assembling at Bridgnorth, the party was first driven to "Lavingstone's Hole," which, to an ordinary observer, appears nothing more than an artificial cave, burrowed in the red sandstone, for the convenience of the occupier of the adjoining land but it is actually a specimen of the engineering skill of the soldiers of the Commonwealth. After entering the outside cave, a passage or burrow can be perceived near the roof, and this penetrates the cliff for a distance of 20 or 30 yards. The object of Cromwell's general (Lavingstone) in making this place was to undermine the castle, which had so successfully resisted the efforts of the besiegers, but on the 26th of April, 1646, Colonel Howard, finding that this mine had been driven so close to the foundation of his stronghold, discreetly surrendered. Bishop Percy's house in the Cartway, and Hermitage Hill on the opposite side of the Severn having been visited, the party drove to Morfe Forest, in which still stands an oak tree, supposed to be the same near which the wife of Roger de Montgomery met her lord on his return to England after preservation from a tempest, and persuaded him to build and endow Quatford Church. This building, which was next-visited, has been restored. It is a Norman building, and in remarkably good preservation. The chantry and "St. James," formerly a priory, having been inspected, the party returned to Bridgnorth, and paid a flying visit to the churches of St. Leonard and St. Mary.

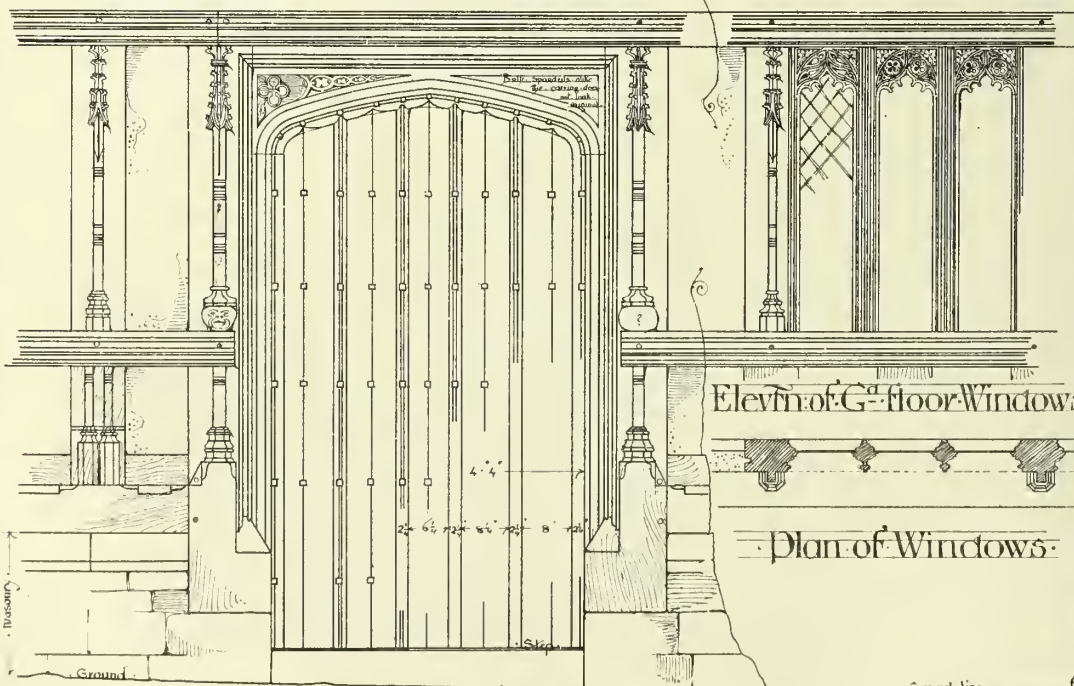
Ford's Hospital
Coventry

Elevation of
central portion
of W. Front



Section of front
showing side
of projecting
Window &c.

Part of interior
elevation towards Room

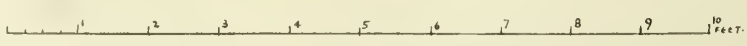


Elev'n of G^d floor Windows

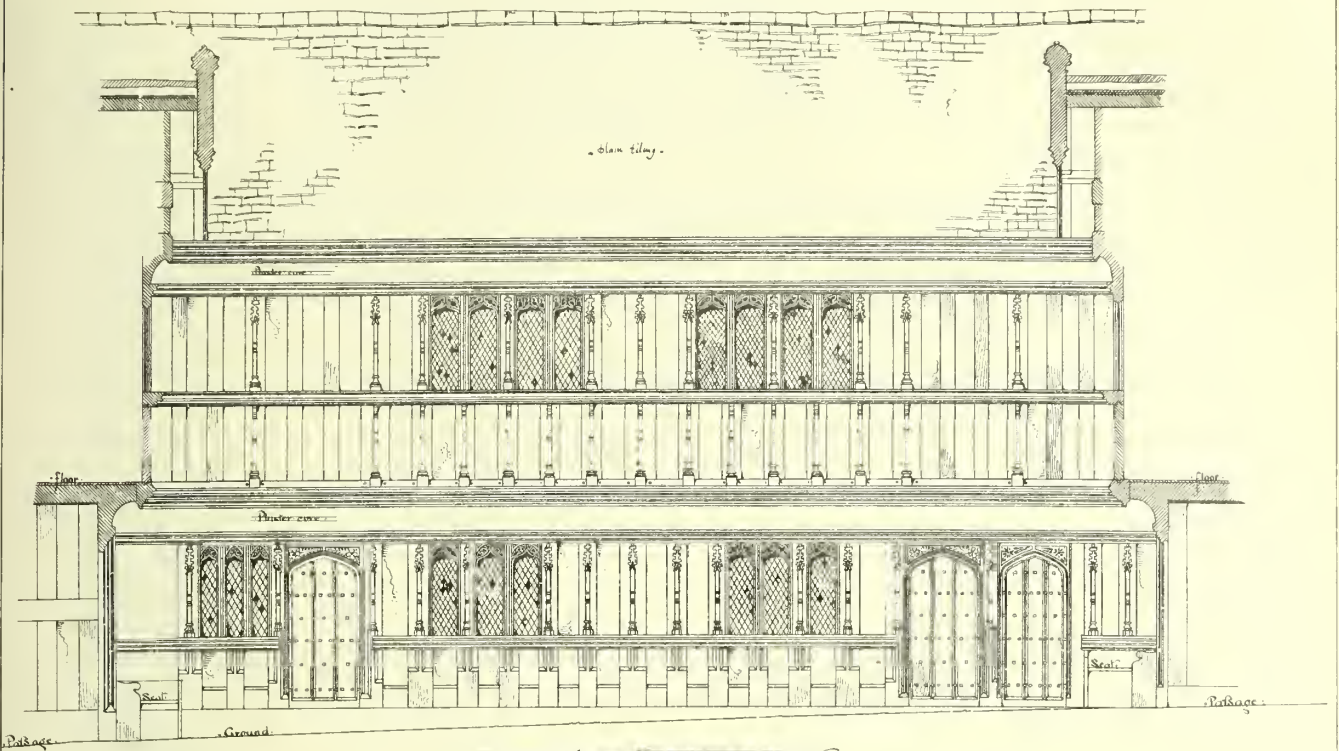
Plan of Windows



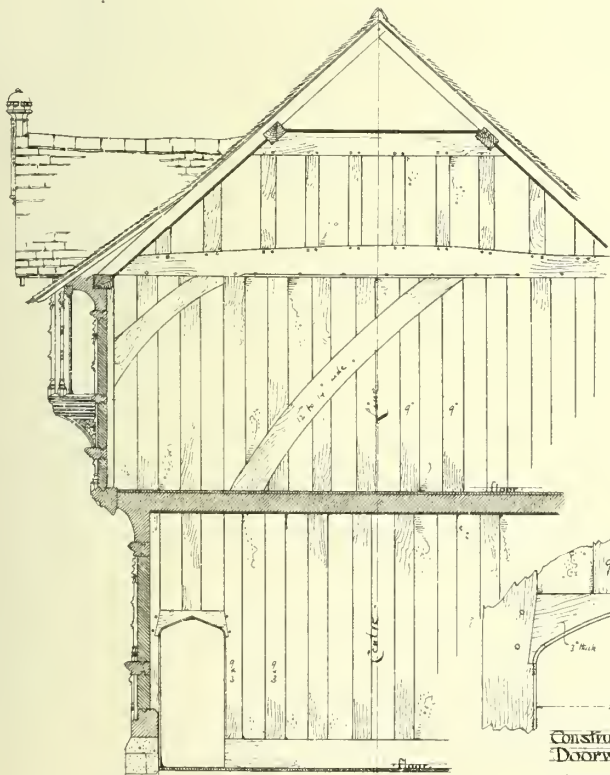
Ed. J. May. mens & del.



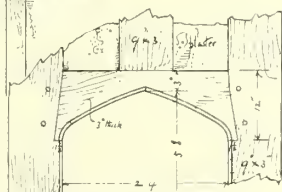
Ford's Hospital, Coventry:



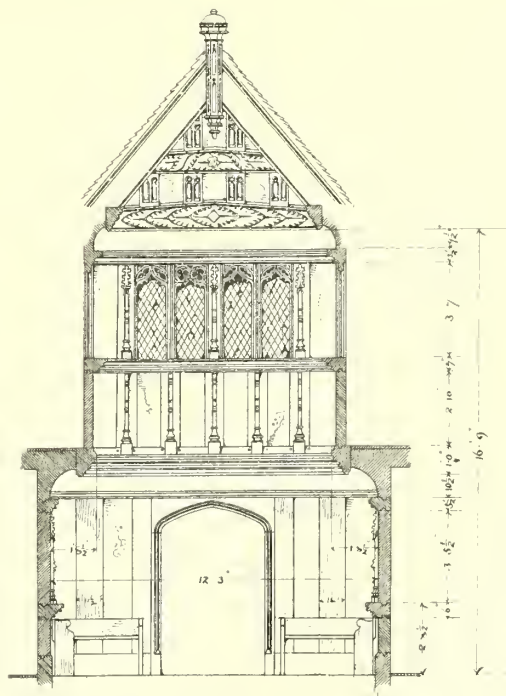
North Elevation of open Court.



Section thro' Room North of Entrance.



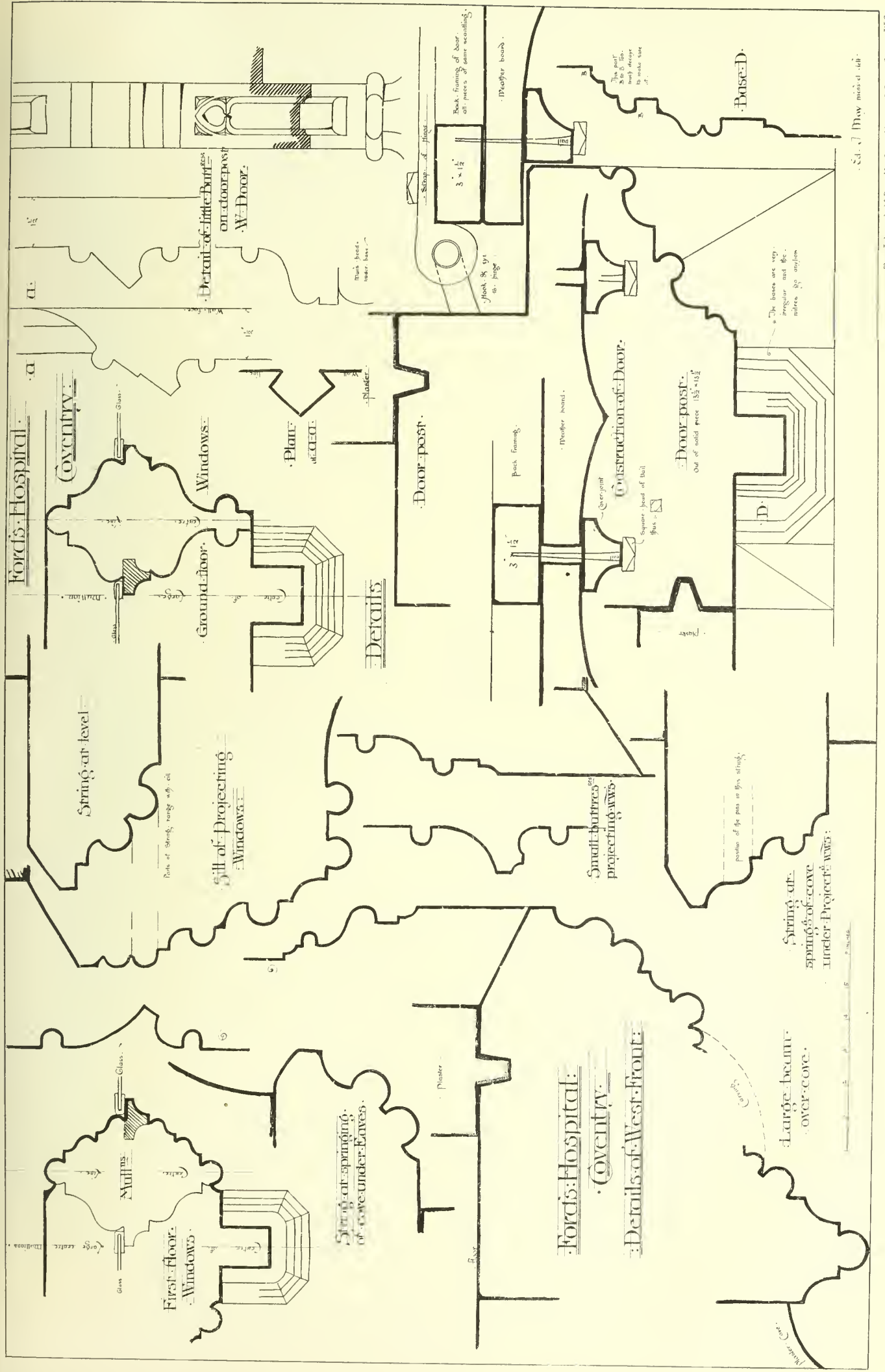
Construction of Doorways: (inch scale):



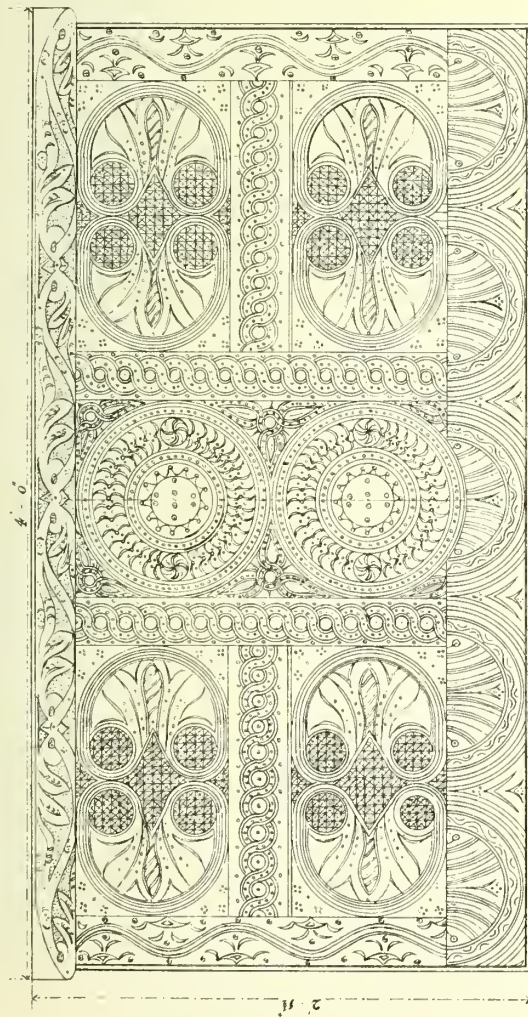
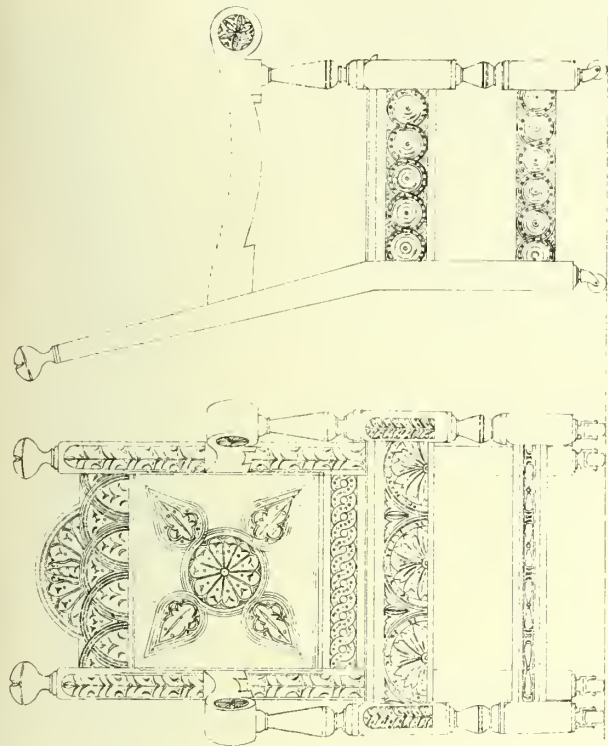
East End of Court.

Ed. J. May, mens et del.

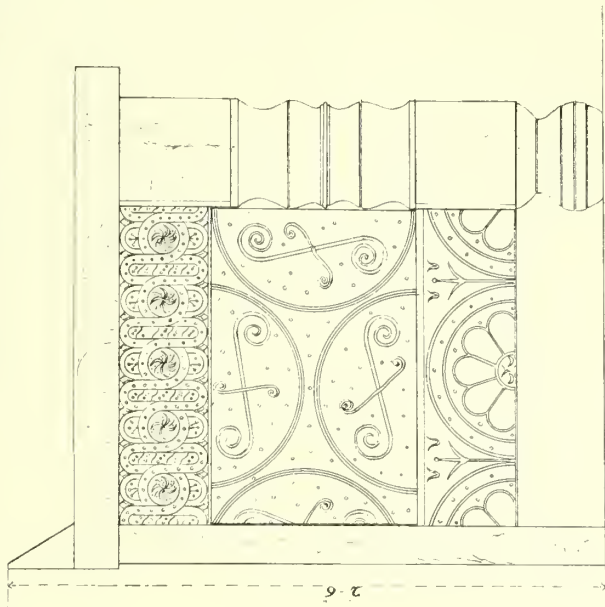
Scale 1/2" = one foot



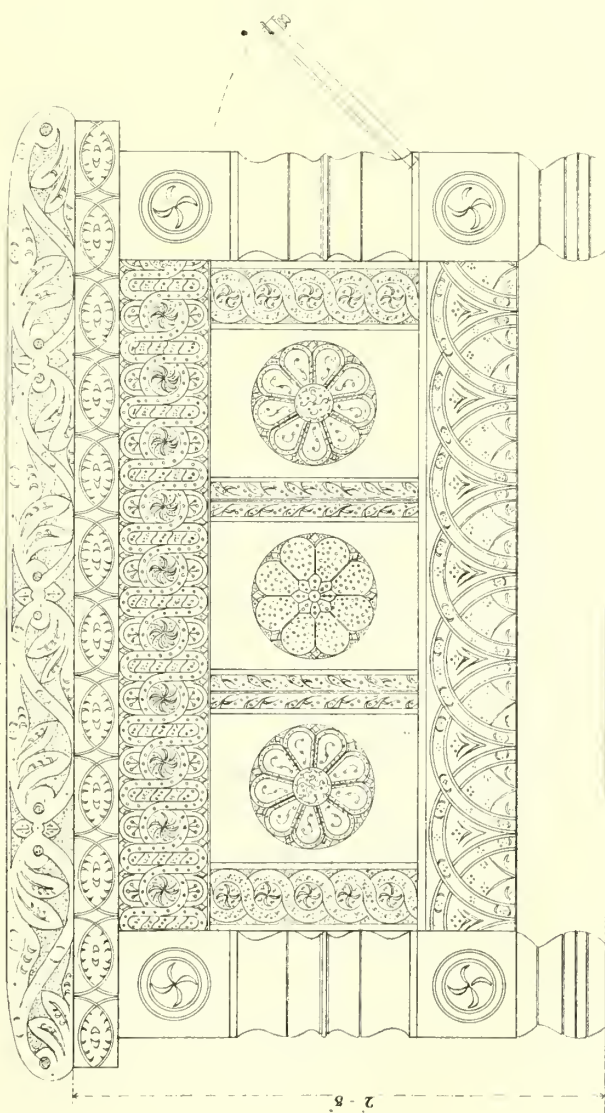
Sd. v. J. Maymies et. al.



top elevation



side elevation



front elevation

OLD OAK CHEST & CHAIR

FORCE OF WIND.

THE disasters caused by storms on land are of such frequent occurrence, and so extensive in their effects, that it may be safely affirmed that there is hardly any power in nature more injurious to the works of the builder than the force which is developed by currents of air set in rapid motion. This fact was fully admitted by Tiedgold, who, in calculating the strength of the timbers of roofs, considered that the pressure of the wind produced a greater strain than all the other forces to which they were subjected. Lofty towers, spires, and chimneys are not unfrequently overturned, or severely damaged by the fury of the wind; and, indeed, whenever a gale blows with more than ordinary violence we invariably hear of a large number of accidents having occurred to roofs, chimneys, or other exposed buildings. It is therefore of great importance that the builder should be well informed as to the pressure produced by the wind, so as to be able to determine beforehand whether his structure is capable of withstanding its tremendous power. In the present article we propose to show how the pressure of the wind on various kinds of buildings can be estimated, as well as to explain the principles which ought to regulate the construction of such works as are likely to be exposed to its violence.

There can be no doubt that the velocity of the wind is much greater at a considerable height above the ground than it is at the surface, the irregularities of which offer great resistance to its motion, and tend to retard its speed. Just as in the case of a stream of water, whose velocity is always found to be much less near the bottom than it is at the surface. This difference, however, is less in currents having high rates of velocity than in those moving sluggishly; and where the stream is very rapid the velocity at the bottom is about four-fifths of that at the surface. Considering, then, that a gale of wind resembles, in this respect, a stream of water, we may take the velocity at the base of a high tower, or chimney, standing in an exposed situation, as four-fifths of the velocity at its summit. Let A B (Fig. 1) represent the height of the building from the ground, B C the velocity of a high wind at the summit; A D equal to four-fifths of B C represents the velocity at the ground; then by drawing the line, D C, the velocities at any other points, a, c, e, can be represented by the ordinates, ab, cd, ef.

Scientific investigation has shown that the pressure produced by the wind on any plane surface exposed to its direct action is directly proportional to the area of that surface, and varies as the square of the velocity with which the current is moving; although it appears probable that in very violent storms the force increases in a somewhat greater ratio than this. We shall, however, at present assume the pressure of the wind to be proportional to the square of the velocity with which it strikes on a flat surface, as this is undoubtedly true for all ordinary rates of speed. If, then, we take the length, A E (Fig. 1) to represent the square of the number of units in the length A D, a p the square of a b, B F that of B C, the pressures produced by the velocities at different heights will be represented by the several ordinates of the parabolic arc, E F. In the case of a tower having the same width throughout its entire height, the pressures at the several points, A, a, c, e, B, will be proportional to the numbers (very nearly)—

16, 18, 20, 22, 25.

The average pressure per foot of surface over each of the four divisions will be nearly in proportion to the numbers

17, 19, 21, 23.

If we suppose the pressure at the summit to be 50lb. per square foot, that at the base will be 32lb., and the average pressures per foot on the four divisions will be in lbs.,

34, 38, 42, 47.

Taking the height of the tower as 100ft., and its width as 10ft., the area of each division will be 250 square feet, and the total pressure on the surface will be nearly equal to

$$250 (34 + 38 + 42 + 47) \text{ lbs.}$$

$$\text{or, } 40,500 \text{ lbs.,}$$

that is, 40,500lbs. per square foot on an average over the whole surface. To calculate the effect of this pressure in tending to overturn the tower about its base we must find the height, AG, of the centre of gravity of the figure, ABFE, at which the resultant of all the pressures will act. By geometry we find that AG is to BG very nearly in the ratio of 54 to 46; so that in a tower 100ft. high the moment of the pressure tending to overturn it will be

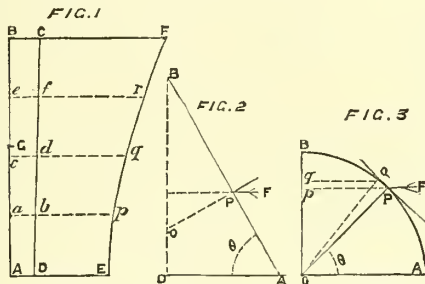
$$40,500 \times 54.$$

The tower being 10ft. wide its weight will have a leverage of 5ft. to resist the above force; if, then, W represents the minimum weight of the tower which will just suffice to prevent its being overturned by the wind, we can calculate the value which must be given to W from the equation

$$W \times 5 = 40,500 \times 54$$

which gives $W = 437,400 \text{ lbs.}$
 $= 3,905 \text{ cwt.}$

The average weight per foot of height of the tower must therefore be at least 39 cwt., and consequently walls of an average thickness of one brick and a half would just suffice to prevent its being overturned by the greatest force that the wind would ever be likely to exert upon it.



The effect of the wind is frequently seen in the lofty chimney stacks of old houses, which are bent out of the upright owing to a want of proper precautions having been taken in building them of sufficient thickness to resist the long-continued pressure of the wind. Suppose a stack to rise 20ft. clear of a roof, the pressure in this case may be taken as acting uniformly over the whole surface, and if the wall is solid brickwork its weight per cubic foot is about 112lb. Putting x for the thickness to be found, then the total weight for every foot of width of the stack in lbs. is

$$112 \times 20 \times x, \text{ or, } 2,240 x.$$

This weight acts vertically at a distance equal to half x from the outer edge, so that its moment about the outer edge is

$$2240 x \frac{x}{2} \text{ or, } 1120 x^2.$$

And the moment of the pressure of the wind at 50lb. per square foot is

$$50 \times 20 \times 10, \text{ or, } 10,000.$$

Hence, by equating these two moments we obtain

$$x^2 = 9, \text{ very nearly,}$$

$$\text{or, } x = 3 \text{ ft.};$$

so that the thickness required must be at least 3ft. in order to prevent the wall from being blown over. As, however, the chimney stack is hollow, and only about half the weight of a solid wall, we must take 56lb. as the weight per cubic foot, and this gives

$$x^2 = 18, \text{ or, } x = 4 \frac{1}{4} \text{ ft.}$$

The minimum thickness of a hollow chimney

stack 20ft. high must therefore be 4 1/4 ft. in order to prevent its being overturned by a pressure of 50lb. on the square foot. If the height of the stack is only half the above, or 10ft., the strength of the wall must not be also reduced one-half, for the thicknesses must be in proportion to the square root of the height; so that if x^2 is 18 when the height is 20ft., then x^2 must be 9 when the height is 10ft., or the thickness x must be 3ft.; and when the height is only 5ft. the thickness should be a little over 2ft. The rule for the thickness may be expressed as follows: If we put h for the height, x for the thickness, w for the weight in lbs. per cubic foot of the wall, f for the pressure of wind per square foot in lbs., the minimum value of x for a wall of any height and weight may be determined from the equation—

$$x^2 = \frac{f h}{w}$$

extracting the square root of the quantity on the right hand will give the required thickness (supposed uniform) of the wall or chimney stack whose height and weight are given. The width of the wall need not be taken into consideration, provided the weight per cubic foot is nearly the same in all parts. Taking f as 50lb. and w as 112lb., then the minimum thickness, x , of a solid wall of height, h , will be

$$x = \frac{2}{3} \sqrt{h}$$

For a hollow wall, whose average height per cubic foot is only 56lb., the minimum thickness, x , for a given height, h , will be very nearly $x = \sqrt{h}$.

The force of wind was investigated by the celebrated engineer, Smeaton, who found by taking an average of several experiments, that a wind blowing with a velocity of 35 miles an hour produced a pressure of 6lb. per square foot on a flat surface exposed to its direct action. Consequently, as the pressure varies in proportion to the square of the velocity, a current of air moving at twice the above rate, or 70 miles an hour, produces a pressure four times as great, that is to say of 24lb. per square foot. From this we can find the pressure produced by currents of any given velocity; for if v is the rate per hour, x the pressure produced by the rate v , then from the above rule we get

$$35^2 : v^2 :: 6 : x$$

$$\text{or, } x = \frac{v^2}{200}, \text{ very nearly.}$$

The following table shows the pressure per square foot on a plane perpendicular to the direction of the wind, for different velocities, as calculated by this formula:—

Vel. of Wind per hour, in miles.	Pressure per sq. ft. in lb. av.
10	1/2
20	2
30	4 1/2
40	8
50	12 1/2
60	18
70	24 1/2
80	32
90	40 1/2
100	50

Except in very exposed situations, or at a great height above the ground, the velocity of wind in this country never exceeds 70 miles an hour, giving a pressure of about 24lb. per square foot; and if this is taken as the force at the top of a high building, the velocity at its base may be calculated as four-fifths of 70, or 56 miles an hour, and the pressure at 15 1/2 lb. When, however, there are no obstructions to lessen the velocity of the wind and deaden its force, it often blows in sudden gusts upon a building, and thereby produces the effect of a battering-ram, which greatly increases the strain on the structure. For example, if a

wind which has been blowing at 40 miles an hour, and pressing with a force of 8lb. on the square foot, is suddenly increased in speed to 80 miles an hour, the pressure at once rises to 32lb. per foot, in which case a blow equal to 24lb. per foot of surface is given to the building, in addition to the former pressure of 8lb. Such a force would be equivalent to a steady and continued pressure of 50lb. per foot, which is the amount that all buildings in an exposed situations must be calculated to sustain.

Roofs of steep pitch surmounting lofty buildings are peculiarly liable to be strained by the wind. If we consider the wind to move in a horizontal direction, and to exert a uniform pressure over the whole surface, we cannot but see that the angle of inclination of a roof materially affects the pressure it sustains from the wind; although Tredgold and other writers on the strength of roof timbers have generally neglected to consider the difference which this makes, and have taken one fixed value for the pressure of the wind per foot of surface whatever may be the angle of inclination of the roof. A little consideration, however, of the subject by aid of the mechanical principle of the resolution of forces, will show that this method gives very erroneous results. For in a roof of low angle the pressure of the wind is hardly appreciable, whilst in one of high pitch it is nearly as great as that against a vertical wall. Suppose A B (Fig. 2) to represent the slope of a roof making the angle θ with the horizontal line, A D, and let F P be the direction of the wind at any point, P, moving with a velocity v ; this velocity resolved in the direction of P O, perpendicular to A B, is $v \sin. \theta$. And since the pressure is as the square of the velocity, we have, by the previous formula, pressure per square foot perpendicular to A B equals

$$\frac{v^2 \sin^2. \theta}{200}$$

In order, then, to find the pressure perpendicular to the surface of a roof of any pitch for any velocity of wind, we must multiply the pressure given in the previous table by the square of the sine of the angle B A D. If the pitch is 30° the sine is $\frac{3}{4}$, and its square $\frac{9}{16}$, so that when the horizontal pressure is 50lb. per foot, the perpendicular pressure in this case is $\frac{9}{16}$ or 12 $\frac{1}{2}$ lb. But in a roof of twice that pitch, or 60° , the square of the sine is $\frac{3}{4}$, so that the pressure on the roof is three times as great, or 37 $\frac{1}{2}$ lb. On the other hand, with a roof of 15° pitch, the pressure is only one-fourth what it is on one of 30° , or about 3lb. per foot. The following table will show at a glance what is the pressure at right angles to the surface of a roof for every superficial foot, according to the angle of its inclination to the horizontal, the wind being supposed to blow horizontally with a force of 50lb. per foot on a vertical surface.

Pitch of roof in degrees.	Pressure of wind per ft. in lb. av.
10	1 $\frac{1}{2}$
15	3 $\frac{1}{2}$
20	6
25	9
30	12 $\frac{1}{2}$
35	16 $\frac{1}{2}$
40	20 $\frac{1}{2}$
45	25
50	30
55	33 $\frac{1}{2}$
60	37 $\frac{1}{2}$
65	41
70	44
75	46 $\frac{1}{2}$

It will be seen from the figures in the above table that the force of 40lb. per foot, which is given by Tredgold as the pressure on a roof surface, is much too great for the roofs of low pitch, which he advocates, and

for which the strength of his timbers are calculated. In estimating the effect of the wind on a roof of high pitch, it must be borne in mind that the pressure can be only on one side at a time, and that there is no counterbalancing force on the opposite side. From this circumstance it arises that a far greater strain is produced upon the trusses than if the same load pressed on both sides of the roof at once.

Hitherto we have considered the pressure produced by the wind upon planes or flat surfaces only: we will now extend our inquiry to the case of a cylindrical surface, and since the pressure thereon must vary at every point, it will be necessary to call to our aid the processes of the integral calculus.

Let A P B (Fig. 3) represent a quarter of the plan of a cylindrical tower on which the wind acts horizontally at any point, P, in the direction, F P, where the radius, O P, makes the angle, θ , with the direction of the wind, supposed to be parallel to F P all over the surface of the tower. The velocity resolved in the direction of P O, or perpendicular to the tangent at P, is $v \cos. \theta$, and the pressure at P is proportional to $v^2 \cos^2 \theta$. Now, the only part of this pressure which tends to overturn the tower is the resolved part in the direction P p, which is found by multiplying the pressure down P O by the cosine of θ , so that the force in P p is proportional to $\cos^3 \theta$ for any given velocity. The pressure on any small arc, P Q, is to that on the corresponding part of the radius p q, as $r \cdot d\theta \cdot \cos^3 \theta$ is to $dr \cdot d\theta$ and dr being the differentials of the angle and the radius respectively. Therefore, for the whole quadrant, A B, the pressure on the ring is to that on the radius, as

$$\int r \cos^3 \theta \cdot d\theta \quad : \quad \int dr$$

These integrals, taken between the limits 0° and 90° for the angle, give us the ratio of $\frac{2}{3} : 1$, or $2 : 3$

Therefore, if there are two towers equal in height and diameter, one being square and the other cylindrical, the pressure sustained by the former is to that borne by the latter in the proportion of 3 to 2, the wind blowing horizontally with equal velocity on each, and its direction being perpendicular to one side of the square tower. If then we suppose the utmost pressure which the side of the square tower will have to sustain, to be 40lb. per square foot on an average over the whole surface, the pressure on the cylindrical one will be 27lb. for every foot superficial in a vertical section taken on a diameter of the circle. The weight, however, of the circular tower is less than that of the square one in the ratio of 11 to 14, if the walls are of the same thickness in each case. If the tower 100ft. high and 10ft. diameter, mentioned above, were circular instead of being square, the pressure tending to overturn it would be 27,000lb., and its minimum weight must average 26 cwt. per foot of height; so that, in order to offer equal resistance to the overturning force, the thickness of the walls must be about the same in the round as in the square tower. It has been stated by Rankine and other writers that the pressure on a cylindrical tower is only half that on a square one of equal diameter. This, however, gives too low an estimate of the force which the former has to sustain, the proportion of 2 to 3 being the one that should be adopted. This result shows that it is much more economical to build a tall chimney circular on plan than square, as a saving of one-third of the material can thereby be effected.

The principles which have been here laid down will serve as a guide to the solution of all problems relating to the pressure of the wind on buildings; but it will generally be found necessary to consider each

particular case according to the circumstances under which it may be placed, as a slight variation in these may materially affect the conditions of the problem.

ANTIQUE ART, ITS RESTORATION AND THE WORK OF TO-DAY.

WHEN we but glance at the all but infinite number of books and treatises and fly-sheets that have been written on the subject of Fine Art, it would seem to be all but impossible to propound another, or at least a new thought about it. Yet, surprising as it may seem, there is, indeed, all but a very beginning again, and all over again, to be made in the future, if not in the immediate present. Let any one without prejudice, or a foregone conclusion about the matter, attentively look into and study almost any work of the distant past, and then try and find out, as well as he can, the *modus operandi* of its production, and do this without, as we say, any previous theory about it drawn, unconsciously perhaps, from the to-day's method of work, and then let him go through the same process with any well-known and accepted modern artwork, just fresh from the hands of the workmen. No art-study, no amount of reading, can be more instructive than this. And what do we find universally, and with hardly an exception, in either case? First, in the old Art, whatever it may happen to be, or in whatever nationalised style, we may always detect the hand-work of the individual workman, or artist, which ever word the reader thinks most closely descriptive; while in the modern work the result is found, and known to be the result, more or less, of combination, the individual all but disappearing in the very number and even capacity of those who have helped him and wrought with him.

We might here go into some of the causes of this strange difference between the ways of work of the older world, and those of the work of to-day. In the past, "machinery" had little or no existence, and what is far more than this, even the methods of work which machinery always necessitates and brings with it, was never even thought of, and the consequence of this absence of mechanical means was, that the individual artist or workman was to be found at the work—whatever that might be—in "The Gladiator," a mosaic, a capital of a column, or a simple patera, or in even the mouldings on a humble monument. It would be a curious thing to go minutely and in detail into the process of production of some famous work of the past, and then into the processes now in vogue for producing the very same work, and one destined for the like place, use, and intent. For are not, after all, the same things needful in all ages of the world, and in all places, and among all nationalities? St. Paul's, to wit, has now to be "decorated," and made a picture of, and be thus compelled to illustrate itself. So had the Sistine Chapel, and Ninevite Palace chambers, and the Vatican galleries, and not a few antique chancels, and even vaults. All know how Michael Angelo tried to get assistance during the painting of his chapel ceiling, and how he failed. And all know how it is proposed to accomplish the work of mosaic decoration in the domical vault of St. Paul's. "Combination" of art-power, whatever it may be under competent supervision, is to do this work. How? we might ask.

Let us take, as another instance of the *modus operandi* of the past and antique ways of work, any one of the famous Greek temples, models of work every way, and glance but for a moment at the way in which the ornamental details—to confine ourselves for the moment to that portion of the work—were executed—the world-renowned

sculpture, as seen in the Metopes and Frieze. Take any one of the Metopes at haphazard, as they are now to be seen under not a few disadvantages, by the way, in the British Museum. No very deep insight into art is needed to see, almost at a glance, that this sculptured panel of Centaur and man is the work, and the sole work, of one pair of hands and one brain. It is no copy from previous forms, but a new idea, executed by the man who conceived it. Not from a drawing, by the way, but by dint of seeing and cutting into the marble block itself—the knowing what to do, and how. What the great sculptor saw in his mind's eye, that he could bring to his fingers' ends, and we here see the results of it, just precisely in the same way as in a written poem we see into the thoughts of the writer of it. No example that could be cited can be better than this of the Parthenon prize, from the simple fact, hardly as yet noticed, that it is not all of it by one man, by Phidias himself, but others have helped him; not, however, to do his work, but their own. The "restorations," by the way, even here, are a fearful hindrance to a thorough insight into this. The student should have to do with *bonâ fide* work only.

Now, modern ways of work are the very reverse of this. The command of powerful machinery, capable of doing so much—indeed, almost everything in and about a building; the being able to buy anything required ready made, needing then only to be fixed, no one knowing who made it; and, more than all, as we have just noted, the mode and tone of work which such easy ways of getting over work and difficulties all but necessitates; and the constant activity of that "division of labour" which has made of the modern world what it now is—all go to make of the art of the day a triumph of mechanical skill and miracle of quick work. Nay, the artist himself, in spite of himself, grows mechanical in his movements; and his very mind, instead of guiding his hands, and thus moulding the work, follows the lead of the mechanism always about him, and all but waits for its guidance. What is the power of the machinery and quality of the combination of assistance? is the first question. Can it all do the work? Then the question, What is the work? In the antique art the subject came first, and then the all but accidental art power of the time, and man followed to do the work, as may be so plainly seen in the Greek art, and especially so if followed historically. Other questions come in here; but our immediate purpose is simply to note roughly how different the artistic action of the present is from that of the past. Which of the two is the best is another question, and needing further analysis.

If there be any accuracy in this distinction between the way of work in the past and the way of work in vogue all round us, what is to be said or can be said on that vital subject of the restoration of past art? If the older art got its vital strength and vigour and attractiveness from the very fact of its being the product of individual artistic effort, not capable of repetition, even by those contemporary with it, what can be said really in favour of such being now-a-days attempted? Mechanically produced, art may be restored by the same means that produced it, for "individuality" is absent. But vital and living art can be produced only once—to live as long as the material out of which it is composed, but no longer. Well-intentioned, as so much of the restoration accomplished has been, it is melancholy to think of how much has been necessarily lost by the process; how much has vanished to return no more. Let it be noted here, too—and it is not a little important to note it, that mere constructional repairs are not restorations but simple

additions. A necessary new corner-stone is an addition; and as time does its work it is now and then without doubt a necessity. Much has been made of this, but there is really no force at all in it. Nay, the very antique look and poetic impression of a fine work is hardly injured by it, as it must needs speak for itself, and contrast with all that is round it. But how many new corner-stones there are which have killed an antique structure outright!

There is a very curious aspect of the Restoration question which may be new even to those who have given it some more than ordinary thought. It is all but an obvious one; it is, and it ought not to be forgotten, that it is quite modern in idea, and of to-day and of this present generation. In the last generation, to go no further back, any alteration or addition made to a cathedral or a church was simply either a taking away of something or the making some addition to it, and no attempt was made to touch the old work itself. A new monument, in whatever style of art, was let into the walling without a thought of restoring the surrounding surfaces, whatever that may happen to have been; so that, incongruous as things so often were, you could not lose the idea of the "antiquity" in the structure. The old idea of the place still remained, however new and modern the fresh work put up. Age or antiquity in a building hardly admits of definition; it is a thing of poetic feeling and sentiment, adding infinitely to the art as art. They of the last century, to do our forefathers justice, did not disturb this, though they did do so much mischief. As an illustration, many, doubtless, will recollect the Temple Church, with its low Norman doorway, blackened by age, and the cave-like aspect of the building itself, even the "whitewash" not killing the idea of the place. It was an antique, like a mutilated statue, with the idea of age and time visibly imprinted on it. If it be an advantage and an improvement to get rid of all this, no one surely has any reason here to complain. The church of the "old" Templars is most completely and utterly gone; and another church of the Templars—the one at Dover—equally so.

So very much might be here added that it is not a little difficult to see how to choose or best to add further illustration; for the more this momentous subject is thought about and analysed, the wider and fuller does it grow. From the widest aspects of art, and the broadest possible views, we must needs descend to minute details and to individual artists and workers. May we therefore end with a memorial word on an artist worker just passed away from us—Digby Wyatt? He did a great deal of active work, that is certain, in the way of general direction, and in the guidance of others, and found much help in the work he accomplished, and so fitted himself, as was needful, into the immediate present of things artistic. But it must needs be in the very nature of art that he, as other art-workmen, must be judged by the work he actually and personally accomplished. He was no mere director of the art labour of other men; he worked himself, and was not a little skilful as a colourist, and with a fine eye for colour. We often thought that enduring fame might have well come of his pursuit of this difficult and special work. As it was, he did do a little, but surely not enough. We once asked him whether he thought, if but a drawing of his faded, he himself could in after years restore it to its first state? He said "No." C. B. A.

A new Wesleyan chapel was opened last week at Northampton. Mr. S. J. Newman, of that town, is the architect, and Messrs. Green Bros. the builders. The style is Gothic, and the materials red pressed bricks, with cement pointings and Bath stone dressings.

Building Intelligence.

ARMLEY.—The new church of St. Bartholomew, Armley, near Leeds, was consecrated last week. The edifice is not yet complete, the porches, western turrets, upper portion of the tower, and choir vestry being yet incomplete, while the choir stalls, gas fittings, and doors are only temporary. The plan is that of a Latin cross, consisting of a nave six bays in length, with north and south aisles, transepts, and sanctuary, with roofs of equal height, and a massive tower at the intersection. The church is built of local sandstone, and faced internally with limestone from the Ancaster quarries. The piers in the nave and the detached shafts are of Green Moor stone. The sanctuary is apsidal, and contains a reredos of alabaster marble and Caen stone, by Messrs. Earp, with paintings on tiles by Messrs. Powell. The length of the church is 167ft., the width across transept 67ft., and the height of the tower 153ft. Mr. Henry Walker and Mr. Joseph Athron, of Leeds, are the joint architects.

BRADFORD.—On Tuesday the new Liberal Club at Bradford was opened. The premises are part of a block of new buildings on one side of a new street, called Bank-street, between Kirkgate and Hustlergate, in the very centre of the town, and in the immediate vicinity of the Exchange and the various local banks. The building is four stories in height, and has frontages to Bank-street, Hustlergate, and Queensgate. The ground floor is set apart for a bank and four shops, and the three floors above will constitute the premises of the club. The style is Italian. The principal entrance is through a broad stone staircase, 20ft. square, from Bank-street. On each floor are suites of spacious rooms, adapted for all purposes of the club. The kitchen and the manager's servants' apartments are on the third floor. The premises have been erected from the designs of Messrs. Lockwood and Mawson, architects, Bradford and London. The enterprise is that of a joint-stock company, of which Mr. Titus Salt is the chairman, and the expenditure incurred is not less than £46,000. The cost of the building is £21,000.

BRIDLINGTON PRIORY.—The partial restoration of the old priory at Bridlington, said to have been founded in 1096 for canons regular of the Order of St. Augustine, by Walter de Gaunt, grand nephew of William the Conqueror, is being attempted, and some £12,500 has been raised in this increasingly popular watering-place and its neighbourhood. To restore the eastern parts of the edifice and the central tower would require £150,000, but the intention is to add shapeliness and beauty to what remains and to run up the two western towers. The history of the building is interesting. After the plunder of Whitby Abbey by the Danes it was fortified with walls and ditches, and its defences were further increased about the end of the fourteenth century—a massive gateway in the Pointed style, upwards of 100 yards westward of the church still remaining. In the sixteenth century it must have been a building of unusual magnificence. The length of the nave was 188ft., its breadth 72ft., its height 90ft., length of the choir about 140ft., length of transepts after 160ft. Not a vestige of chancel or transepts is now visible, and the central and two western towers have likewise disappeared. The principal entrance is by a pointed arch surmounted by a crocketed pediment, while on the north side is a beautiful porch much dilapidated, belonging to the fourteenth century. The western front is little less than a ruin, the north tower has no roof, and is blocked off from the interior by a hideous wall, the tower windows are built up with brick, and the stonework insecure.

BRISTOL.—A new Congregational church at Sneyd-park, Bristol, intended to accommodate about 300 persons in the nave and transepts is now in course of erection by Messrs. Cowlin and Son, contractors, under the superintendence of the architect, Mr. Stuart Colman. The plan is in the form of a cross, with ambulatories in the place of aisles. The transepts are slightly raised above the nave level, and have freestone parapets at the

junction with the cross. Local sandstone rangework, of a yellow hue, is used for the external facing of the walls, and large stones of the same material form the quoins throughout. Bath stone serves for all tracery and moulded work.

IPSWICH.—The church of St. Matthew, Ipswich, has been enlarged at a cost of £1,245, under the direction of Mr. G. Gilbert Scott, M.A. Mr. Henry Luff, of Ipswich, was the builder. The enlargement consists in the extension of the north aisle to the same width as the south, by which means accommodation is provided for some 200 additional hearers, and the church now affords accommodation for between 1,000 and 1,100. Externally the walls are of rubble, faced with rough flints with white stone dressings. The style of the new aisle, like the rest of the church, is Perpendicular, and the stonework of the old windows and north door has been restored and used. In the west wall of the new aisle is a handsome five-light window, whilst in the east wall is a new two-light window filled with stained glass. The roof is open and of plain oak timber.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. This week's number contains articles on Chemists and Druggists, Homogeneous Sewers, The Water Supply of London, The Present Position of State Medicine in England, Distemper in Dogs and Typhoid Fever, Mr. Lawson's Talk on Hospital Mortality, The Approaching Congress of the Sanitary Institute of Great Britain, Warming and Softening Water, The Ventilation of Sewers at York, Geography of Consumption in Devon, The Heavy Infantile Mortality at Macclesfield, Underground Water, The Report of the Society of Arts on the Recent Health and Sewage of Towns Conference, New Provisional Orders, Public Health Reports, Water Supply, Correspondence, Public Health Patents, The Editor's Table, Gleanings, &c. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—A. E. J.

BUILDER. (You have a claim for tendering under the circumstances.)—Pupil. (Apply to the secretary of the R.L.B.A. Our own pages will also supply you with the requisite information.)

ARCHITECTURAL SCIENCE CLASS.—Aubrey. (We are glad to have your expression of approval.)—E. F., A. L. B., and others. (It is our intention to continue this class in another course of study, seeing it has met with such approval. The class commenced at the beginning of last year.)—B. (The back numbers may be obtained by application.)—Attneave. (Thanks for your good wishes; your suggestion shall be borne in mind.)

"**BUILDING NEWS**" **DESIGNING CLUB.**—L. J. H. (This will recommence next week, when the new subjects will be given.)—Fred. F. Perkins. (Next week the work of the club will recommence, when we shall republish the conditions.)—Fleur-de-lis. (Your suggestion shall receive consideration.)—McClhin. (We shall be able to reply to your question after it is seen how the work proceeds on its recommencement.)

Correspondence.

TEWKESBURY ABBEY.

To the Editor of the BUILDING NEWS.

SIR,—I have read with much interest the able paper on Tewkesbury Abbey in your last number.

The Austin Canons of Oxford and Bristol built an aislelike Lady Chapel eastward of the transept on the north side. The Benedictines of Canterbury erected a smaller chapel at the east side of the transept (Wimborne, a secular church, had also the Lady altar in the transept); but at Bury St. Edmund's, Peterborough, and Ely, where external parish churches existed, their Lady Chapel was a large parallel chapel northward of the presbytery, in a position which more nearly corresponds with that of the building under discussion at Tewkesbury. At Glastonbury and Durham the Lady Chapel was at the west end of the nave. But in every case the major ecclesia was the minster proper (as at Chichester, the term High Church is not extinct to this day), and the majus altare its high altar. There were occasionally more than one Lady altar, as at St. Alban's and Chichester (the latter a secular church), but it will be remembered that the choir, whether monastic or secular, was always enclosed, and with due precaution against any interruption of the choir services circulation was permitted to the laity round the aisles, in order to give them access to the lesser chapels and low altars, and especially to the great shrines of patron saints where they existed. The matin mass of the laity was said at 5 A.M. in summer, and at 6 in winter, and probably was the most frequented, for so late as in the seventeenth century we find a relic of the custom in the provision for an early morning service by Bishop Hacket in Lichfield Cathedral.

The erection of large eastern chapels of St. Mary is, no doubt, due to certain doctrinal developments in the thirteenth century; but such adjuncts existed at an earlier period—for instance, at Chichester, where Bishop Gilbert extended the original Norman building in the Decorated period.

The beautiful coronal of chapels at Tewkesbury had its parallel in the Cistercian church of Croxden; and its germ in budding chapels—usually three—might be traced at Pershore, Bury, Leominster, and Norwich, like tentative approaches to an imitation of French arrangement.

The accommodation of the laity in conventual churches was not limited to a portion of the nave. At Romsey, on the exterior of the north aisle of the nave, into which the nuns' choir was extended, a parallel parish church was built and served by prebendary chaplains. At Boxgrove, which had only a single aisle in the nave, the monks erected two screened galleries in the transept, like a huge wooden triforium. At Chester an entire wing of the transept at the south was shut off for the accommodation of the people, whilst at Durham the sermon was preached in the women's chapel of the Galilee.

My present object, however, is to direct attention to the rich illustrations of historic architecture which are stored up in the wills contained in the Archbishop's Library of Lambeth, and at Somerset House, where the amiable and efficient custodians are ever ready to afford aid to students, who must give laborious days to a continuous and patient research. In a recent special inquiry on a particular subject—Chichester Cathedral—when I had no time to take discursive notes, I met with several important matters in connection with the foundation of chantries at Tewkesbury, and also information with regard to Hereford. The ecclesiology of London might be re-written with advantage; our present ignorance would soon be tested by even cursory reference to these mines of fresh lore. The Record Office has also its riches, for I found a complete enumeration of the whole range of the conventual buildings of Malmesbury (where the Lady Chapel, I find, was a transverse eastern structure), as built by the abbot

of the period, which I have embodied in a small independent memoir, which will be ready within a short time.—I am, &c.,

MACKENZIE E. C. WALCOTT.

A DOMESTIC DRAMA IN THREE ACTS.

By "CLAMANS IN DESERTO."

SIR,—The letter of "Clamans in Deserto" on the subject of Architects and Quantities, which appeared in your issue of the 3rd inst., has been well replied to in the succeeding numbers, but there is in it a point which appears to me to have been overlooked. I think that the whole matter might take the form of a stirring dramatic incident with the following as the leading idea, the filling up to be written by those architects who are not able to take out their own quantities.

ACT I.—A large public building has to be erected—the architect employed is a Fellow of the Institute, complying with the abominable rule of not taking out his own quantities. The "promoters" wish for an estimate from him of the probable cost; the broad path of cubing which leads to destruction is brought into play; he reports the result—afterwards a wretched thief, called a quantity surveyor, is engaged. He carefully takes into account the whole of the works required to be done—no more nor less, furnishes his bills, and tenders are obtained, based thereon; the lowest tender is considerably above the architect's estimate, proving the swindling propensities of the quantity surveyor. The work is done, the architect is ruined, and the curtain falls, showing him dying in a mad-house.

ACT II.—A few years are supposed to elapse; soot and dust have played their part—the public building requires repainting. The "promoters," with the caution before them of employing a Fellow of the Institute, engage the services of a pure though youthful architect. The original "painter's bill" is exhumed, and a copy supplied to the new and entirely untried builders. The tenders arrive—the excessive lowest astound the "promoters," but the work is ordered to be done; and, what is more, it is paid for. This crowning incident, accompanied by a banquet of the "promoters," terminates Act II. Architect No. 2 being ruined as No. 1, and the curtain falls with his body on the stage, just brought from the paddle-wheel of a Thames steamboat.

ACT III.—The "painter's bill," of Act II., fell into the hands of a firm starting with all the freshness of youth, with Cubitt, Lucas, and George Smith, straight before them as a goal of ambition. They have landed this important work—they have ascertained how much paint and varnish will be required to comply with the covenants of the original "bill"—they have rushed to the manufacturer, ordered the ascertained quantity, and have returned to their hearths happy and serene. The paint and varnish are delivered, a foreman employed, who, not knowing the description of the original bill, which provided for four or five oils because on new work, proceeds in the usual manner, and gives the now old work the usual clean and two oils; and Act III. opens with a scene of the builder's yard showing half the quantity of paint and varnish ordered and left after all the work had been done. The "confidential clerk" of the firm is now introduced—a broken-hearted man, in consequence of this surplus paint and varnish; he meets an "old friend" of a disappointed man, unburdens his bosom, and retires. The "old friend," in tears, rushes to the disappointed "one who knows," and in less than five minutes he is in a snug parlour, narrating, through the fumes of some real "Highland," the whole history of the excessive paint. Various suggestions as to the reason of such excess are made—at last it occurs to the disappointed one that the work had been done on the original bill, made by a quantity surveyor. He knows or has heard that quantity surveyor is only another appellation for "thief"—he grasps in a moment the whole course of the swindle, hastily bids adieu to the "old friend," finishes what has remained of the liquor, and writes out the drama in three acts, entitled "A Public Building; or, the Two Ruined Architects, the Youthful Builder, and the Swindling Quantity Surveyor."—I am, &c.,

WILLIAM WOODWARD.

THETFORD SCHOOL COMPETITION.

SIR.—Last autumn, when the Board advertised for plans, it was clearly stated that each competitor must guarantee that the buildings could be erected for the sum stated in his report. One of the competitors, I believe, submitted with his plans a builder's tender amounting to about £3,500, and Messrs. Coe and Robinson were prepared to undertake that they would procure a tender for less than £3,800. Now, to most of the competitors who studied the local papers, it was pretty clear that the Board could not decide whether the designs of Mr. Pearce, of Norwich, or Mr. Smith, of Thetford, should be accepted, and after sundry meetings the whole of the plans were referred to Mr. Boardman, of Norwich. This gentleman ignored the plan of the London architects, and reported in favour of the two local architects before mentioned, and now tenders have been obtained for carrying out the plans of Mr. Pearce, and a tender submitted by Messrs. Palmer and Holden, amounting to £6,126, has been accepted. It will doubtless afford satisfaction to some members of the Board that their friend has been successful, but the ratepayers should ask why the schools should cost £6,126 when Messrs. Coe and Robinson's guaranteed estimate was £3,800?—I am, &c.,

FAIR PLAY.

NEW BOARD SCHOOLS AT PLYMOUTH.

SIR.—An article, "communicated," appeared in the BUILDING NEWS of the 24th inst., commencing with these words:—"Some few months since the School Board for this town (Plymouth) expressed dissatisfaction with their architects, Messrs. Norman and Hine, &c." Who the author of this communication is we care very little to know; but we beg, in fairness to ourselves, that you will supplement it by publishing this note, and with it the subjoined copy of a letter we received from the School Board on the close of our connection with it after six years, and the erection of five large school buildings.—We are, &c.,

ALFRED NORMAN, } Architects.
JAMES HINE, }

Plymouth, August 28, 1877.

[COPY OF RESOLUTION PASSED BY THE BOARD, MAY 8TH, 1877.]

"That as the connection of Messrs. Norman and Hine with the School Board ended when the late Board went out of office, this Board, whilst fully recognising their services as architects for the last six years, are of opinion that in future it is desirable that designs for School Board schools shall be obtained after competition." Signed by the Clerk to the Board,

M. E. STRIBLEY.

A MODEL NEW CHEAP HOUSE.

SIR.—"B. X.," and such reformers as he, have the matter of imperfect houses pretty much in their own hands. Most of the defects to which he so touchingly alludes were apparent to him or any one else on a most casual look at the house, and any skilful architect or surveyor could have discovered the latent defects, and would have warned "B. X." against living in the house.

As long as people can be found who will take such houses as the one described there will be people to build them, and they will be built; but if the public has the sense to leave them empty, this class of construction will soon be abandoned, and as there cannot well be a change for the worse, things will mend.

"B. X.'s" complaint is something like that of a man who voluntarily puts his hand amongst stinging nettles, and then cries out that he is hurt, and asks for sympathy.—I am, &c.,

W. R.

HOW NON-SURVEYING ARCHITECTS "PROTECT" THEIR CLIENTS.

SIR.—If your contributor still thinks that architects are as likely as surveyors to supply excessive quantities, let him ask the first dozen builders he meets whose quantities they prefer. The better the quantities for the builder the worse for the client.

I write in this matter about what I know, and about what is impressed on me more and more forcibly by every day's experience. Exces-

sive quantities are an evil about which non-surveying architects do not know. They do not know whether the quantities are in excess or not; they pride themselves on having nothing to do with quantities. The consequence is, that in a multitude of cases they let their client pay 5 or 10 per cent. more for his building than he ought to pay, and in an extreme case, like that which I gave in detail in the BUILDING NEWS of August 3rd, they let him be literally robbed of £400 in a contract of less than £1,000. After this it surely does not require any great boldness, or, simply, any great recklessness, to say that non-surveying architects cannot protect their clients. The boldness and the recklessness seem rather on the side of those who say they can.

I quite agree with your contributor that architects ought to be independent, but there are two ways of making them so. One is to debar the architects from having anything to do with quantities, or knowing anything about them—with what results to the client we have seen. The other is to let him take out the quantities himself, make them the basis of the contract, and have them paid for directly by the client. If clients knew their own interests they would not be long in choosing between the two systems.—I am, &c.,

CLAMANS IN DESERTO.

SHORES.

SIR.—The author of "a chapter on Posts and Shores," in the BUILDING NEWS for Aug. 24, devotes a few lines to what he calls the "Mechanics of Shoring," in which he considers a shore as a sloping timber resting on the ground at the foot and against a wall at the top. On referring to "Tredgold's Carpentry" (35), it will be found that we have here merely the case of an ordinary lean-to roof, which has very little in common with a raking shore. The "Mechanics of Shoring" form a much more complicated problem, as the shore being wedged up tight against a "stud," or needle driven through the walling-piece and into the wall itself, has to assist in supporting the weight of the upper portion of the wall, as well as to prevent the wall itself from falling outwards. It is evident that the mere weight of the shore would do very little towards effecting these objects unless its power of resistance to compression were brought into play, and it is for this reason that the two ends of the raking shore are tightly wedged up so that its full strength as a "post" may be utilised.—I am, &c.,

E. W. T.

A SUGGESTION.

SIR.—I am frequently hearing that certain gentlemen engaged in a profession or occupation have formed themselves into a Masonic Lodge, the latest addition to the lodges thus formed being that of persons connected with gasworks. Could not such an enterprising and energetic body as the Architectural Association form a lodge admitting only members of the Institute or Association? A circular from some of the leading Masons in the two bodies would be the means of ascertaining how many brethren would be likely to join.—I am, &c.,

MASTER MASON.

Our French brethren are evidently of opinion that to have a good opinion of oneself is a professional duty. The Société Libre des Beaux-Arts has, with singular modesty, issued, as the subject of its prize essay, the following:—"Chercher depuis quelle époque l'art Français est supérieur aux arts étrangers."

A new fever and small-pox hospital was opened last Saturday, at Bowdon, Cheshire. It is fitted up throughout with Shorland's system of ventilation, consisting of the Patent Manchester Grates for warmth, vertical pipes for the supply of cold air without draught to the patients, the Patent Manchester Cowl which sheds light and extracts foul air from bath-rooms and water-closets, and patent extract vitiated air arrangement in smoke flues, for the removal of injurious gases from the wards. The building is of wood, with roof and sides covered with corrugated galvanised iron.

The foundation stone has been laid of a new Wesleyan chapel at Harrogate, the architect being Mr. Woodhouse, of Bolton-le-Moors. The estimated cost will be about £6,000, and the style of architecture Early Decorated Gothic.

Intercommunication.

QUESTIONS.

[5106].—The Largest Station.—I desire to know which is the largest in superficial area of the two following stations—viz., St. Pancras Station, London, or the new station at York?—ALPHA.

[5107].—Staffordshire Blue Metal.—Can any of your readers give me any information how the above is coloured, vitrified, and manufactured?—A. F. H.

[5108].—Strength of Materials.—I have worked as a bricklayer for some time, and am now foreman in a jobbing shop. I have attended the Science and Art Classes, and obtained first class advance in building, and intend to try for honours next year. I want to understand the strength of materials, &c. I have the published formulæ, &c., but I cannot understand them. Can any one tell me of any class or institution where I may go to in the evenings?—C. J. E.

[5109].—Illuminator.—Could any of the numerous readers of the BUILDING NEWS, interested in the art, tell me the names of any standard works on illuminating and missal painting?—PAPYRUS.

[5110].—Separating Fine Sand from Water.—Can any reader inform me how to separate fine sand from water—the sand travels with the water, and speedily renders ordinary filters inactive? The quantity of water to be dealt with is about 6,000 gallons per day, flowing from a surface spring into a reservoir.—X. Y. Z.

[5111].—Turkish Baths.—Will some one who has had experience in these kindly inform me the best and cheapest materials and construction of floors and ceilings of warm and hot rooms; also the best and cheapest mode of heating the same in the Turkish baths?—AQUATIC PLANT.

[5112].—House Ventilation.—Being about to execute a design for a rectory house, I have been asked to pay great attention to the ventilation of the several rooms. Would some kind reader assist me by illustration or otherwise the best course to adopt, and oblige—R. M. D.

[5113].—Contract Plans.—If a client applies to his architect for the "contract plans" of a building nearly finished, is it not the duty of the architect to give them to him? In case he declines giving the "contract copies" should he not furnish other copies free of charge to his client? Does not an architect by acting in this manner (refusing to show the drawings) incur censure?—A HON. PROFESSOR.

REPLIES.

[5087].—Durability of Timber.—Timber, used externally without paint or other preservatives, will be more likely to resist the effects of the weather than if planed up. The simple reason is that the loose fibres shelter the surface, protecting it from the alternating effects of rain and sunshine. As to the ravages of insects, or the effects of decay, it is immaterial whether the timber be planed up or left rough.—R. H.

[5092].—Mortar Joints.—Rolled Iron Beam.—1st. The chief consideration, other than appearance, in determining the thickness of mortar joints in brickwork, is that of strength, loss of strength being occasioned either by the joints being too thick or too thin. In the first case, using more mortar than is absolutely necessary to hold the bricks together is weak construction, as ordinary mortar is not so strong as brick; and in the second case, where the joints are too thin, there will not be sufficient mortar to hold the brickwork together. Joints should not be less than $\frac{1}{4}$ in., or more than $\frac{1}{2}$ in., in thickness. 2nd. A beam will carry double the weight when uniformly distributed than when centrally loaded, provided the load in each case is of the same nature, whether live or dead. The required weight per foot-run will be 12cwt.—R. H.

[5092].—Brickwork.—Besides the better appearance secured, the closer the joints are kept the longer the work will last, as the action of the weather will not have the amount of force against them, and therefore they will not require pointing so often. Moreover, the closer the joints are the less shrinkage will take place, and thus settlements will be prevented, as the heavy piers will shrink and form bad cracks over windows, &c.—C. T. E.

[5094].—Measuring Chimney Breasts, &c.—I cannot think where "Oue Who Does Not Know" is writing from, but I have done a deal of piecework in London, and our custom is to measure all flues as solid brickwork, as if there were no flues in them. Thus, a smoke shaft would be measured as a solid pier, and a party wall full of flues as if there were no flues. The bricklayer would not have so many bricks to lay, but he would have to target the flues instead. All openings are deducted, and the work reduced to rods and paid for at so much per rod.—C. T. E.

[5096].—Board Schools.—"Perplexed Student" will do well to procure the "Rules for Planning and Fitting-up Schools" of the Education Department, as without them it is impossible to design schools to meet the requirements of the said department. In planning schools there are many things to be taken

into consideration, amongst which are the kind of desk used, whether long or short, and whether 3, 4, or 5 rows deep; also the number of class-rooms required, and the manner of teaching in them, whether by using desks or, as in some provincial towns, only seats. The minimum area allowed is 8 superficial feet per child, but 10ft., or even 12ft., will not be too much; in fact, it is nearly impossible to have a well-planned school with less than 10ft. per child. Having settled preliminary matters, and attended to rules before-mentioned, "Perplexed Student" will find the size determined by the number of children to be accommodated. Every schoolroom and class-room, ceiled at the level of the wall-plate, must be 12ft. high inside, when with a greater area than 360 superficial feet, 13ft. high, and when more than 600 superficial feet, 14ft. When ceiled to the rafters and collar-beam, the internal height must be 11ft. to the wall-plate, and 14ft. to the collar-beam. A mixed school (boys and girls) need make no difference to calculations, but infants should always be kept separate from older children, allowing for the latter 9 or 10 superficial feet per child. A good work—perhaps the best bearing on these matters—is "School Architecture," by Mr. E. R. Robson, architect to the London School Board.—R. H.

[5096].—Board Schools.—"Perplexed Student" can get all information he requires from Robson's "School Architecture," price 15s., which he may obtain from B. T. Batsford, High Holborn.—J. HATTON LOWE.

[5098].—Concrete Parsonage.—"J. H. G." asks where any concrete parsonages can be found. The question is ambiguous, because if concrete is a good material for a dwelling-house of any description, it must be also for a parsonage, and *vice versa*. There is no county in England but what at the present time possesses some good examples of concrete buildings, and, possibly, some bad ones. They are successful erections if proper care, proper materials, and efficient supervision are obtained. The percentage saved, when compared with brick or stone, it must be self-evident depends entirely on the locality; and the comparative cost of concrete and brick erections cannot be stated unless the actual value of the relative materials, *in situ*, are known. If "J. H. G." were a constant reader of the BUILDING NEWS he should know that this journal reviewed "Concrete, and its Use in Building" (Spon and Co., 48, Charing-cross), in the number for July 27th, and in that work he will find the questions he asks amply considered.—THOMAS POTTER.

[5100].—Hollow Walls.—The outer portion should be 9-inch work, as it has to withstand the pressure of wind, force of drifting rains, &c., and, moreover, the advantage of "English bond" in the outside brickwork is obtained. If the bricks and mortar are of fairly good quality it would be better not to carry the joists beyond the inner wall, otherwise the ends may be subjected to dampness which may pass through or into the outer portion of brick wall. This applies only to ordinary houses, or to floors carrying moderate weights. A course of bricks to form a bonding course immediately above the joists helps to consolidate the inner and outer portions of walls, but is scarcely necessary if sufficient Jennings' bonding bricks for hollow walls are used; if, however, a course is employed, it should be of blue Staffordshire or other non-porous bricks, and laid in cement, or the dampness may be transmitted through the entire thickness of the walls.—THOMAS POTTER.

[5100].—Hollow Walls.—The 4½in. wall should be inside. For ordinary-sized rooms 4½in. will be quite sufficient bearing for joists. It is not always necessary for a cavity to run clear from ground to eaves, as they are sometimes stopped at floors.—J. HATTON LOWE.

[5100].—Hollow Walls.—These walls, when a brick and a half in thickness, are best built with the 4½in. wall inside. In regard to the joists, this will depend on the wall-hold "C. F. M." intends giving them. If, as in North Country practice, 9in. be required, then they must be taken through to the 9in wall, setting aside, to a certain extent, the object

of the "hollow wall." If, however, the bearing be short, 4½in. will be ample wall-hold.—R. H.

[5101].—Chimney Shafts.—If "E. F. B." would write to the secretary of the Civil and Mechanical Engineers' Society, 7, Westminster-chambers, and ask him for a copy of the paper read by Mr. E. M. Bancroft on this subject, he will get all the information he requires. It is a valuable essay, and well worth perusing, as it contains much practical information.—Jos. W.

[5102].—Fair Wear and Tear.—It seems hard on Mr. Vernon to have to make good a crack in his brickwork, but as he has covenanted to repair and keep in repair, he must do so. I do not think that a crack in a wall could be considered as resulting from "wear and tear" of the house.—W. R.

[5105].—Patent Silvered Glass.—The dampness is caused by the sweating of the newly plastered walls, the moisture combined therein being drawn to the warmer surfaces of the rooms. In all new houses an air space (half an inch at least) should be left between the surface of plastering and the backs of looking-glasses, pictures, or anything, in fact, usually placed against the walls; and for some months or a year, or more if the walls are thick. Furniture also should be kept some distance away. The object to be gained is to allow of a free circulation of air, and in suitable weather all doors and windows should be opened. A piece of flannel or cloth covering the backs of looking-glass, pictures, &c., is a good precaution against the effects of damp, and a knob of quicklime placed in wardrobes, closets, or confined places in new houses will absorb the dampness otherwise deposited on any cold surface it may come into contact with, as cutlery, plate, &c., and saves wearing apparel and other articles in a great measure from mildew and similar evidence of dampness; of course the quicklime must be renewed at times.—THOMAS POTTER.

Bricks perforated with three holes, that the mortar may get a good hold, are being used in the construction of some buildings in Minneapolis, Minn.

The arrangements are now nearly completed for the inauguration on the 6th of September of the handsome Art Gallery at Liverpool, built at the cost of Mr. A. B. Walker, Mayor of Liverpool, as a present to the town. We shall give an illustration of the building next week.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,
Have REMOVED from 57, St. Paul's Churchyard, to new and extensive Premises,
123, QUEEN VICTORIA STREET, ST. PAUL'S, E.C.
Illustrated Price Lists gratis and post-free.
Makers to the QUEEN, H.R.H. the PRINCE OF WALES, and the Bank of England.

Trade News.

WAGES MOVEMENT.

LONDON.—The strike amongst the operative stonemasons of London has virtually concluded. From a return made on Tuesday morning it appears 120 of the leading metropolitan building firms have conceded the 10d. per hour. Out of 1,200 labourers thrown out of work by the strike, only twenty reported themselves, the remainder having found employment elsewhere. The operative masons have a good organization and efficient officers, and to do them simple justice as a body, their demands have seldom proved unreasonable.

MOTHERWELL.—About three months ago the master joiners intimated to the men that after the expiry of three months they would not bind them-

selves to abide by the bye-laws and rate of wages then in force. Subsequently they submitted a revised code of bye-laws and rate of wages for the consideration of the men. The latter have responded by formulating a counter code of bye-laws. The employers' notice expired on Saturday, the 25th, and on Monday the men came out on strike.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—(ADVT.)

Holloway's Ointment is not only fitted for healing sores, wounds, and relieving external ailments, but rubbed upon the abdomen it acts as a derivative, and thus displays its utmost salutary influence over stomaclic disorders, derangement of the liver, irregularities of the bowels, and other intestinal inconveniences which mar man's comfort.

TENDERS.

BATH.—Additions to Monkton Combe Collegiate Institution. Mr. E. H. Lingen Barker, architect:— Hill and Gay (accepted)... .. £520

COLCHESTER.—For alterations to a leather factory for Mr. Warmington. Messrs. Ebbetts and Cobb, 23, Essex-street, Strand, W.C., architects:— Everett and Son... .. £246 Dupont... .. 237

DEPTFORD.—For drainage works, Cemetery, Brookley-road, for the Deptford Burial Board. Mr. A. G. Hennell surveyor:— Kent... .. £2,649 0 0 Woodham Bros... .. 2,567 0 0 Thompson and Son... .. 2,457 0 0 McKenzie... .. 2,320 0 0 Rowley... .. 2,050 0 0 Cooke and Co... .. 1,800 0 0 Dover Bros... .. 1,685 0 0 Hare... .. 1,650 0 0 Hubbard (accepted)... .. 1,575 0 0 Simmons... .. 955 16 0

DEVON.—For new Board Schools at Teignmouth. Mr. J. W. Rowell, architect:— Underhill and Aggett... .. £5,965 Davis Bros... .. 5,920 Laphom and Goad... .. 5,867 Slocombe... .. 5,550 Furler and Co... .. 5,800 Stevens and Bastow... .. 5,749 Stacey and Rabbage... .. 5,705 Jackman (accepted)... .. 5,295 Stratford... .. 5,245

EXETER.—For four houses, &c., in Northernhay-street Mr. J. Jerman, architect (Associate and Graduate R. I. B. A.):— Gibbard, J. R... .. £1,845 Worden, D... .. 1,708 Smith, D... .. 1,465

HASTINGS.—For the erection of house in Clive-vale, for B. C. Mummery, Esq. Mr. W. L. Vernon, architect:— Reeve... .. £1,016 10 0 Harman... .. 1,012 10 0 Ditch... .. 994 0 0 McConnell (accepted)... .. 902 10 0

LONDON.—For the alterations to offices, No. 1, Muscovy-court, E.C. Mr. J. Randall Vining, architect:— Smith and Co... .. £636 Stamp and Bowtle... .. 587 J. Garrad... .. 583 P. J. McManus... .. 523 Thos. Boyce (accepted)... .. 474

LONDON.—For warehouse, Watling-street, E.C. Messrs Ford and Hesketh, architects:— Adamson and Sons... .. £6,527 Browne and Robinson... .. 6,380 Dove Bros... .. 6,365 Peto Bros... .. 6,290 Scrivener and White... .. 6,287 Brass... .. 6,118 Lawrence... .. 5,957 McLachlan... .. 5,871 Shaw... .. 5,763 Perry and Co... .. 5,723 Corder... .. 5,599 Newman and Mann (accepted)... .. 5,599

NORWOOD.—For the external painting, &c., Castle-h Lodge. Mr. J. Randall Vining, architect:— W. Poole... .. £220 G. Hoove (accepted)... .. 198

CHAPPUIS' PATENTS

FOR

REFLECTING LIGHT.—DAYLIGHT REFLECTORS

OF EVERY DESCRIPTION, ALSO

ARTIFICIAL LIGHT REFLECTORS

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

THE BUILDING NEWS.

LONDON, FRIDAY, SEPT. 7, 1877.

DESIGNS FOR THE NORTH LONDON HOSPITAL FOR CONSUMPTION, HAMPSTEAD.

WE have examined the designs that have been sent in competition for this building, and though they are only eight in number, we think the committee have been fortunate in securing a set of designs marked by some ability. We can duly appreciate the endeavour to render that prominent hill-top, known as Mount Vernon, worthy of the picturesque charms of Hampstead, and the architects who have contributed have tried their best to make their work harmonise with the features and surroundings of the place. The instructions verbally given to the several competitors were that 100 beds were to be provided in the proposed hospital; that the out-patients' rooms, the dispensary, the physicians' rooms, stores, &c., were to be provided in the basement; that the board-room, secretary's office, matron's apartments, the resident physician's rooms, &c., should be on the ground floor; that the first and second floor should be devoted to the accommodation of 50 patients each, or 25 of each sex, while the top floor should contain the kitchen and other offices. A further condition was that the wards should be for 6 or 8 patients each, with a few for a less number. Future extension had also to be considered, and the site, which is triangular in shape, necessitated the main frontage to be towards the road leading from Hampstead to Branch-hill, on the west side of the present hospital. As a rule the balcony principle has been adapted with varying degrees of success.

The design, "Experientia Docet," which we first come to, exhibits a block in a free kind of Classic Vernacular in red brick, relieved by stone and terra cotta. The treatment is sensible, but not marked by refinement, and we perceive the author has adopted a meaningless feature or two from the recent Wakefield prize design. Looking at the plans, which in this case form the only recommendation, and upon which the selection will mainly hinge, we find the author has a long block terminated by cross wings. In the basement are the dispensary, boiler, stores, &c.; on the ground floor the nurses' rooms, waiting rooms, and temporary chapel. The plans of the first and second floors contain the wards. These are arranged with a corridor along the north side upon which they open. The wards are for 7 or 8 beds, and have end windows. The author places his bed and living rooms on the south or south-western side, the corridors being on the other side. Fifty beds have been provided for women on the first floor, and fifty for men on the second floor—we should have preferred each floor to have been divided for both sexes. In the centre is a semicircular bay projection, which forms the day and dining-rooms—a feature of some merit. The kitchen and other offices are placed at the top, the former occupying the centre high-roofed portion with lifts. We find the author estimates his design at £13,500. "Hampstead" is the motto of a design that at once attracts us by the home-like style of its architecture and the picturesque handling of the features. Like the last, the author has a long block facing the road with end cross wings, but the corridor of communication is placed in front, and forms an arcaded balcony of timber externally resting upon a stone arcade of Gothic design—a very desirable and pleasing feature in the design. This open arcade stops

against the extreme wings, and the two central day-room octagons, which form a rather piquant addition to the main elevation. Though there is some thought and artistic skill displayed in the plans, the author has not been so successful in his wards. These are 25ft. by 24ft. each, and have two end windows and fireplace towards the south-west, with a verandah on that side, scarcely well lighted enough, especially those shadowed by the return wards in the wings. The day rooms, as we have mentioned, are placed in front and project from the arcaded balcony, the main stairs are central, and the smaller staircases are in front in the extreme wings, with the w.c.'s, lavatories, &c., at their outer angles. Occasional wards are provided at the ends of main corridor in the wings, and the general administration seems planned with care. The chief recommendation of the design is, however, the exterior treatment, which is in a half-timbered domestic type of Gothic, though there is apparently a want of connection between the centre and wings. The author's estimate is £16,500, the rate being £150 per head, including warming, &c. The author of "Light is Life" has certainly approached the pathological idea of hospital arrangement in his plan nearer than any other competitor. He has taken advantage of the pavilion principle in arranging the wards lengthwise along an axis. We have here a central block containing the hall and stairs, with an elongated pavilion on each side. The ground floor shows the board-room in centre behind, the secretary and resident medical officer's rooms on the right, and matron's rooms on the left. A long corridor extends the whole length of this floor, and connects the projecting wings, comprising the male and female patients' day rooms, 53ft. x 22ft., which form the extreme ends of the range, and small wards for four and five beds. The ward plan shows a series of wards placed lengthwise on each side of central stairs, with two end staircases in the wings. Each room holds seven to nine beds, and has windows on both sides, the fireplace being placed between two windows on the south side. This arrangement is one that has been followed with obvious advantages in hospital-building. The day-rooms are at the ends, and balconies have been provided round them, well suited for convalescent use. Each floor accommodates 25 of each sex. The wards are 22ft. wide and 13ft. high, the author giving 6ft. of wall space or 850 cubic feet to each patient. Advantage has also been taken of the fall of the ground. The style adopted is shown in a well-drawn ink perspective that, however, strikes us as representing a loftier block of building than the length of frontage warrants. The front is divided into vertical slices gabled above, and the effect is, to our minds, wanting in connection and solidity of character. The features and dormers betray a decided Jacobean feeling, and are less characteristic than "Hampstead" for a rural site. We next come to "Home Comfort"—a design happily treated elevationally, being in a French chateau style, but showing inadequate lighting, with an arrangement that must be pronounced defective. The ground plan is cut up, and the alternate recession of the wards with balconies between, and the centre corridor are points that rather place this plan outside the field, from a pathologist's point of view. We at the same time admit the author has endeavoured to give homeliness to his wards by reducing their size, and the external treatment of the alternate balconies is clever and piquant. Another design, "Extend," adopts a very similar arrangement to the last, the block being traversed by a centre corridor, the wards being long and short, with open balconies between. There is a centre stairs,

and the ambulatory or corridor is made a feature. The wards, 24 x 26 for eight beds, are lighted at one end entirely, the clinical cases and nurses' being put between the wards. The lavatories and w.c.'s are well placed at the outer angles. Externally the front, shown by a nicely-drawn ink perspective, has a dignified and characteristic look in a Classic treatment, displaying some refinement. The centre is perhaps rather crushed by the pilasters, but the side arcades and the roof are pleasing features.

"Cavendo Tutus" has adopted the balcony principle, the wards being on the inner side for four beds each, with central stairs and lifts, and a special ward in the front. Two end wings give wards for eight beds each, and the bath-rooms, &c., are placed in semi-isolated pavilions at each end of the building. The author endeavours to obtain all the advantage of wards lighted on both sides; the gallery to this end is partly lighted by projecting bays, and the wall of wards adjoining this gallery is pierced with windows. There is certainly an effort to do the right thing, but the result is not successful, and the Gothic front lacks repose and breadth from the cutting up of the front. "Heath" is a flashily-coloured red building of the asylum type, and in a Queen Anne dress; but the author has fallen into the error of giving us an old-fashioned plan, with long advancing wings, L-shape, the consequence of which is the wards are imperfectly lighted. The author of another, "A Trap to Catch a Sunbeam," has a clever idea, but it has been imperfectly worked out. There are two radial pavilions or blocks attached to a long frontage, X-shape, the wards being chiefly in the former with a side corridor. The design shows a pleasing grouping of parts, but the administration seems rather confused. We cannot fail to notice that the authors of these designs have been struggling to combine the wants of a hospital with some architectural character. Unfortunately the dictates of sanitary science have rather run counter to the notions and traditionally-accepted models of architecture, and those who have most boldly accepted the principles laid down by authorities in hospital construction have failed to realise architecturally the kind of building suited to Hampstead. The majority have, we think, rather fallen short from a want of study of the necessities of ward arrangement in the essential point of light and air, or in the administrative part. The committee, nevertheless, should bear in mind that their requirements really point to a home for consumptive patients rather than a hospital; it should be looked upon as more of a convalescent sanitarium, the rooms should be small, home-like, and limited to five or six patients, and the administrative arrangements should be such as to reduce to a minimum the work of the nurses and attendants. We believe, as a rule, the great-hospital plan to be a failure, and the death-rate of recent institutions of the kind shows the desirability of making a hospital as much like a home as possible. Mr. Street, we understand, is to be the referee.

LIGHT, AND ITS RELATION TO ARCHITECTURE.

THERE is a great deal to be said about the modern sash-window. Its relation to health and ventilation, its aid to cheerfulness and comfort, and its artistic capabilities make it one of the most useful and valued of the many functions of a building. A windowless building is a heavy gloomy structure at the best, though our ancestors in the feudal times gave all the play of light and shadow they could to their keeps and moated structures. They were heavily

fringed with embrasures, and pierced with crenellations. Nowadays, the pressure of a town population has compelled the architect to make the window the conspicuous organ of his building. As it is the only source of light and air to a building, so it has come to be enlarged, like those functions of animal life the ontologist or evolutionist has traced to some variation or change of condition of the animal. Of course climate has mainly influenced the development of this feature—in fact, if we trace it from the earliest ages of building in the East, through the various civilised nations, we find a varying size given to the aperture, according to the latitude and power of the solar rays. But this had not been the only influence. The requirements of defence necessitated, as we have seen, a very small aperture on the exposed sides as observed in many of our Border castles. Another cause that operated against the adoption of a large window was the want of the necessary materials. As civilisation advanced, these restrictions have become relaxed, and the demands of city life have led to the enlargement of the window. A curious reversal of this law of development we are just now apparently witnessing in the revival of the Vernacular window of the 17th century, when the window tax and the small panes of glass imposed restrictions to lighting. It is evident, however, on considering the change from Gothic to Queen Anne, that such is really not the case, but that we are returning to a style in which the large square sash-window was the redeeming feature. As to the smallness of the panes, there is an artistic reason for this, apart from the question of light. Viewed architecturally, indeed, there is much to be said for a style in which the window is made a sensible and conspicuous feature, and this is one of the reasons that has made us tolerant of that revival. But light has so many other claims on our regard hygienically, that we may briefly refer to a few of them. In a recent paper, read by Mr. Carl Pfeiffer, in the United States, the subject has been dealt with, especially the limits of the utility of glass. The lecturer referred to the thickness and qualities of glass, and its various properties of transmission of light. It is either too thin or too thick, badly made, or wrongly placed. The thick French plate glass was instanced by Mr. Carl Pfeiffer as especially injurious. The sunlight that passes through it is rendered oppressively hot; in fact, there is something in the material of which the glass is composed, or the manner in which it is manufactured, that renders it extremely unpleasant as a transmitter of light. When the rays of light fall obliquely on this thick plate glass, the oppressive feeling is intensified. Mr. Carl Pfeiffer says:—"It would seem evident that the heat rays and the magnetic rays which light produces in its transit through our atmosphere gain the preponderance over the pure light rays by passing through the glass, and, destroying the equilibrium, injure our health." A window of small panes of uneven quality, the author observes, produces a similar effect: the rays of light are refracted and cross each other. Reflected light of all kinds is, according to the paper we are referring to, open to this objection, and the suggestion is thrown out that the colour of the walls of a room should be regulated by the number and position of the windows, and that no mirror should be placed for the light to fall upon it. Sir David Brewster suggested to a friend who was engaged at his desk in a dark office in the City to extend a fine white muslin blind on the outside of his window, flush with the wall; the advice was taken, and the light was caught by the fine fibres, and thrown into the room greatly to the relief of the eye.

sight; but in this case the light is not reflected, but direct. Another instance is adduced from Miss Nightingale's "Notes on Nursing." She shows the purifying effects of direct sunlight upon the air of a room, and mentions the fact that all patients in a sick ward lie with their faces towards the light, even though it sometimes gives them pain. We know the musty and close smell of rooms that have been long darkened; and every physiologist knows that the sunny side of a street is generally the healthiest, while the inhabitants of the shady side of deep valleys are invariably weak and degenerate. It has been observed also that in dark wards or those lighted from the north only, the sick do not speedily recover. The author affirms that the mischief resides in the reflected light. The "all-overpowering delight of the patient, and, indeed, every health-desiring human being, however, and the sweetest treat for the eye itself is to be able to look through the direct light of the atmosphere into the blueness of the sky, that most wonderful mixture of darkness and light—that dark background of the infinite, lit up with the clearness of light to the very shade suited to human eyes." The being able to see out of a window is another great health condition, and architects, if they bore this in mind, would probably give us less of borrowed lights and fewer windows facing dead walls than they occasionally do. The axis of a ward should be, if possible, placed north and south with windows on both sides, so that the sun may not be absent during the day. Miss Nightingale says the window space should be one-third of the wall space, and placed from 2ft. to 3ft. of the floor to 1ft. of the ceiling.

But confining our attention to the qualities of glass, as M. Emile Saigney remarks:—"All forms of light exhibit three kinds of rays—those which are purely luminous, those which are also calorific or heating, and those which are chemical or magnetic." The first or luminous rays we cannot see, as we can only see colour, but of the other rays transmitted, or the coloured light, the yellow, orange, and red rays are specially heating, while the blue, indigo, and violet are magnetic; but it is not generally known that the maximum of heat is found in the dark region beyond the red, and that those refracted beyond the violet on the other side excite chemical action. Thus, it is shown that different qualities of glass change the relation between the luminous, calorific, and chemical rays, and that, in short, all glass acts more or less in the manner of a prism. While providing for an abundance of pure light, the means for regulating its supply becomes necessary, and blinds or shutters of some kind are required. The colour of these blinds may be made conducive to the comfort or health of the inmates. Thus, green, blue, and neutral-tinted blinds or curtains may be beneficial for those suffering from nervousness or irritation; while red and scarlet may be desirable for those who require stimulation, and are in depressed spirits. There can be no doubt that the value of colour in hygiene is neglected, and is not studied sufficiently by the architect in wall papers and interior decorations. In our hospitals, school-houses, and public institutions and offices, the importance of the windows, their size and position, become one of the most vital of all the questions demanding attention. We may here remark upon the prevalent practice of placing the windows to suit the elevation of a building instead of the room. Architects frequently make the blunder of placing bedroom and sitting-room windows so low as to give outlook only, without thinking of upper and direct lighting, or they place them low, so as to allow an outer cornice, verandah, or balcony to pass over

the window head. The result is indirect lighting, bad ventilation, and a depressing effect on all the inmates. Dark rooms and corners are always unhealthy and unwholesome, from the absence of the chemical action of the light; and the extreme value of well-lighted nurseries and playgrounds is beginning to dawn upon those who thought children could be confined to any corner. Mr. Pfeiffer, indeed, suggests the benefit that would accrue by giving children the "solar air-baths"—the ancient *solaria*—in which they could lie naked upon the floor, their bodies being bathed in bright sunlight and pure air; though we think such a luxury would be unnecessary if the dormitories and nurseries of our houses were well supplied by window light. Dr. Winslow refers to the advantage and comfort to invalids of providing a garden on the top of hospitals, planted with shrubs, and laid down with grass, and interspersed with bright and sweet-smelling flowers. In this retreat the convalescent inhales pure air, and what is as necessary, pure bright sunlight. The life-giving and health-sustaining influence of sun and air is nowhere more felt than in this populous city of London. We have frequently spoken of the advantage of utilising our house-tops, if only for flowers and as children's nurseries. Carl Pfeiffer says if the value of light to the skin of children were known we should have plenty of glass-house nurseries. To those of scrofulous habit, the benefit of sunlight and oxygen is immense; and if our underground dwellings, and crypt-like basements could be lifted up out of their eternal shadow to gain sun and air, many a weakly child that now perishes, might be saved. The cellar dwellings of London and large cities are a disgrace to our civilisation, and it is satisfactory to know the Local Government Board are turning their attention to them. Permeated by drain and other noisome gases, ill-ventilated, and robbed of nature's light—what can be expected but an alarming mortality among our cellar population? The model bye-laws issued by the Board provide an open space—extending at least 24ft. between the line of frontage of domestic buildings and the opposite premises, and this space is never to be diminished, and in the rear the space is to be not less than 150ft. sup. per house. Other provisions to regulate spaces between are made, to which we may refer another time. The area of windows to every habitable room is to be equal at least to one-tenth of the floor area, and to be constructed so that one-half at least may be opened. Dr. Winslow, in his work on the "Influence of Light on Health," refers to this subject. The Towns Improvement Clauses Act of Scotland enacted "that no cellar less than seven feet high, without a window, and of which more than two-thirds are below the level of street, should be inhabited." In Germany the occupation of cellars is prohibited; but, according to Mr. Pfeiffer, no city is so cursed with sunless dens as New York. Its tenement houses are densely packed, and even exceed in some parts those of London, there being 200,000 persons to the square mile, or 120,000 more than are packed in the latter city, the mortality among which is chiefly confined to children. The evil can only be remedied by legislative action; dwelling-houses in towns should not be lighted by shafts or deep well-holes five or six stories high—such a mode of construction should be discontinued; every bedroom should have sunlight when practicable, and borrowed lights should be prohibited for dwellings. It would be very easy to frame rules to meet the most urgent cases. Again, houses should be restricted to a certain number of stories, and as Mr. Carl Pfeiffer says, reform is needed here as in New York, where in Nassau-street,

Fulton-street, and Broadway, houses of from seven to a dozen stories are run up. This subject is undoubtedly one for the architect; he should be enabled to regulate the quantity and quality of his light; he can tone it with the hues of painted glass, and regulate the health and comfort of the inmates by means which art and science have placed within his grasp. One authority has proposed, indeed, to make use of glass as a remedial agent, and to effect by glass the banishment of all disease, to cover in acres of ground by prodigious palaces of glass filled with park-like accessories, where the vicissitudes of winter would be avoided and where thousands of people may enjoy a perpetual spring, undisturbed by changes of weather. Such an idea is too Utopian: nevertheless, there is no reason why every house should not be a sanitarium.

ART AND ARCHITECTURE.

AT a recent meeting of the Newcastle Improved Dwellings Company, the Chairman (James Hall, Esq.), remarked that any one who travelled much abroad, particularly in France or Italy, on returning to this country, must be struck by the meagre artistic taste which as a rule was displayed in our street architecture. It was a mistake to imagine that artistic effect could not be produced without incurring extra expense. A beautiful house, designed by a true artist, need not cost any more than an ugly one; beauty did not consist in a profusion of useless ornamentation, which was sometimes used to cover serious defects: but could be produced by the use of simple lines and curves, which were equally as effective as the most elaborate carvings, when guided by a master-hand. When on the Continent he had frequently noticed how artistically the most trivial details of domestic architecture were treated, which seemed to give a charm and attraction to houses which were not generally experienced here. There was an affinity between the outside appearance of houses and the social habits of the inmates which was not thoroughly understood. They should remember that home was the place where our dispositions to good and evil, which characterised after life, were first formed and nurtured; therefore, one of the best ways to improve a working man, socially and otherwise, was to render his home attractive both inside and out, that it might become a positive pleasure for him to return there after his daily labour, which, he regretted to say, was not always the case. He saw no reason why workmen's dwellings should not be rendered as attractive as the residences of the rich, by more artistic treatment of the materials at command, and their proper adaptation to the requirements of that class of tenants. He would be glad to see further improvements made in this direction, and felt assured that the results would prove satisfactory from all points of view.

A new Board School is about to be erected at Teignmouth from the designs of Mr. J. W. Rowell, of Newton Abbott. Mr. J. Jackman, of Teignmouth, is the builder, and the cost will be £25,295.

The arrangements for the opening of the Manchester new Town Hall were agreed upon last week. On Thursday next the members of the Council will assemble at the old Town Hall, and walk to the new building, where a gold key will be presented to the Mayor (Mr. Ald. Heywood), who will open the principal door. A special meeting of the Council will then be held, and an address will be adopted and presented to the Mayor. In the evening a banquet will take place.

The foundation stone of a new Roman Catholic chapel, at Whitechurch, was laid last week. The edifice will cost about £2,000. The architect is Mr. James O'Byrne, Liverpool, and the builder Mr. John Matthews, of Nantwich. The dimensions of the building are 86ft. by 24ft. It will be built in the Gothic style of red brick, with Grinshill stone dressings. The chapel will seat about 400 persons.

Christchurch, Weston-super-Mare, has been restored and enlarged under the superintendence of Mr. Hans Price, of that town. Mr. Rossiter was the builder. The cost has been £1,100. A new chancel has been added, together with an organ chamber.

THE CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT LLANGOLLEN.

[FROM OUR OWN REPORTER.]

WE resume our report, supplying a fuller account of the proceedings on Wednesday week, of which we could only give a line or two in our last.

WEDNESDAY

Was devoted to a carriage excursion to places of interest within a few miles of headquarters. A numerous party left Llangollen at 10 a.m., and proceeded towards Chirk by the old Holy-head-road. Nearly opposite Cefn

OFFA'S DYKE

Was crossed, and the members alighted to follow and examine it. It consists of a deep and broad ditch, and a mound still in many places as much as 8ft. or 10ft. in height, the ditch being on the Welsh or western side. This dyke is much more perfect and distinct in this section than that known as Wat's, which runs through the grounds of Wynnstay on the opposite side of the valley. It was remarked that where a natural boundary or obstruction, such as a river or steep hill, occurs, the earthwork ceases; thus near Cefn the dyke terminates at a steep cliff overlooking the Dee, and reappears on the opposite shore. Several speakers mentioned that it was always called in ancient chronicles by its present name, although one or two, with Mr. Burgess, were disposed to attribute to it a military rather than a civil origin, and to antedate it to the days of the Romans. If poet's dicta might be allowed weight in deciding knotty points of origin, we might quote Churchyard's description:—

There is a famous thing
Calld Offa's Dyke, that reacheth farre in lengthe.
All kinde of ware the Danes might thither bring;
It was free ground, and callid the Briton's strengthe.
Wat's Dyke, likewise, about the same was set;
Between which, too, bothe Danes and Britons met.

CHIRK CASTLE.

Passing through a pair of fine wrought-iron gates, dated 1779, concerning which the villagers have the odd notion that they were beaten out by a man and his wife, the members drove through the park to Chirk Castle, the residence of Colonel R. Myddleton Bidulph, M.P., and one of the most ancient inhabited houses in the kingdom. It is a quadrangular structure of three stories, strengthened at the angles with round towers. It occupies the site of the ancient fortress of Castell Crogen, but the only portion of the present castle that dates from Edward the First's days is at the north-west angle, the entrance to the quadrangle. This is surmounted by a tower known as Adam's, of very slight breadth compared to its depth; on the inner face of this tower is a projecting oriel window, and beneath it the dungeons. The greater part of the fabric dates from about 1595; on the east side is an inscription stating that it, and the tower above, was all rebuilt by Sir Thomas Myddleton in one year, 1636. The roofs are now concealed by parapets, but when the high gables, of which traces exist, were perfect, the views in the quadrangle must have been extremely picturesque. A visit was first paid to the armoury in the basement, which Mr. Bloxam characterised as containing a remarkably perfect collection of arms of the period of the Civil Wars, including long-barrelled short-stocked guns (originally fired from a rest), pikes, and swords, and also a veritable black jack, a broad-brimmed Puritan's hat, and other relics of the sharp fighting. The castle, it was remarked, was once besieged by its own possessor, Sir Thomas Myddleton, at that time a Parliamentary, who endeavoured to dislodge a party of Royalists ensconced there. Sir Thomas ultimately changed sides, and in his turn was besieged, and forced to surrender, and the castle was greatly injured. Crossing the courtyard the members made the tour of the grand suite of apartments, under the guidance of Mr. J. Tom Burgess, who drew attention to the portraits and tapestry, and also to the unrivalled collection of cabinets of 17th century date. Of the latter the gem was one given to Sir Thomas Myddleton by Charles II. at the Restoration; it is of ebony, richly inlaid with

silver, with three internal panels, said to have been painted by Rubens. Some discussion occurred in the domestic chapel as to the period of its building, many members doubting if it be of earlier date than Charles's reign, although it is claimed to have been added in the 14th century.

PONTCYSSYLLTAU.

After luncheon at an hotel in Chirk village, the return journey was commenced by way of Pontcyssylltau, to allow of a closer view of the viaduct and aqueduct by which the valley of the Dee is spanned. The latter is one of Telford's masterpieces, and was constructed in 1795-1805 to carry the Ellesmere canal across the mouth of the Vale of Llangollen; an embankment stretches for 1,500ft. from the south side, and is connected with the other side by 18 light piers of sandstone and two abutments; these piers support an iron trough 1,007ft. long, carrying the water-way and towing-path at a level of 120ft. above the Dee. The viaduct, which was designed by Mr. Robertson, C.E., carries the Great Western extension railway to Barmouth, and also has 19 arches of 60ft. span, the rails being no less than 150ft. above the river. Passing through Llangollen the party proceeded to

VALLE CRUCIS ABBEY.

The conventual buildings are now occupied by a farm premises, but remains in a very perfect state. The Abbey Church is a roofless ruin of great beauty, and occupies the same position—as the finest remains of a conventual establishment—with regard to North Wales, that Tintern does to the southern part of the Principality, although, indeed, that abbey is just without the modern limits of Cambria; the positions of both abbeys by the side of a stream are very similar. The west gable, with its triplet of two-light lancets, and a rose window above, is very elegant in effect. Within the chancel Mr. Loftus Brock read the paper which we printed last week.

Mr. C. W. W. WYNNE, of Peniarth, described the results of the excavations of the abbey premises carried out by himself and the late Lord Dungannon many years ago, when the tombstones now arranged in the grassy space of the church were discovered buried in the earth, as well as a leaden bird (probably the arms of the abbey, used as the balance of the ever-burning lamp in the sanctuary), the ruins of the great tower, &c. Some discussion arose as to the date of the west gable; and Mr. Bloxam afterwards described the gravestones in the church. At the suggestion of Mr. Brock the thanks of the members were accorded to Mr. Wynne for having cleared out the ruins, and rendered so plain the plan of this beautiful structure, the proposer remarking that it was to be wished that all owners of ancient abbeys knew that by putting them in good condition tourists would be attracted in such numbers as to repay the expense and the wages of a custodian.

ELISEG'S PILLAR.

A singular inscribed column, about a quarter of a mile beyond the abbey, was the last object visited. It stands on a tumulus on a pedestal of squared stone. It is but a fragment of a circular shaft about 7ft. in height, with a roll ornament upon the upper part. Upon its surface is an almost illegible inscription in Celtic letters. From the base Mr. Bloxam read a paper, in which he described the pillar as giving the earliest lapidary inscribed pedigree in the country, and its being the most remarkable post-Roman memorial. When perfect, it stated, according to copies made at the time, that it was erected by Concern to his great-grandfather Eliseg, who recovered his inheritance of Poosia, after the death of Cattfell, by force, out of the power of the Eng, by his sword. The upper part of the column is now lost, but the lower part existing yet was set on its ancient base about a century since. Mr. Bloxam said he should ascribe the date of the monument (which gives also the intervening generations between Eliseg and Concern) as about the 8th century. It has the peculiar entasis of Classic monuments—a fact he had never before heard noted.

In the evening a meeting was held at the Assembly Rooms, when papers bearing on Welsh philological questions were read by the

Rev. Dr. Margiliouth, M.A., and Mr. John Rhys, professor of Celtic at Oxford.

THURSDAY.

A carriage excursion to places in the neighbourhood of Corwen was the chief feature of the day.

SYCHANT,

One of the sites claimed for Owen Glendower's house, was the first stopping place. A mound, said to have formed one of the earthworks defending the site, having been examined, the party proceeded to a place surrounded by a dry fosse, which Mr. G. R. Wright, in a paper read on the spot, claimed to be the "Sychant" (dry place), described by the bard Iolo Goch as that whereon stood Glendower's residence, which he said was equal in magnificence to Westminster Abbey, had a gate-house and walls surrounded by a moat, and that near it was a wooden house, supported on posts and covered with tiles, used for the lodgment of guests, and also a cross-shaped church. The bard added that there was a good heronry and falconry, and also excellent fish to be had from the river. Mr. Wright contended that the earthwork just visited was an outpost of defence, and another and higher one, to which the party went just subsequently, was the principal one; but several speakers appeared unconvinced that this was the true site of the house from which Owen is said to have looked upon 40 square miles of his own land. At a neighbouring farm-house Glendower's table was inspected. It is certainly a very ancient and clumsy piece of furniture, once a board, about 16ft. long, 3ft. across, and more than $\frac{1}{2}$ ft. thick; but now, for convenience, it has been sawn across. Several members thought it quite possible it dated from the time of the chief, whose full name, Anglicised by Shakespeare into Owen Glendower, was Owain ap Gruffyddo Glyndyfrdwy. He was, it may be remembered, the great grandson of Llewellyn, the last of the British princes.

CORWEN.

The attraction in this quiet Merionethshire town, at the foot of the Berwyn Mountains, was the church. On entering the graveyard a stone pillar of great antiquity, and locally known by the brief and euphonious title, Carreg y Big yn y Vach Rwyd, or Glendower's sword, was glanced at. It is a monolith, 7ft. in height, and tapering from a girth of 51in. at the base to 31in. at the neck. The head has been injured, but yet shows on each face a panel, 11in. square, filled with interlaced ornament of late Norman character. The angles of the shaft are chamfered away, and finished with a roll moulding, and the whole is embedded in a massive circular slab of slate. It derives its name from the fact that on the (east) side facing the church is sculptured in bold relief a dagger-shaped Latin cross, about 1ft. in length. The proportions of the pillar are very elegant, and assist in fixing its date at about the last third of the twelfth century. Near the entrance-gate is the pedestal of another cross, into which has been set, a dozen years since, a post ornamented with Jacobean carving, and carrying a sun-dial. The church was formerly cruciform, with a square tower at the west end, but as more seat room was needed, it was enlarged as well as restored in 1871 by Mr. Benjamin Ferrey, F.S.A., who substituted for the south transept an aisle of the same width, separated from the church by an arcade and large circular piers. At the same time (as we were informed in a paper read in the church by the Rev. W. Richardson, M.A.), the utterly uneccelesiastical round-headed windows of Hanoverian date were taken out of the walls and traceried ones put in their stead. At the east end yet remains a triplet of three lancets, deeply splayed, and probably contemporaneous with the great circular font—both First Transitional in character. Nothing is known as to the period of erection or earlier history of the church, and no other features appear earlier than the 14th century. The church is dedicated to the Armorican missionaries, Moel and Salien, who lived in the 6th century. The long narrow nave and chancel of same width pointed, Mr Richardson suggested, to an early origin. Great length in proportion to width is a

characteristic of a class of Welsh churches, and was probably adopted for strength and to keep out the driving rain. The chancel, we noted, has a modern boarded roof internally; that over the nave is a substantial oak hammer-beam roof, marked by the peculiarity that the king-posts stop short of the apex, and that in the remaining transept is yet richer in character, and also of late 15th century workmanship. Some oak panelling of a good but not uncommon type, prevalent 80 years earlier—consisting of a rose surrounded by a pierced quatrefoil—was found during the restorations in the chancel ceiling, and has been preserved and used to beautify the communion rails. In the vestry is an oak chest carved out of the solid bole of some giant of the forest. It has been roughly squared out for the reception of plate and vestments, and measures externally 56in. in length, 25in. across, and 29in. in depth. The weak point is the ironwork securing the lid, which, like Rob Roy's house, held-to at the back with a bit of string, could be forced with comparative ease. When leaving we examined the exterior of the low south chancel door, on which is a singular incised carving of a dagger, about 22 $\frac{1}{2}$ in. in length, with a cross-guard 10in. through. It is said to have been caused by Glyndwr, who, when in a rage, threw his dagger at the church-door from the cliff side above. It is needless to comment on the vigour with which the Welsh traditionally endow their famous chieftain, further than to note that a careful measurement showed the indentation to be fully an inch deep. After a luncheon in the schoolroom the journey was resumed to

RHUG CHAPEL,

Or Rûg Chapel, a small Carolian building in the grounds of Rûg Hall, and highly interesting as showing a scarcely altered Stuart domestic chapel of the Stuart period. Externally it has been re-roofed and beautified of recent years, but within it has only been cleansed and repaired. The springers of the hammer-beams, by which the roof is divided into four bays, are concealed by figures of angels; the beams themselves are painted with flowers and fruit, and the pilastered surface between the purlins is covered with wavy lines. The colouring is throughout of low tertiary tones. On the eastern beam we note the date 1637, probably that at which these decorations were completed. On the north wall is frescoed in black and white a skeleton and other emblems of mortality, with singular inscriptions (in Welsh), warning the reader that he, too, will soon be as silent and forgotten. The communion furniture and stalls and benches are of the solid workmanship of the period, the ends of the latter being connected with those before and behind by low concave steps, mortised and pinioned into each upright. On the ends are carved the thistle, rose, and other national emblems. At the west end is a large and low gallery, having the bolt and egg ornament carved on the front. The ritual chancel is indicated by a light open screen, decorated above the rail with a freely-carved fringe ornament, and in the centre of the church hangs a rough and clumsy wooden candelabra, reminding one, in the arrangement of the loose bars and spindles, of the little swinging cradles one may now and then see suspended by a stout hook and rope from a beam of the living room in old-fashioned cottage homes in mid-Wales. In the graveyard is a 14th century shaft of a cross of slender proportions surmounted by a modern head. The Rev. W. Richardson read a paper in the chapel. The adjacent mansion of Rûg, once the residence of the Vaughans, now that of the Hon. C. W. Wynne, is being enlarged under the direction of Mr. Kennedy, of Bangor.

CAER DREWYN.

This ancient encampment, situated on a lofty hill, isolated on three sides, opposite Corwen, was the last place visited. It was described by Mr. G. R. Wright, who drew attention to the fact that upon it Owen Glendower assembled his troops (c. 1405) before descending to meet those of Henry IV. on the marsh land by the side of the Dee below. A large encircling wall of loose stones, the one side of which passes up to a little cairn on the highest point, renders the hill very conspicuous from a distance; these are also parts of two other aggers and a line of fosse surrounding the hill, render-

ing it easy to reconstruct the lines of the early British camp, which probably existed here centuries before Glendower's occupation. Pennant speaks of the marks of tents being visible all over the hill into the valley in his time—a century since—and clearings of the ferns and furze showed that pits and hollows, presumably made by man, cut up the surface of the hill; but the members were more intent on tracing and identifying the best known peaks and rounded clumps in the ranges of mountains rising tier on tier on every side, than on the marks of the encampment around and below their standpoint. On the return journey a stay was made at the Rev. W. Richardson's, Corwen, to see a silver chalice dug up in a cellar in the town some years since, in a blackened and battered condition—and presumed to be of great antiquity, perhaps that used by "Iorwerth Sulien, vicarius de Corvaen," whose inscribed effigy is placed on the north side of Corwen chancel. A member dispelled the pleasant dream by showing that it was marked with the stamp of a well-known Nuremberg maker, and could not, therefore, be older than 1780.

At the evening meeting, presided over by Bishop Merriman (Grahamstown), Mr. GEORGE G. ADAMS read a paper on "Medals Commemorative of Events in British History." Although medals and coins have received less attention than almost any other branch of art, he thought England is improving in this respect, although she is surpassed as to the designing of medal dies by Germany, France, and Belgium.

Dr. PHENE followed with a paper on the hill fortress of Tre'r Caeri, near Pwllheli, North Wales, tracing the similarities between it and structures in Brittany, and in the East. The lecture was illustrated by numerous plates and diagrams, and Dr. Phéné endeavoured to prove that the antique religion of the dwellers in these hill camps was the worship of the sun serpent, and that this was introduced into Europe by Phœnician traders.

FRIDAY.

The day's outing was by rail to Dolgelly, visiting several places on the return journey. From Dolgelly station the members proceeded at once over the hill to

CYMMER ABBEY.

The ruins of this Cistercian house comprise the ivied walls of the church, and several of the domestic buildings, now occupied as farm premises, the whole being inclosed within a wall of loose stones. Mr. Loftus Brock stationed himself beneath a large sycamore tree inside the nave, and read a paper, of which the following is a full abstract:—

Directing attention to the beauty of the surrounding scenery in and about the long valley, the triple peaks of Cader Idris looming large to north-west, the lecturer remarked that from the site itself they could gather that these remains were those of a Cistercian abbey. Indeed, every spot around had its tale of old days to tell. The wooded ground across the valley, reached by a hedge of some antiquity, had a quaint little church dedicated to St. Iltyd, a name reminding us of the remote period when the Gospel was first proclaimed in these valleys. A glimpse of its simple bell-turret might just be seen over the trees. On the rough hills to the left of where they stood, were traces of earthworks, and beside some white cottages was a mound, one of the mysterious dwelling-places of an almost unknown people. Still further to the left was the site of an ancient chieftain's house, where a meeting was arranged between Owen Glyndwr and his kinsman, with whom he was at variance. They met on the hillside and Owen killed his adversary, and hid the body in an oak which was long pointed out. The very ruins of the house have disappeared, but Miss Lloyd has lent to the temporary museum some large bronze vessels recently found on the site. Mr. Brock pointed out that just above the abbey site might have been chosen one equally sheltered, less damp, and with all the glories of the panorama of the valley—a seeming confirmation of St. Bernard's statement that the founders "searched out damp and low-lying valleys wherein to build their monasteries." Much difficulty exists with respect to the founding of Cymmer Abbey, but Mr. de Grey Birch has shown that it was entered in a contemporary

roll of Cistercian abbeys, thus: "1193, de Kemer (in Cambria XX.)." The founder cannot be conclusively determined. The known documents, the list of abbeys, and the site all agree that the house was one of the Cistercian order, but strange to say the buildings do not agree in this respect. The ground floor of the church is all but perfect, but the usual arrangements of a Cistercian abbey cannot be traced. Instead of the cruciform minster, with transepted chapels and central tower, we have a continuous nave, distinct traces of a continuous north aisle, the anomaly of a western tower opening into the nave, and the continuous north aisle opening into the church by arches only at the western extremity of the nave, and which was elsewhere entered only by irregular openings into the eastern part walled off from the western. The south side of the church, now much ruined so far as the nave is concerned, has some irregular openings into apartments (of which there are no remains) outside the church. A roughly-walled orchard affords space wherein to expect the conventual buildings constructed around a cloister garth, but no traces of edifices exist. The house was always a very small one. The western tower is the only example of such an arrangement known in Great Britain—exclusive of that at Furness, which is a late erection on a towerless west front. After careful examination of the architectural features, the lecturer had come to the conclusion that it was a part of the original building. The whole abbey agrees in style, and cannot be ascribed to an earlier period than the end of the 13th or beginning of the 14th century. The three lancets of the east end appear at first sight like Early English work, but are no older than may have arisen from the usual course of commencing at the east end and completing at the west. The lancets have the peculiarity here, as at Valle Crucis, of commencing at a level remarkably close to the paving in proportion to the size of the church. The abbey is of the slaty stone of the district, not too well built, with dressings of freestone. The numerous small square openings could not have all been putlog holes. They passed quite through the walls, and he suggested that, as the windows were all fixtures, they might have been intended for ventilation. After pointing out the architectural features of the abbey Mr. Brock quoted from the letters patent of King Edward I., in which the monks are spoken of as being "of the Cistercian rules, and living regularly under the rule of Benedict, our patron," and asked whether some association with the Benedictine order would not explain many of the difficulties of the ground plan.—After the reading of this paper an adjournment was made to a building (now inhabited), known as the "Abbot's House," where Mr. Chas. Wynne, of Peniarth, gave further details as to the history of the abbey and its descent through the Vaughans to the present owner, Miss Lloyd. The abbey was locally known only as Vanner, and so it appeared on deeds and charters as far back as about Elizabeth's reign, before which time it was written Cymmer or Kemer.—A long discussion took place as to the date of the lofty room in which the company were assembled, Mr. Bloxam holding that its capacious fireplace and chimney, as well as the square chimneys, showed it to be posterior to the Dissolution. As to the roof (a fine 15th century one, blocked up near its bridge by plaster), that might, as tradition said, have been removed from an earlier building. Mr. Wynne said no post-Reformation dwellings in Wales had halls so high as this; besides, it had only been inhabited by the dowagers of the Price and Vaughan families, and could not have needed so large a kitchen. Mr. Talbot believed that the fireplace as well as the windows were alterations made at the same time that the old roof was blocked up. After considerable discussion, in which Messrs. Wynne, Brock, Grover, and other members took part, an examination was made of the exterior of the room, which was generally considered to confirm the view that the shell of the building is part of the ancient abbot's house. Near the south entrance to the premises, Mr. Bloxam pointed out the guest-house, now used as a stable. On returning to the abbey church,

Mr. Talbot pointed to various puzzling features in the church, which appeared to indicate an earlier origin than 1200. Some mouldings and a sedilia cap had a strong Norman feeling. It was pointed out by Mr. Brock that corresponding members were different, and he argued for a common origin for all, except a tomb recess in the south wall of chancel, which all agreed was of Henry VII.'s time. Mr. Wynne mentioned that a column had been recently taken from between the sedilia by the children of a neighbouring squire, and an opinion was expressed that it ought if possible be recovered and replaced, and repairs executed to prevent the ruins from further decay. These suggestions Mr. Wynne promised should be considered, and if thought advisable, acted upon. On the way back to

DOLGELLY,

the site of the mansion of Hywell Sele, who was murdered by Owen Glendower, was seen. On it stands a modern house. The ancient oak tree, in the hollow of which Owen is said to have concealed the body, was long identified with one in Nannau Park, close by, which fell about 60 years since. Its site is marked by a sun-dial. Dolgelly itself has not much to detain the archæologist. It is but a large cluster of low houses built of a dark grey stone, arranged in narrow lanes and open squares. The old Parliament House, in which Glendower is said to have assembled his council in 1405, before advancing to attack Henry IV., is being pulled down to make way for a block of public buildings. It is a low stone and timber building within a "sagging" tiled roof, and is situated in a passage near the centre of the town. St. Mary's, the parish church, was rebuilt in the Georgian days, and has been lately restored. The only interesting feature is the sepulchral effigy of a knight dressed in studded mail, said to have been brought from Cymmer Abbey. The inscription on the hordure of the shield shows that it is one of the Vaughans, who is identified with a member of the family that died during Edward IV.'s reign, and both the character of the monument and the mouldings of the recess in Cymmer chancel support the theory.

LLANDERFEL AND PALE.

At Bala station a short stay was availed of for the inspection of a tree-planted mound which lies at the angle of land where the Dee issues from Bala Lake. It was generally agreed that this, and the series of similar small hills seen from the railway on the banks of this stream, between its source and Glyn-dyfrdwy station, are in most instances of glacial or alluvial origin, and that they have been escarped by the inhabitants of the district. The last visit was to Llandderfel, where the little village church, recently in great part rebuilt, was examined. It is of the usual type, the nave and chancel being divided by a perpendicular rood screen, of which the canted-out head of panel work has been, in comparatively modern days, set back vertically over the beam. The roof is like that of the disputed room at Cymmer Abbey, but less ornate. Outside are some grotesque gurgoyles. Messrs. Brock and Breeze called attention to the chief features, and gave the history of the ancient and venerated wooden image of Saint Derfel, which, as there had been a prophecy that it would set a forest on fire, was sent by the villagers to London, and employed for lighting the flames under Dr. Forrest (father confessor to Catherine of Arragon), who was burnt at Sheffield. A wooden pastoral staff, and horse of rude workmanship, are shown in the porch; the former was pronounced to be of 14th century workmanship, and, probably, to have been that held by the image. The members then crossed the Dee and railway to Palé, a modern mansion, Italian in style, built in 1870 for Mr. Robertson, M.P. (who acted as his own builder), from designs by Mr. Poulteney Smith. In the grounds a singular stone slab, upheld on slate-slips, was the subject of a discussion. The capstone is a massive slate about 13ft. long by 4ft. to 5ft. broad, and nearly a foot thick, supported on thin layers of similar slates; it stands just beneath a low cliff face. Dr. Margoliouth considered it to be a kistvaen from which the mould has been washed away; Mr. Breeze showed that it differed from all

others in North Wales by having a central pillar; and Mr. Tom Burgess contended that it was merely an accidental fall of stone. The general opinion was that it was a cromlech or kistvaen, formed of readily accessible materials from the cliff above. The members having partaken of refreshments offered by Mr. Robertson, returned to headquarters. At the evening meeting, held in the Assembly Room, papers were read by Mr. S. I. Tucker (Rouge Croix), on the Arms of the Principality of Wales; by Mr. Compton, on the Ancient Welsh Towns and Statues; and Mr. W. de Gray Birch described the collection of local MSS. and records which have been brought together.

SATURDAY.

This day was devoted to visits to the Vale of Clwyd by special train. At

DENBIGH

The castle, one of the largest ruins of a defensive structure in the kingdom, was at once visited, the mayor's hospitality being enjoyed there. The outer walls enclose part of the town, together with the head of a rocky hill, and are hollow, the space between the faces of masonry being grouted. The remains exhibit the features of an Edwardian fortress distinctly. The principal gateway is flanked by octagonal towers, once, as Mr. Tom Burgess showed, defended by long buttresses, so that stones or lead, dropped from the loopholes above, would clear the moat and fall on besiegers on the earthwork. Between there is a pointed doorway house, above it a square panel, in which is a niche, occupied by the headless statue of the founder, Lacy, Earl of Lincoln. This gateway leads through an octagonal chamber into an inner bailey, surrounded by the dwelling apartments of the soldiers. Mr. Loftus Brock remarked that this was, from the date of its erection in Edward I.'s time, always held as a garrison. It was one of the three last to hold out for the Royalists in 1646-7—Holt, near Wrexham, and Harlech being the other two; and Charles II., by way of showing his gratitude, ordered that Denbigh and Carnarvon (also obstinately defended for his father should be demolished and the materials sold, but the order was not fully carried out. Mr. Tom Burgess explained the plan of the castle and its surrounding buildings. The castle now belongs to the Corporation, who have laid out the grounds as a place of recreation. Some suggestions were offered the mayor by architects in the party as to the best mode of preserving the fragments of the castle from further dilapidation. In the outer bailey is the shell of a large church, commenced in 1579 by the Earl of Leicester, but never completed; it consists of nave walls, with tiers of four-centred and circular windows in two stories. Still nearer the castle is the modern garrison church of St. Hilary, which has been disused for a few years past; the windows are boarded up and the whole neglected, but it is said to contain some good Late woodwork. Before leaving Denbigh many of the members visited the new church of St. Mary's, and examined the reredos, widely known in consequence of the lawsuit raised as to its dedication; it was designed by Sir G. G. Scott, and is in three panels—the gathering of the manna and the grapes of Eschol being arranged on either side of a representation of the Crucifixion, the figure of the Saviour standing out in half relief. Near the station, and in a small public "place" set off from the street, is a pillar of considerable height, having on the top a statue of Dr. Pierce, the public-spirited Mayor of Denbigh, who has been instrumental in providing a water supply and drinking fountains, and otherwise benefiting the borough. The monument is from the designs of Mr. Underwood, and is being erected (for it is not quite completed) by Mr. Rudlan Jones, of Rhyl.

RUTHIN CASTLE

Was the next feature of the programme, and they were received by the Hon. Mrs. West. The south side of the castle is modern, and is now the residence of the Hon. Cornwallis West. Its architect, Mr. Henry Clutton, has skilfully grafted it on to the older building without attempting restoration. Both are of red sandstone, quarried in the neighbourhood, that of the ancient castle having been quarried from

the moat. A circuit of the building was first made, and showed that there are considerable remains of the older buildings, although the chapel, keep, and principal entrance have disappeared. A plan made in Elizabeth's reign, a copy of which was exhibited, shows that on the east front was an acute-angled bastion, and that the remainder of the castle (as can be seen from the remains) followed the usual plan of a parallelogram, strengthened at the angles with circular towers. These, as Mr. Brock mentioned, had in the fifteenth century been shorn of their high roofs, and otherwise adapted to meet the requirements of artillery warfare. On the north side are two circular turrets, which protected a sallyport; opposite the north-west angle stood the castle mill—a very important accessory to a mediæval garrison. The members went into the subterranean "dungeons," but it was shown that the name was erroneous, for the doors opened outwards from the jambs, and were too numerous. These substructures were nothing more than the store-houses, and the theories of the labours of prisoners, formed from the rude figures of crosses, birds, and other devices, are contrary to the facts. After a rest and refreshments, alike grateful after a week of travelling, the visitors examined the pictures, armour, and tapestry, and a choice collection of antiquities and works of art in the saloon, wherein Mr. G. R. Wright read from a privately printed work a history of the old castle, showing that it was founded by Edward the First, assisted by Reginald de Grey, in 1281, and that it was besieged and nearly destroyed during the Civil Wars. It passed from the De Greys to the Crown, and after several changes into the hands of the Myddletons, from whom it came by marriage to the brother of the present possessor. During the hurried return to the station a hasty visit was paid to a small mansion in the chief street; the front door opens into a good example of a Jacobean galleried hall leading into a room, panelled, and now filled with family portraits.

In the evening a meeting was held, at which Mr. C. LYNAM read a paper entitled "Notes on Early Monumental Sculpture."

ST. ASAPH'S CATHEDRAL.

Some members diverged at Ruthin to visit the cathedral church of St. Asaph—an edifice exceeded in size by all other cathedrals, and very many parish churches in England and Wales, but well worthy a visit if only to note the solidity and massiveness of effect produced by a large and plain square tower set into a compact cruciform structure. It has suffered from fires in 1282, and again in 1404, and no part appears older than the former date, except, perhaps, the bases of the piers; these are remarkably plain, being continued into the arches without intervening caps. Most of the work is of a simple type of Early Decorated. The top of the tower was blown down in 1714, and repaired by Bishop Wynne, who used for his patching and parapets a local red sandstone that contrasts with the greyer material of the older work. The cathedral was restored prior to 1869 by Sir G. G. Scott, and appears now in excellent repair, and well tended. The dignity it would otherwise possess is somewhat impaired by the modern wooden-vaulted ceiling, which, though preferable to the former flat ceiling, is too low and wanting in substantiality, and the lean-to roof of the aisles to nave. By the way, one recognised in the tracery of the east window a replica of the very graceful one occupying the same situation in Tintern windows and found that it was copied from that example a few years when filled with memorial stained glass—a fact which does not speak highly for the originality of the artist or the committee.

An examination was subsequently made of Rhuddlan Castle, a quadrangular Edwardian fortress, with circular towers at the angles and two others flanking the entrance.

On Sunday evening Dr. MARGOLIOUTH preached a special sermon before the members of the Association in Llangollen parish church from Ps. xlvii., 10 v. (first clause), in which he explained the ancient ritual in the Temple of Solomon.

MONDAY.

The Congress proceedings were closed by a visit to Mostyn and Holyhead, some of the members leaving Llangollen, notwithstanding

the steady down-pour, by an early train, so as to judge of the effect of Sir Gilbert Scott's restoration of Chester Cathedral. Soon after leaving Chester the ruins of Flint Castle, two low circular towers of crumbling red sandstone, connected by irregular walling, were seen on the marshes of the Dee, close to the station; closer inspection shows that the remains are utterly neglected, and will become disintegrated beyond remedy in a few more years.

MOSTYN HALL.

Here the members were received by Lord Mostyn in the hall, which has been rebuilt on the old lines, and with the former woodwork—a necessity owing to its threatening condition—so carefully as still to show an admirable example of the principal room of an Elizabethan mansion. The minstrel gallery opens into the buttery and serving rooms, and has well-carved balusters of smaller pattern than those of the gallery in Rûg chapel. Beneath it is a raised dais. In the hall—which was used as the common dining place of the household down to the end of the last century—are a large richly-carved cabinet, a massive table and forms, all of oak, worked in the Jacobean period; and hanging upon the walls is a collection of armour of the last Civil Wars. A curious feature is a large circular shield of the First Pretender, used in 1715. It has the white rose in the centre, and around it in three concentric rings the arms of the families supposed—in several cases without foundation—by the Pretender to be favourable to his cause. On the margin is the inscription in English, French, and Welsh, "Under the Rose be it spoken." On the dais stands a hollow basin, formed of the root of a tree. This was found at Dinas Mawddwy nearly a century ago. The bowl is 11in. across and 3½in. deep, and seems to have been formed by ruder means than a turner's lathe. On one side is a smaller and shallower excavation, 3in. across and 1in. deep. The log or root itself is 22in. in diameter and 10in. deep. On the top are some rudely carved representations of the mistletoe, and the word "Athrywyn," said to express "happiness or tranquility." It is supposed to have been an early font, and the smaller hollow was used for oil or salt. Lord Mostyn afterwards conducted his guests over the mansion, the greater part of which dates from 1633, but part has been added by the present owner. It is notable among country seats for the numerous family portraits with which every room is hung, and for those of the Royal Charlesses by Vandyke (one apartment is adorned with a series of paintings representing Charles II.'s beauties), but chiefly for its well-stocked and valuable library. In this department Mr. W. de Grey Birch delivered an address in which he remarked that on its long lines of shelves was the finest collection of ancient manuscripts gathered together in any building in England except the British Museum, being especially rich in Welsh books. Amongst the parchments was one granted by Charles II., which, after stating that the wandering and unskilled minstrels have become a nuisance, grants authority that candidates shall be examined at Caerwys. This possesses historic interest as marking the cause and date of origin of the modern Eisteddfodau. The rooms are wainscoted with oak panelling, treated in three modes, that with the plain chamfered styles predominating. The chapel has a wooden barrel vault, and although now having square heads and diamond heads appears to be a pre-Reformation adjunct to the hall. In the wall near by was seen the window, now walled up, through which Henry Tudor, then Earl of Richmond, escaped a party of Richard III.'s soldiers and made his way to Bosworth—a chain of events that secured him the English Crown. Separated by a gravel walk, the visitors saw a second building, intended when built in 1576, to be completed by a wing uniting the old and new parts into a quadrangle. It is now used as offices. Before leaving, a vote of thanks was passed to Lord Mostyn for his hospitable reception, on the motion of Mr. Brock.

HOLYWELL.

St. Winifred's well and the chapel above were the great attraction here. The former is a deep spring that rushes up with sufficient volume to turn some mills on its course to the Dee. It

is enclosed in masonry, and above it springs a lofty well-cover of great richness, consisting of a groined and vaulted stone ceiling, with central fan pendant, the whole being supported on seven pillars arranged in a circle. The well is the property of the town, but is rented by the Local Board of Health to the members of a Roman Catholic community, who have erected small sheds and other accommodation for bathing exacting a fee from every person availing themselves of it. Whether a local authority has the legal right to allow access to the well to be thus restricted is a matter which might, with advantage, be tested. Close by the well side is a large collection of crutches and children's boots, presumably left there as votive offerings by those who deem themselves to be cured. It was stated, however, that the waters have recently been analysed, and found to be of remarkable purity, second only to one sample of well water previously tested by the examiner. Above the well, and supported on pillars, is a chapel, now used as the Sunday school of the parish church, and for Welsh services. It consists of a nave and north aisle of four bays, and an eastern semi-octagonal apse. Denuded of furniture, overlaid with whitewash, and with commonplace windows inserted in the aisle, it yet has some traces of a Decorated chapel, almost rebuilt in Late Perpendicular style. One or two bosses have not been removed from the flat-panelled oak roof, and the stone corbels supporting the springers are fairly carved. Mr. Loftus Brock delivered an address in the chapel, in which he repeated the legend of the miraculous springing of a well where the head of St. Winifred fell to the ground when struck off by her persecutors. The worship of this well probably dated from a period long anterior to the introduction of Christianity, and the hypocast and other remains found in the neighbourhood indicated that the Romans, as in other towns, availed themselves of its properties. He had found on inquiry that the popular belief in its healing virtues had by no means died out in that locality, but was rather on the increase. The beautiful groined roof of the substructure and this chapel were rebuilt on an earlier foundation in 1495, by Margaret Countess of Richmond, mother of Henry VII. Before ascending the hill to the main street of Holywell we peep into the parish church of St. Winifred, which stands on a directly eastward line, and close to the chapel. It was almost rebuilt in 1769, and exhibits all the gracelessness of that period—heavy galleries inclining to a low angle with the floor, flat ceiling, plainest of windows, and plenty of plaster and whitewash. The only respectable feature is the large tower, but this is little more than patchwork. The rector (the Rev. Mr. Williams) mentioned that Mr. Thomas Wyatt, of London, has made a report upon and drawn out preliminary plans for the rebuilding and rearrangement of the church (which is in a somewhat dangerous condition), adopting the old Transitional piers yet standing, as the key for treatment. Mr. Wyatt suggests that the lowest estimate for securing the stability of the building would be about £2,000.

BASINGWERK ABBEY.

The ruins of this Cistercian abbey were visited just before returning to Holywell station. They consist of a few broken walls, containing windows, in which are no visible mouldings, and some heaps of stones and mounds, the whole occupying an uninclosed waste corner between tramways, a paper-mill, and the village street—surroundings as incongruous, and as likely to involve their speedy obliteration as it is easy to imagine. Plans of the probable arrangements of the conventual buildings, together with descriptions of the abbey, were given in the BUILDING NEWS in the autumn of 1873, by the Rev. E. C. Mackenzie Walcott, on September 29th, and by the late Mr. Edmund Sharpe, on October 29th. Mr. Brock described the remains; we hope to give an abstract of his paper next week.

THE CONCLUDING MEETING

of the Association was held, in the Llangollen Assembly-room, in the evening; Mr. Thomas Morgan (hon. treasurer) in the chair.

HARLECH AND CRICCIETH CASTLES.

Mr. J. DILLON CROKER read a paper written by Mr. F. G. Westmacott Chapman, upon these sister fortresses in Cardigan Bay. That of Harlech is of British origin, and crowns a rocky eminence the base of which was formerly washed by the sea, but now looks upon a tract of reclaimed land. Numbers of Roman coins have been found in the neighbourhood, and it was probably held by them, although the nearest known station, that of Segontium, was 29 miles distant. The original building is said to have been erected in the third century by Brozawen, wife of Matholwch, King of Ireland, and was enlarged about 550 by the British Prince Maelgwyn Gwynedd. The whole of the present castle was erected in 1282 by Henry de Elfraton, who was also the architect of the castles of Conway and Carnarvon. In 1401 Harlech was taken by Owen Glendower, and held by him for four years. The most memorable incident in its history is the brave defence made by the little garrison (1459-68) under Dafydd ap Ifan ap Einion, who only surrendered after a nine years' siege by Edward IV. The stirring "March of the Men of Harlech" dates from this memorable siege. During the struggle between the Royalists and Parliamentarians Harlech was held, sometimes by the former, and sometimes by the latter; eventually it was surrendered to Lieut.-General Mytton, on March 30th, 1647, being the last castle in North Wales that held out for Charles I. The plan of the building is quadrangular, with a round tower, surmounted by a lighter one at each corner. On the land side are the remains of a deep fosse, over which was a drawbridge between two high towers, rendered more secure by three high portcullises. In 1692 a golden torque was dug up near the castle, and is now in the collection at Mostyn Hall. The Castle of Criccieth appears also to have been of British origin, and is stated to be the most ancient Welsh castle remaining. Two of the towers are round, and are said to have been built by Edward I., but as they correspond internally with the other two square towers, it is probable that he merely "cased" them. It was never a very extensive building, but was surrounded by a double fosse and vallum. It is best known as the prison of Gruffydd ap Llewellyn in 1239, and as afterwards, in Edward III.'s reign, of the valiant Howel-y-Fwyell of Bron-y-fel, who exhibited prowess with his mighty battle-axe at Poitiers. The author concluded with an eloquent testimony to the bravery and loyalty of the Cymry, both to their British princes and subsequent monarchs.

Dr. PHENE gave the results of investigations he had carried on during the past week in Sarphele, a little village about six or eight miles from Llangollen over the Berwyn mountains. The name suggested a connection with serpent worship, and investigation showed a remarkable ridge of exposed quartz in the form of a huge Saurian, crossed by an ancient camp, fir trees arranged on the same (perhaps traditional) plan, and also the existence of a singular tradition about a sleepless smith and the mystic brazen image he fashioned, much resembling that current in Scandinavia.

Mr. W. DE GREY BIRCH then gave a *résumé* of the Congress proceedings. Although the work of the past eight days might not appear to have been considerable, yet to him the total results achieved in so many directions appeared almost incredible. Of fortified dwellings they had heard of or seen specimens of almost every age, including the cave huts of which Dr. Margoliouth had spoken, the numerous entrenched camps, Offa's and Wat's Dykes, and the mediæval castles raised on more ancient banks at Dinas Brân, Caerwrlle, and later examples at Denbigh, Chirk, and Ruthin, the last two yet inhabited. The three religious houses examined had been all of the Cistercian order, but they had seen at least a dozen churches, from the traces of Norman at Corwen to the Jacobean at Râg, and eighteenth century work at Dolgelly. Of domestic dwellings they had seen several examples, including the site of Owen Glendower's house and Mostyn Hall. Of the monumental remains the most interesting had been the three pillars, the first that of Eliseg, which

he thought to be Roman in workmanship, but lettered with an inscription in the small so-called Irish writing of much later date than the occupation; he others were Glendower's sword at Corwen, and the churchyard cross at Râg. At Gresford they had seen some fine glass in the north chancel aisle, dated 1498, and a good east window, while at Plas Newydd they had seen a great deal of wood carving. Having alluded to the collections of manuscripts, Mr. Birch concluded by an allusion to the fact that archaeology was every year splitting into a greater number of branches, and that more would be accomplished if every student set himself to some definite part of a special line of inquiry.

The proceedings terminated with the usual votes of thanks to all who have promoted the success of the Congress.

TUESDAY

Was an extra day, devoted to visits to

OSWESTRY AND LLANGEDWYN.

On arriving by special train at Oswestry, the members separated into two parties. The larger number proceeded by invitation to the seat of the President at Llangedwyn, on the river Tanat. The mansion was built in the later years of Charles II., and is of advanced Jacobean style, with pronounced Queen Anne fenestration and woodwork. Amongst the contents are a valuable collection of ancient MSS., and a gold torque found on Cader Idris, and supposed to be the largest of its class extant (about 40in. circumference). The adjacent village church of St. Gedwyn has been restored, and now appears uniformly Early English in style; the mouldings and details are of a simple and refined character.

The second section devoted the day to more earnest work in and around Oswestry. The members first went to the ancient well, about which there was nothing remarkable, except that it bears the name of the Saint, King Oswald, who was killed here during the 7th century. They visited many half-timbered houses, especially examining one at the corner of the main street, now used as a bank. It is of the 14th century, and exhibits some fine woodwork, especially in the oriel window, and the arms of the Fieldings, Earls of Deubigh, upon the chief front. The plaster which disfigured the quarterings has been carefully removed, and the whole skilfully renovated. The parish church was restored a few years since by Mr. G. E. Street, R.A. It is a very large structure, with several aisles added at various dates. The whole of the tracery appears to have been renewed, but some of the stained glass is ancient and excellent. The chancel screen is adorned with quatrefoil ornament, and has a stoue base. The chancel is of later date than the nave, and built of a different kind of stone. In it is a fine monument to one of the Yale family, temp. James the First. The great feature of St. Oswald is the noble square tower. The upper part of it had been destroyed during the Civil Wars, and is replaced by a story, finished with a balustrade of the Queen Anne period, the south-west angle turret being also raised and ornamented in the same manner. The tower is partly covered with ivy, and the whole composition (incongruous as the admixture of Perpendicular and Renaissance may be) was pronounced by Mr. Loftus Brock to be "charmingly picturesque." Under the guidance of Mr. J. Tom Burgess the party proceeded to Old Oswestry, which consists of numerous concentric oval-shaped entrenchments, flanked on the east and west sides by Offa's and Wat's Dykes. The outer vallum encloses an area of nearly 60 acres. While pacing the ramparts on the west side a series of ten circular cavities were noted, which it was suggested were ancient cave dwellings. Eight of these are above and two below a gap in Offa's Dyke, supposed to be left as an entrance. The members of this section separated about 6 o'clock, feeling that the additional day had not been the least productive or pleasant of the Congress proceedings.

It is probable that the Association will make Leamington the headquarters of next year's Congress.

ST. ALBAN'S ABBEY.

FOR some weeks past workmen have been busily engaged in excavating the floor of the nave, and around the bases of the great piers of the south arcade; these latter spaces have been filled with concrete as a preparatory measure to the erection of the ponderous trusses and shoring with which it is intended to lift off the roof. At the junction of the early English work of Abbot Trumpington with that of the Decorated of Abbots Hugh de Eversden and Richard Wallingford, the roof will be severed, and by means of powerful screws the western portion, about 120 feet long, lifted off the walls. The next proceeding, after centring all the arches with massive timbers, will be that of forcing the whole mass of Trumpington's work, the triforium and clerestory, with all its beautiful arcades, to an upright position. As this wall now leans over 2 feet 4 inches towards the south, and is upwards of 80 feet in height, some anxiety is manifested as to the success of the undertaking. Iron ties from north to south will be inserted in two tiers through the spandrels, with coupling screws in the middle, as were so successfully used in repairing the great central tower; the three tiers of raking shores already in position will be added to considerably, and four hydraulic rams will be used simultaneously with powerful screw-jacks and other mechanical appliances, to move the great mass. Raking shores will be applied inside the building at every vantage point, and two enormous horizontal trusses, the whole area of the section of the nave under repair, will be placed at the heights of 30 and 50 feet respectively, in order to regulate the distance to which the arcing is to be forced. Every precaution is being taken to render the bold undertaking a successful one. After the wall has assumed its upright position the roof will then be lowered on it in its proper place, and meanwhile four flying buttresses will be constructed to keep up the work so moved. These buttresses will be very massive, the abutments above ground projecting no less than 9ft. from the south wall, with, of course, foundations far beyond. In excavating for the westernmost of these the workmen have unearthed the foundations of one of the great western towers, which was begun to be built by Abbot John de Cella, about A.D. 1209. The whole of the five western bays of the south aisle are to be groined as of old, the former groining having been destroyed, and the roof of this aisle is to assume its ancient high pitch. After these works are completed, the next section to undergo repair will be the four bays of the nave next eastward. The piers here of Hugh de Eversden which were erected after the great fall of this portion of the abbey in 1323, show signs of weakness, being split vertically in many places. At present, as a precautionary measure, and with the view of preventing danger from any possible additional weight being thrown on them, it is intended to grip them with trussed balks, strongly bolted together.

With all these works the restoration of the dilapidated western front must not be lost sight of. Here were once to be seen three grand porches, the like of which for architectural beauty were not to be found in the kingdom. The great central porch is in fair preservation, and with some repair will again be secure; but the two flanking porches, now hidden from the public by the hideous blocking up of their fronts, are in a sad state of dilapidation and decay.

The Leekie Memorial Church, at Peebles, was opened on Friday last. The architecture of the church is Gothic of the fourteenth century, and it has a spire which rises to the height of 146 feet. The church, which is seated for 500, has together with the ground, cost considerably upwards of £7,000.

Preparations for the dismantling of the north side of the parish church of Market Rasen, and its enlargement, have been commenced by Mr. H. Scupham, the contractor. The alterations will cost between £400 and £500.

Last week a new Early English Unitarian church, in Falsgrave-road, Scarborough, was formally opened. It is capable of seating 300 persons, and was designed by Mr. C. A. Bury, architect, of that town. It consists of nave and spired tower, with schoolroom attached. The material is red brick, with white stone dressings. The estimated cost is £4,500.

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ILLUSTRATIONS.

CONVENTS OF NAZARETH AT NORTHAMPTON—TOWER OF ST. GILES CATHEDRAL, EDINBURGH—ST. PAUL'S CHURCH, MANCHESTER—THE WALKER FINE ART GALLERY, LIVERPOOL—HOUSE AT WESTERN HILL, DURHAM.

OUR LITHOGRAPHIC ILLUSTRATIONS.

THE WALKER ART GALLERY, LIVERPOOL.

It having been felt for many years past that Liverpool much needed a building for a permanent exhibition of pictures and works of art, a movement was set on foot by Messrs. Picton, Rathbone, Samuelson and others, for erecting such a building by voluntary subscription; but although numerous sums were promised, they were insufficient for the object in view, and there was every prospect of the project falling through, and of Liverpool being without a public picture gallery for some years to come, until the present Mayor, on taking the mayoral chair in 1873, announced his intention of presenting the town with an art gallery at a cost of £20,000. The foundation stone of the building was laid on the 28th of September, 1874, by H.R.H. the Duke of Edinburgh, and was opened on the 6th of this month by the Right Hon. the Earl of Derby, K.G. The building is of Cefn stone, and in the Corinthian order of Classic architecture. A flight of twelve steps leads up to a portico which has six fluted columns supporting a pediment and attic. The façade, surmounted by a medallion cornice and open balustrade, extends 70ft. on either side of the portico, making the total frontage of the building to William Brown-street 180ft. Above a fretwork enrichment running round the building are panels, in which the following subjects will be carved in bas relief:—1st, King John granting a charter to Liverpool; 2nd, William III. embarking at Hoylake; 3rd, Queen Victoria's visit to Liverpool; 4th, Laying the foundation stone by Duke of Edinburgh. On the right-hand side of the steps to entrance is a statue of Michael Angelo, and on the left a statue of Raphael; above the portico is a figure representing Liverpool. These figures, which are of white Carrara marble, have been executed by Mr. J. Warrington Wood, of Rome, and are greatly admired by all art connoisseurs. The main doorway under the portico opens into a hall 40ft. x 30ft., with a floor of encaustic tiles laid by Messrs. Minton, Hollins, and Co. On either side of the hall are rooms 70ft. x 30ft., with inner rooms 46ft. x 35ft. These rooms are intended for an art museum. Retiring rooms for ladies and gentlemen are provided on the ground floor. The upper hall is reached by a double flight of stone steps 12ft. wide, and the floor is laid with parquetry by Messrs. A. and J. Arrowsmith, of London. The rooms opening from this hall, and which are lighted entirely from the roof, are intended for picture galleries solely, and are of similar dimensions to the rooms below. There are four other rooms on this floor set apart for water colours, miniatures, and gems. The building throughout is heated by hot water. The ventilation is secured by flues carried up the walls with gratings over cornice and Archimedean-screw ventilators in roof. Mr. Cornelius Sherlock, of Liverpool, is the architect, and the sole contractors are Messrs. Haigh and Co. As the area of the land is limited, the building has necessarily been brought close up to the street to admit of future extension in the rear.

HOME AND CONVENT OF NAZARETH AT NORTHAMPTON.

This convent and home is being erected for the Sisters of Nazareth, for the reception of the aged and infantine poor of this district. The Home provides for 100 inmates, and comprises chapel, class-rooms, and refectory for the children, infants' room, sisters' refectory, community room, and rev. mother's room; day-rooms for the old women and for the old men, and bedrooms and dormitories, kitchens and kitchen offices, bath-rooms, &c. The work is being carried out in local stone, the roofs being covered with plain tiles from Staffordshire. Mr. Thomas Cosford, of Northampton, is the builder, who is executing the work under the supervision of the architect, Mr. Francis W. Tasker, of 7, Furnival's-inn, E.C.

HOUSE, WESTERN HILL, DURHAM.

This is a design for the enlargement of a house on the Western Hill, Durham. The old house only being one room deep, with a room projecting at the back, it seemed best to clear away that room and build the whole breadth up. The large bay is provided to give a good sight of the Cathedral, which a flat window could not do. The gable front between the party walls is to be framed pine, filled with thin red brick and plaster—the roof covering to be small slating—the windows would be part leaded, as shown, the lower parts being plate-glass in casement—the upper compartments of transom windows to swing on pivots. The sitting-room fireplace would be stone, but the drawing-room would be wood, with tiles inserted round the grates. Mr. J. Shields, of Durham, is the architect.

ST. PAUL'S CHURCH, MANCHESTER.

We described this church, which has been erected from the designs of Mr. John O. Scott, when we illustrated its exterior in the BUILDING NEWS of September 10, 1875. We now give an interior view. The building is approaching completion, and will be opened early next year. The upper part of the tower, which was excluded from the contract, has just been commenced. The total cost will be £16,000. The view which we give is intended to show the character of the decoration, which it is hoped may be undertaken before long. Messrs. Collins and Cullis, of Tewkesbury, are the builders.

TOWER AND LANTERN, ST. GILES' CATHEDRAL, EDINBURGH.

The church of St. Giles dates as far back as the beginning of the 12th century, since which period it has undergone numerous additions and alterations, so much so that its earlier characteristics have entirely disappeared. The date of erection of the lantern is not quite certain, but is supposed to have been about the middle of the 15th century, at which time the roof of the old church was raised, and a clerestory added. In 1571 the church was forcibly taken possession of by Sir William Kirkaldy, of Grange (in the interest of Mary, Queen of Scots), who placed in the steeple "three pieces of brass ordinance" with which to assist in holding the city against Regent Murray's forces. It was not till 1633 that Charles I. caused St. Giles to be constituted a "cathedral church, according to the first intention of the erectors and founders thereof." In 1648, owing to the dangerous and ruinous state of the lantern, the magistrates had it thoroughly repaired, and it is probable that at this time the uppermost portion was rebuilt. Again, in 1829, the whole cathedral was restored and refaced in a style of Gothic possessing no architectural interest whatever, that portion embodied in the subject of illustration being the only part left in its entirety. This species of lantern seems to be peculiar to North Britain, as it does not occur further south than Newcastle, while we find specimens of it still remaining at the Iron Steeple, Glasgow, and King's College, Aberdeen, and until recently it terminated the towers of Linlithgow and Haddington churches. Of all the Scottish examples, that of St. Giles is the richest and lightest, being of an octagonal character, the others being merely formed by ribs springing from each of the four corners of the tower. The cathedral stands on a high ridge of land,

running westward, and terminating with the Castle Rock, and from its elevated position the tower may be seen from almost any part of the city, forming a pleasing and picturesque feature in the view.

THE GRANGE, EAST SHEEN.]

This house, illustrated last week, was lately built as a residence for Henry Vernet, Esq., stands upon an elevated site on the borders of Richmond Park, and overlooks the beautiful Roehampton Valley. The grounds are of considerable extent, and the stabling occupies an outlying portion, having a separate road of approach. The house is built of grey stock brick and Douling stone, and is covered with plain tiles of a brownish-red colour. The internal joinery is of pitch-pine, varnished. The work was carried out by Messrs. Sharpington and Cole, Mr. Thomas Earp executing the carving, and Messrs. Heaton and Co. supplying the stained glass, quarry glazing, and ornamental tiles—the whole from the designs, and under the superintendence of, the architect, Mr. E. Ingress Bell, of 17, Craven-street, W.C.

BUILDING NEWS DESIGNING CLUB.

AS we are constantly being asked to furnish the particulars of the "Club" to those who wish to become members, we herewith republish them.

1. Drawings to be sent in 21 days after the publication of the list of subjects.
2. Three subjects will be given every fortnight, from which list a selection may be made by each competitor.
3. The drawings to be executed in firm black lines on white drawing paper, in sheets of the absolute size of 18in. x 12½in., with no washes or tinting in colour whatever. Outline to be the first consideration; but drawings may be slightly shaded with shadows executed wholly in line. Sectional parts to be shown in ruled "hatching," or blocked in. The scale to be used will be given with each subject.
4. Drawings to be forwarded unmounted, by post, care being taken to toll the short way of the drawing, as packages over 18in. long are not transmissible through the post.
5. On entering the class (which may be done at any time) each competitor is required to furnish his name and address, which must be written legibly on the back of each drawing as a guarantee of good faith, the *nom de plume* the author intends to adopt being boldly marked on the front of each separate drawing.
6. Prizes of £5 5s. and £3 3s. will be awarded to the best series of designs, such series not to consist of less than twelve subjects. Our decision to be final.
7. Before awarding the prizes any contributor will be expected to furnish proof, if necessary, as to his age, and the time during which he has been engaged in professional pursuits, though no candidate need be strictly an architectural student.
8. We reserve the right of arranging the drawings for publication in any manner we deem necessary.
9. A critical notice of the designs sent in of each series will be given in our issue following the receipt of the drawings.

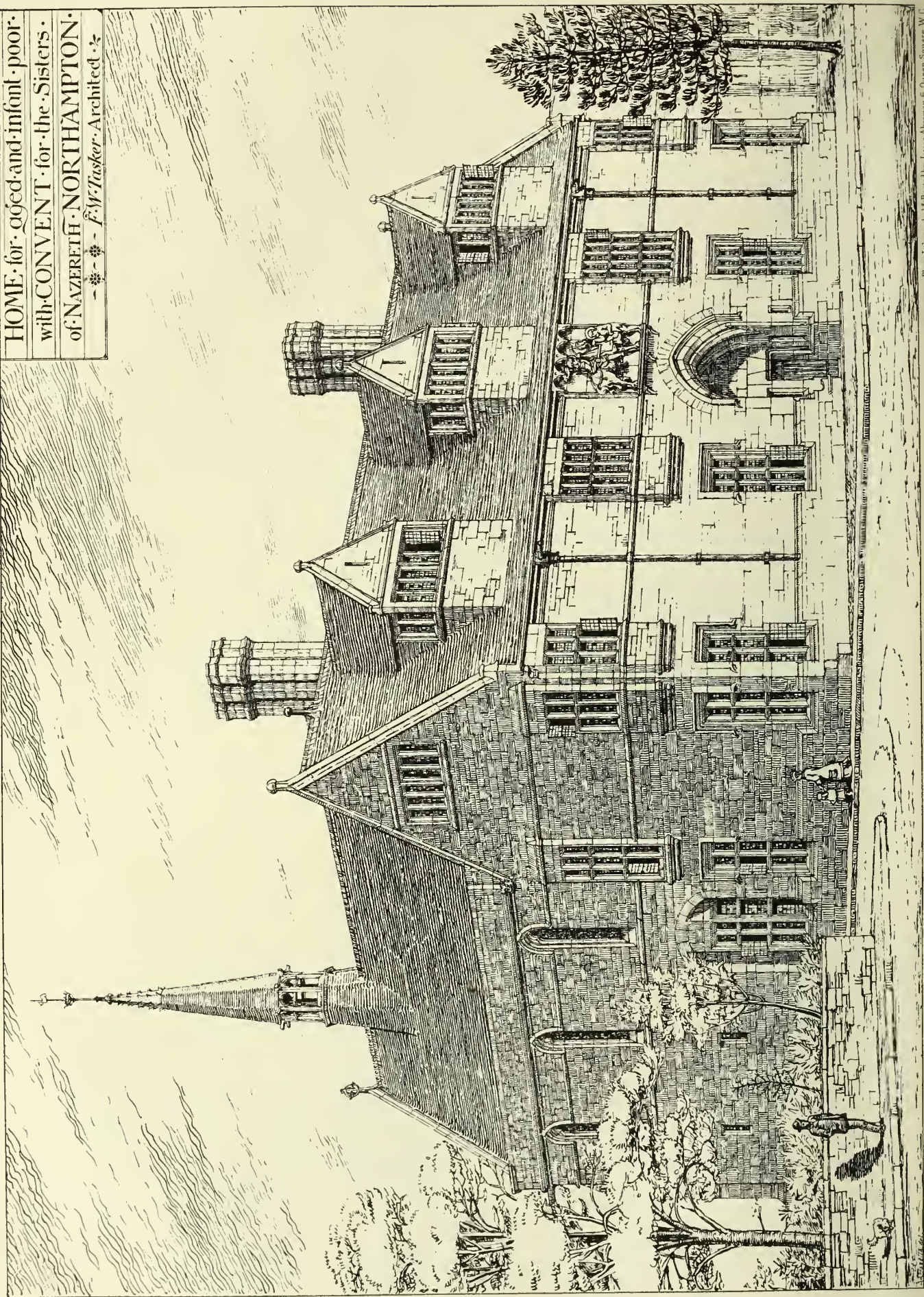
LIST OF SUBJECTS—NO. XIV.

- A. A mixed village school to accommodate 100 children, with school-house attached, for master and his wife. Cost not to exceed £1,000. Material, brick (no stone), with tile roof; plan, two elevations and section; scale, ½in. scale.
- B. An oak staircase for a small rectory, having a hall about 15ft. square; height from floor to floor, 12ft.; plan, ¼in. scale; elevation, ½in. scale and details.
- C. An escritoire in painted wood, with decorations, size 4ft. 6in. by 5ft. high; elevation, or view, and details, 1in. scale, and ¼ full size.

The foundation stone of a new Wesleyan chapel at Winsen-green, near Birmingham, was laid last week. It will be a brick building, 48ft. by 30ft., and will furnish accommodation for about 300 persons. The cost will be about £650. The architect is Mr. G. F. Hawkes, and the builder Mr. Elvins.

THE BUILDING NEWS, SEP 7. 1877.

HOME for good and infant poor
with CONVENT for the Sisters
of NAZARETH NORTHAMPTON.
- * - * - F. W. Tasker. Architect. * - *



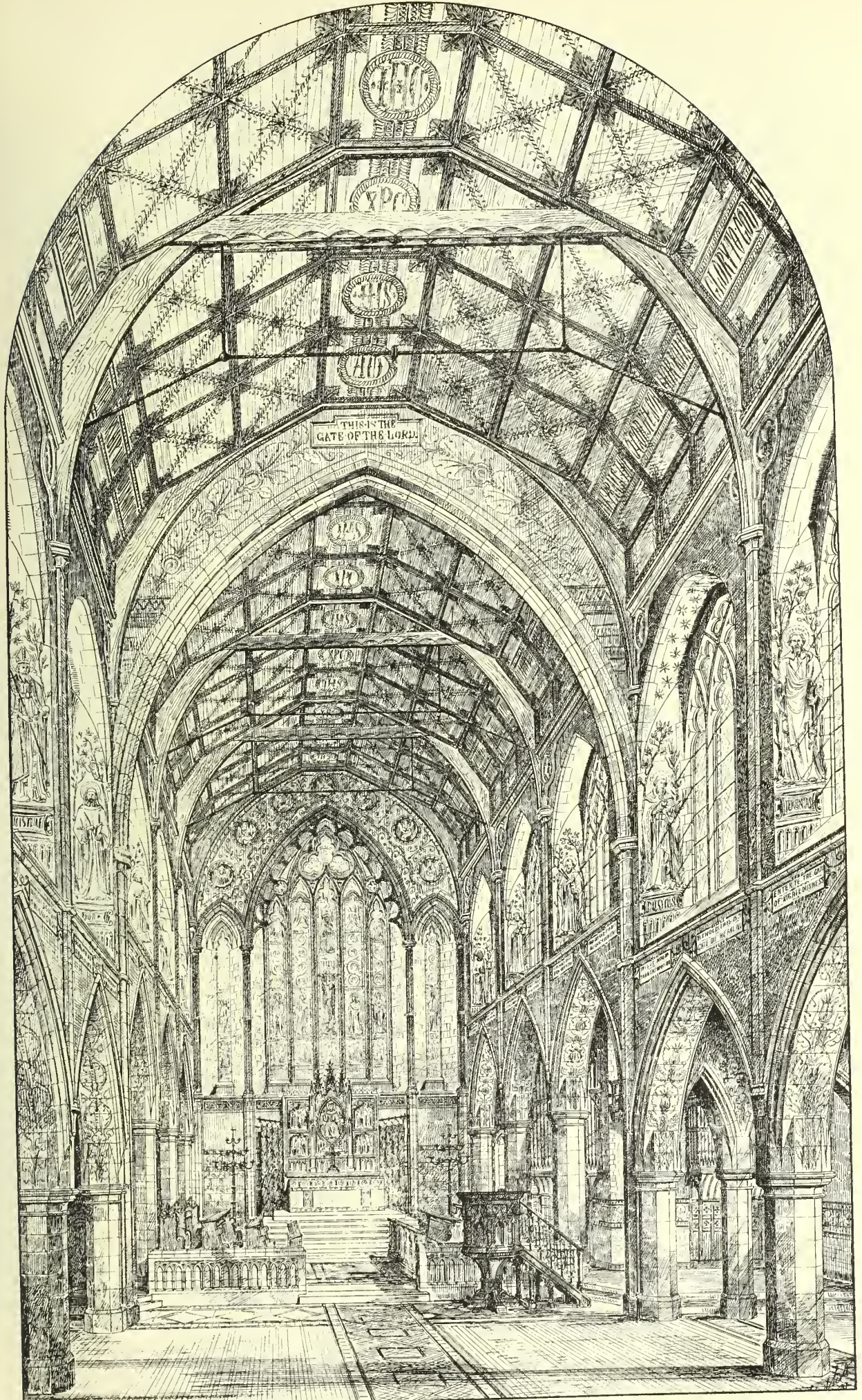
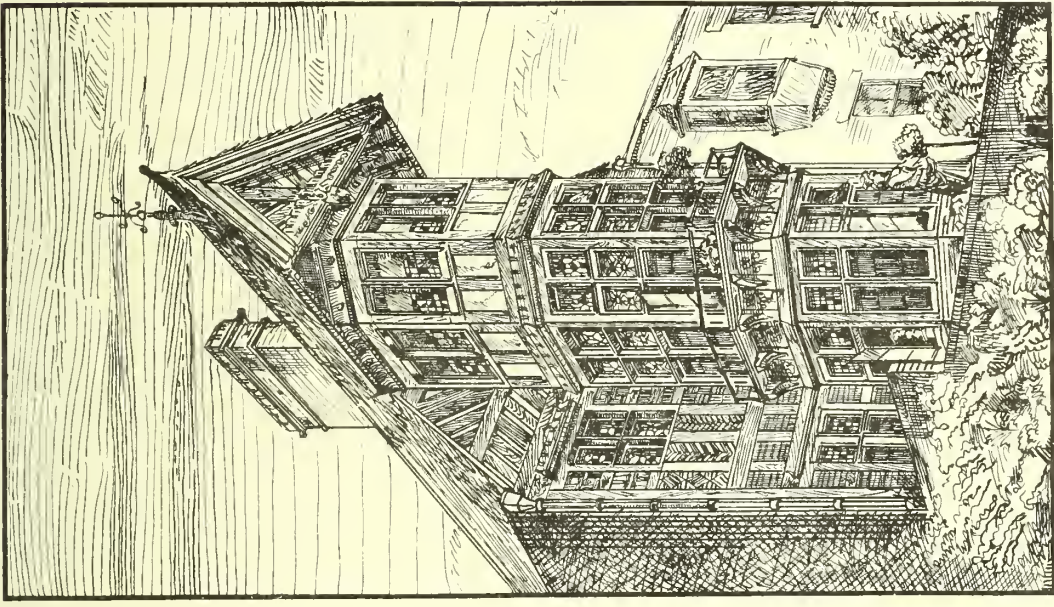
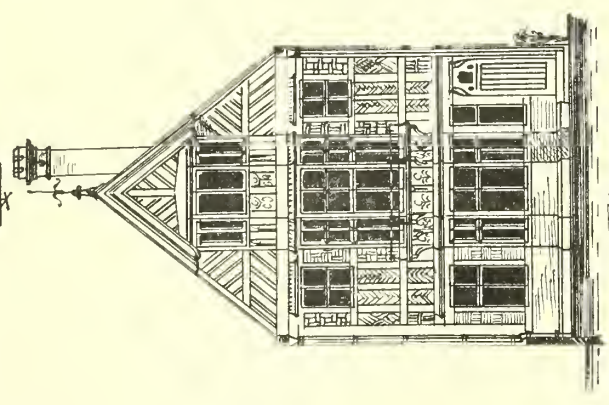
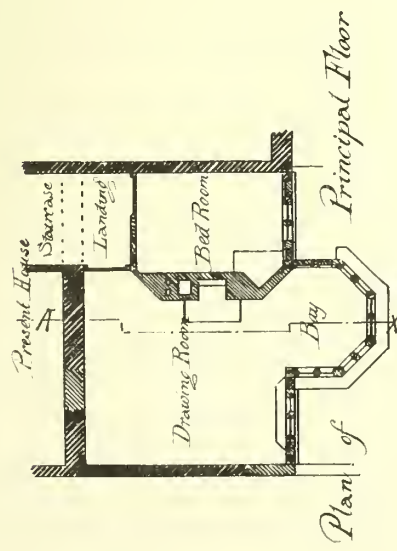


Photo-Lithographed & Printed by James Akerman, 6, Queen Square.

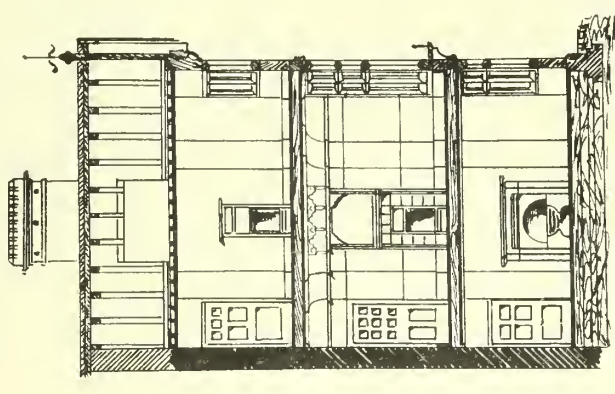
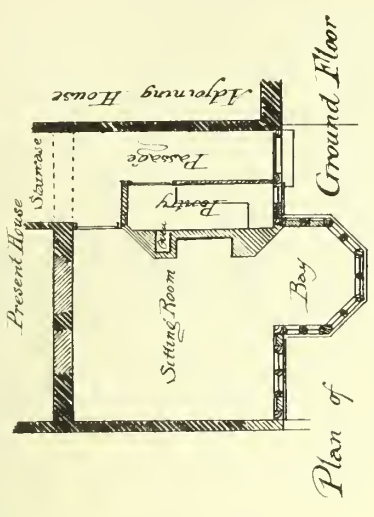
INTERIOR OF S. PAUL'S CHURCH MANCHESTER.

Wm. Strickland del.
1877. Archt.

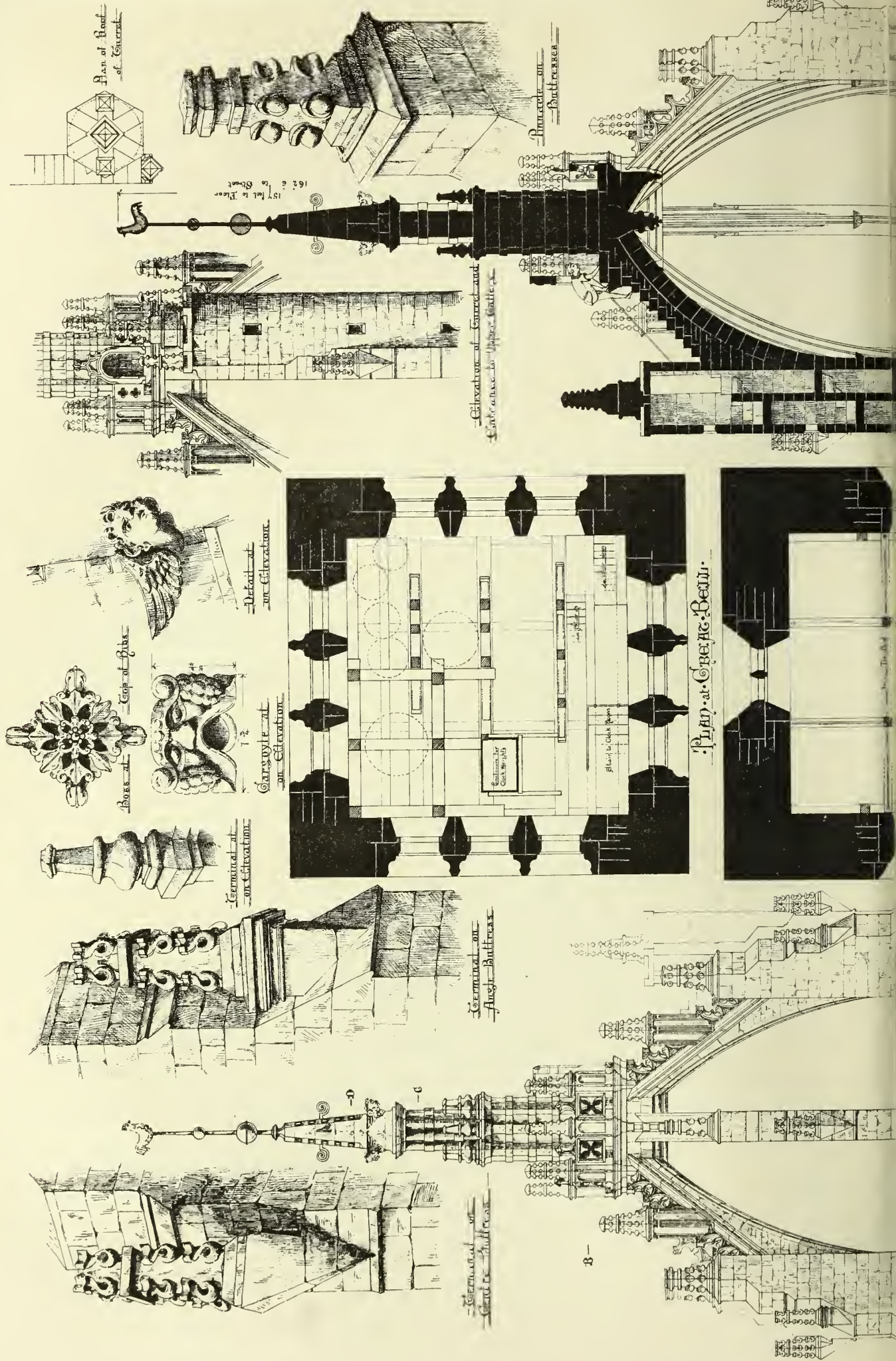
HOUSE WESTERN HILL
DURHAM

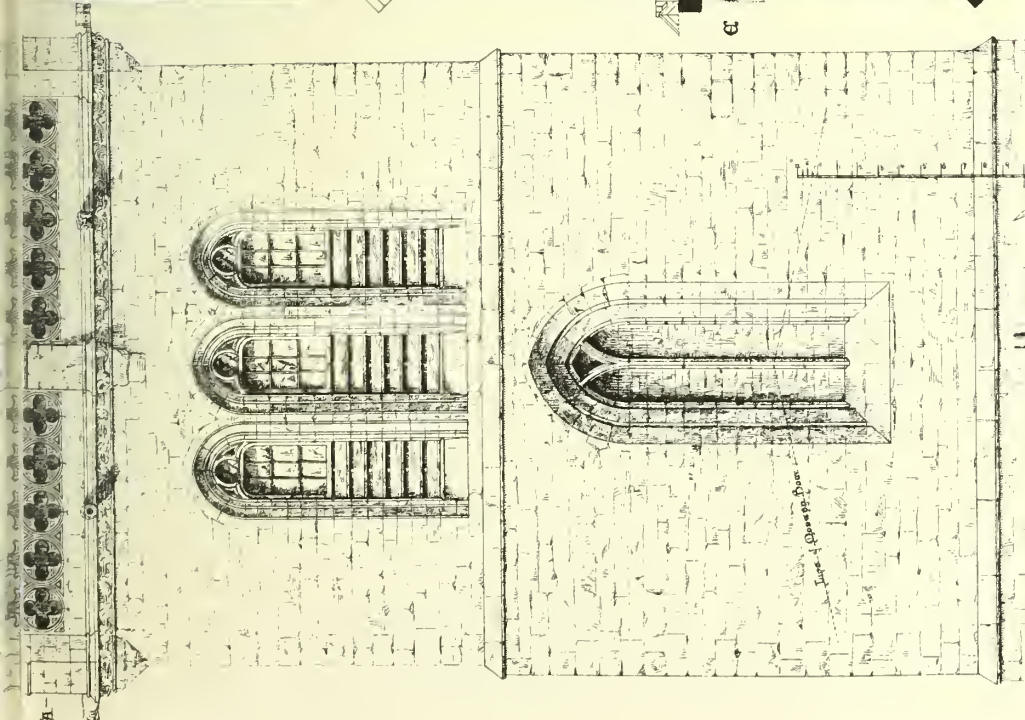


J. Shields, Architect.



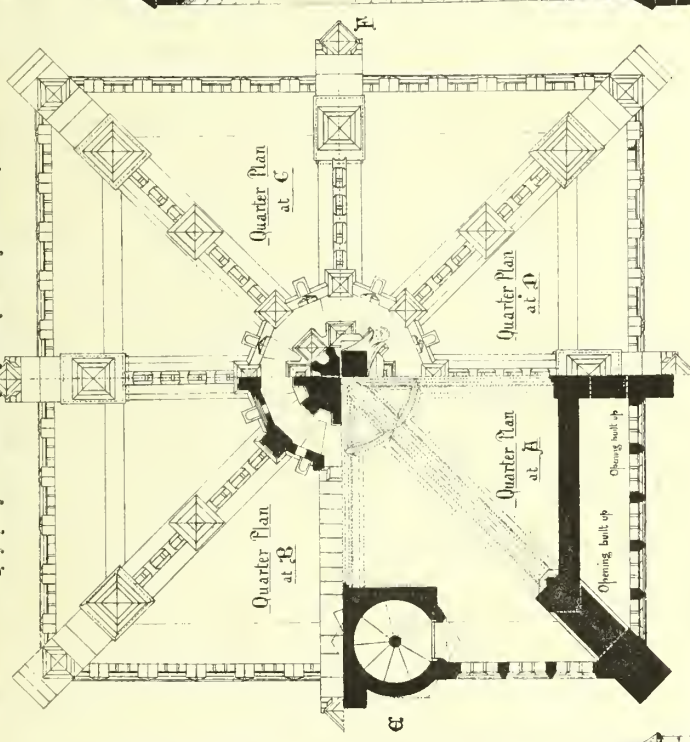
THE
LIBRARY OF THE
MUSEUM OF NATURAL HISTORY
LONDON





Plan of 5th St. Elevation at Springs, N.Y.
Scale 1 inch to 1 foot.

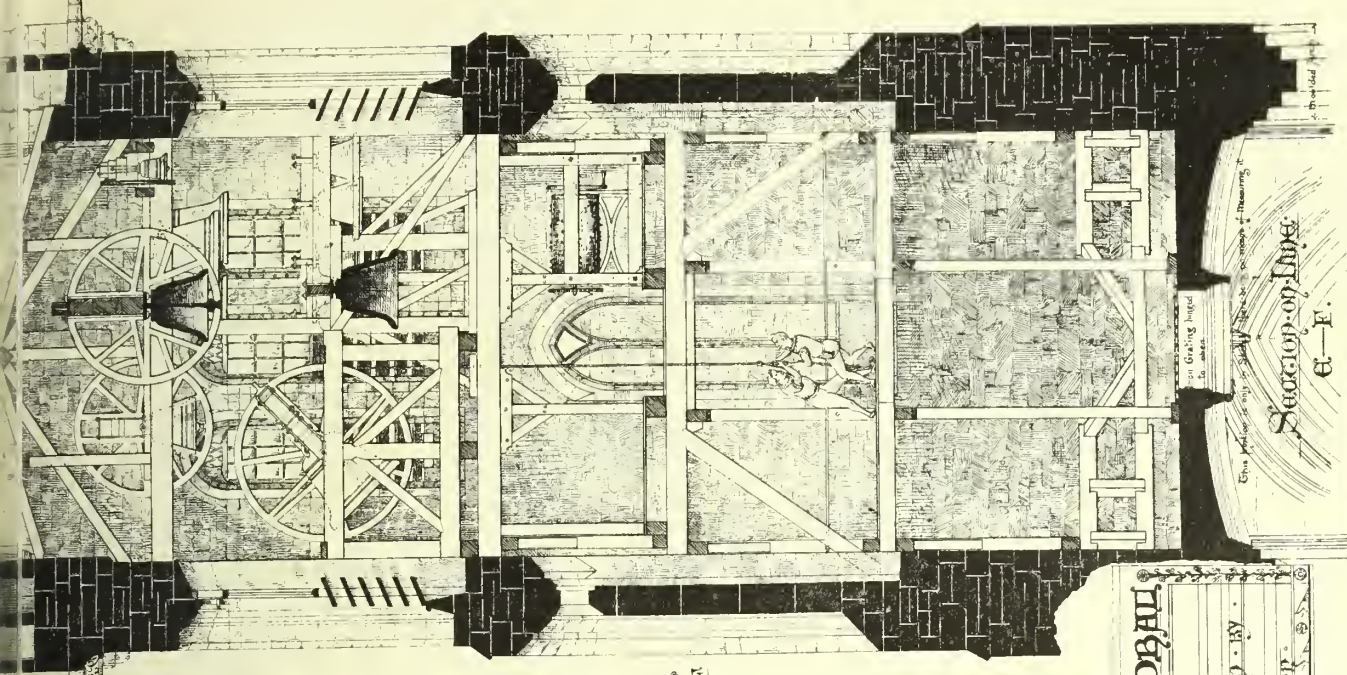
Plan of Bell Ringers' Chamber.



Towers and Crown Spire of St. Peter's Church, Newburgh, N.Y.

W. H. CHAMBERLAIN, ARCHT. BY

FROM THE SUBSCRIPTIONS OF THE



THE MATHEMATICS OF CONSTRUCTION.*

NOTWITHSTANDING the numerous treatises on the theory of strain and the strength of materials, there is scarcely one that is thoroughly adapted to the purposes of the architect. Rankine's manuals are excellent in their way, but they are overcrowded with algebraic formulæ, and are more useful as school class-books than as treatises comprehensible by the average student or man of business; Tregold's, Tarn's, and Hurst's are more adapted for the architect's general requirements, but they are hardly comprehensive enough, and we may search through the recently-published manuals without finding one suitable for the architect's requirements, as distinguished from the wants of the engineer. At last an American architect, Mr. R. G. Hatfield, Fellow of the American Institute, and member of the Society of Civil Engineers, has brought out a comprehensive treatise on the mathematics of construction, expressly intended for architects and students of architecture, and from a perusal of its pages we consider the author has succeeded in furnishing the profession with a reliable and exhaustive handbook on those every-day branches of construction it is so much in need of. Mr. Hatfield, who has consulted upwards of thirty works on the subject—comprising the excellent works of Barlow, Bow, Campin, Fairbairn, Hodgkinson, Humber, Rankine, Poisson, Robison, Shield, Stoney, Tate, Tarn, Tredgold, Weisbach, &c.—admits that few of these works are adapted to the specific wants of the architect. In some of these the subject is treated in the abstract, and in a manner too general for the practitioner, while in more detailed works the wants of the civil engineer, rather than the architect, have been consulted. The result is that the latter is content to forego a mathematical knowledge of the subject, following precedent and trusting to chance. The author has treated his subject methodically, and the various theories and examples are classified under sectional headings, numbered for reference, which is undoubtedly the best mode of bringing any particular problem under the eye of the reader. The contents are well arranged under general heads, and there is a good index, but the most valuable part of the book, as a means of reference, is a directory or digest of the principal rules and articles by which any particular case occurring in practice may be immediately found, from the general conditions which are stated in outline. Every topic or subject is presented first in concrete form, and from thence the mind is led gradually to the abstract principle involved. By this systematic treatment the author has made his work something better than a collection of rules and tables promiscuously jumbled together, and has given it the coherence and method of a scientific treatise. Another useful feature is the questions for practice that occur at the end of each chapter. We are glad to find the author has largely illustrated the graphical representation of strains—a most useful study to the young architect, and one very imperfectly developed in most of the works published. We are led to believe this method of finding strains is very seldom resorted to, from ignorance of the principles. How simple the process is those who have once mastered it know well. Thus, in the case of a lever or half beam projecting from a wall, the moment of rupture is equal to the product of the weight into the arm or leverage at which it acts, and the strains can be measured by scale in the following manner. At the wall end of lever

draw a vertical = to this moment, join the end with the extremity of beam, and the triangle thus formed becomes a scale upon which the strain at any point of the beam can be measured. The graphical strains in a beam, with centre load resting upon two supports at each end, are found by drawing lines from the ends to a vertical made equal in centre to $\frac{wl}{4}$, and any vertical ordinate within the two triangles thus formed will give the strain at that point. The law of resistance is clearly stated, from which the reader is led to the lever principle as the foundation of the whole theory of the subject. The several elements of resistance to rupture are simply explained. Thus we have first the unit of strength of a given material lin. square and 1ft. long; then we have the product of breadth into the depth; and, lastly, the resistance of the fibres to extension, also in proportion to the depth. Putting these several elements together, and representing them by letters, we may say the total resistance, or

$$R = \text{Unit of strength } bd^2.$$

We have, then, the destructive energy of the weight, or the moment of the weight, to go against this resistance, and when the student masters both the sides of the equation, he can at once determine or calculate the strength of any beam, either of iron or wood, by the simple rule

$$Wl = \text{Unit of strength } bd^2.$$

The effect of weight as regards position is clearly distinguished, and the rule for a beam loaded at any point is given, a general formula for which may be thus expressed in words: The resistance of a beam loaded at any point is equal to the weight multiplied into the segments of the length into which the weight divides the beam, and by 4, and the product divided by the length of beam. The effects of distributed loads, the destructive energies of differently-loaded beams, and the relation between lengths, weights, and effects, are shown. After showing the conditions of equilibrium between the destructive energy of the load and the resistance of material at the point of rupture, the author proceeds to apply the factor of safety, without which the rules given are useless to the architect. The author gives the rules for the safe load under differently-loaded beams. When a load is suspended at the end of a lever fixed at the other end, the rule is $4Pan = Bbd^2$; when distributed, it is $2Uan$; when the load is placed on a beam supported at both ends it is Wal ; when it is distributed on such a beam, $\frac{1}{2}Ual$; and when the load is at any other point the rule is $4Wa\frac{mn}{l} = Bbd^2$. In these rules P = weight; a = the symbol of safety = for English timber nearly 4; n = the arm of lever; W = the weight, and l = the length of beam.

The application of the rules to the construction of floors is a very useful part of Mr. Hatfield's treatise. The formula for these is the fourth rule given above. It is shown that each beam in a floor is subjected to the weight arising from so much of the floor as extends to half-way to the adjoining beam, or the weight equals the length of beam by the distance apart of the beams. Knowing the weight or load per superficial foot of the floor, the total load upon a beam will be obtained by multiplying its length by the bearing and by this unit of load, or $\frac{1}{2}acf^2$, in which f = the unit of load and c the distance apart of beams. The unit of load for a floor of a dwelling is put at 20lb. as the maximum, the author working out the details of the beams and plastering. The average weight per lineal foot of white pine beams is put at $6\frac{1}{2}$ lb. We may observe here that the author differs from Tredgold in fixing the weight of a

crowd of people at 120lb. per foot. Taking the investigations of Mr. James Walker, Quetelet, and other evidence, the total average weight of people appears to be 105.5lb., and the greatest weight of a crowd of people is stated to be 66lb. per square foot. Estimated as a live load, however, this figure is increased to 76.4lb. as a moving force, without considering the elasticity of the limbs and the floor, which would reduce it to nearly half this addition. A promiscuous movement of a crowd of people has little effect upon a floor beyond their weight, and Mr. Hatfield describes an interesting experiment made by him at Jackson's foundry, New York, in 1860, which corroborates the above figures. Eleven of the factory men were placed upon the platform of a large scale, 8 $\frac{1}{2}$ ft. by 14ft., and their combined weight showed an average of 139.55lb. a man, a trifle over Quetelet's data. A promiscuous stepping and walking about increased the total weight only 10lb., or barely 1 per cent., but a simultaneous movement, or military tread, increased the weight 159lb., or over 10 per cent., thus showing a result bearing out the former figures. The men were afterwards directed to use their utmost exertions in jumping and violent movements urged on by loud shouting; the effect produced was an increase of 795lb., or 52 per cent., but in a closely-packed room there would be no room for this violent jumping, hence we may conclude 66lb. is the total effect of the most riotous crowd of persons on each foot of floor of a room, or 10 per cent. addition for a bridge through which a solid body of people could march. The greatest load that need to be provided for is thus, say, 70lb. per superficial foot, and therefore floor beams calculated to sustain this load, or to break with not less than four times this, may be considered equal to any emergency.

Thus, for the floor beam of dwellings, the general formula is

$$\frac{1}{2}acf^2 = Bbd^2$$

as regards safety from rupture; but for the sake of preventing excessive deflection the rules for the resistance to flexure are the most desirable for the architect's purpose.

The rules denoting stiffness are more complex—hence they are neglected for those which determine the strength or resistance to rupture. A beam should not only be safe, but appear so, and hence the laws of deflection are more necessary to the architect than those of rupture. Deflection is proved to be directly as the weight and cube of the length. A general rule for beams as to stiffness is given, the rate of deflection being left indeterminate, though $\frac{1}{3}$ in. per foot is considered fair. The deflection of a white pine beam is obtained by multiplying the load in middle by the cube of length in feet, and dividing by 2,900, the average value of the measure of elasticity multiplied into the breadth and cube of depth. To find the depth we multiply the weight in centre by the cube of length, and divide product by the measure of elasticity multiplied by the breadth and rate of deflection. The cube root of the sum will give the depth. When the load is distributed the formula is for deflection

$$\frac{5}{8} \frac{U l^3}{F b d^3}$$

For floor beams the simple rule to obtain the depth is to multiply the distance apart from beam centres by the cube of length, and divide product by the breadth of beam into the value of the particular wood, which for white pine is 1.55, and the cube root of sum is the depth required. A very useful chapter is that on the effect of bridging floor beams, a subject that has been very inadequately considered. By experiment upon a model the author found that a bridged beam sustained more than three times that borne by the unbridged beam. The useful and practical subject of girders,

* Theory of Transverse Strains, and its Application to Building, &c. By R. G. HATFIELD, Architect, F.Am.Inst.A., &c. London: Trübner and Co.

trimmers, and trimming joists, the allowance to be made for the mortising, &c., are entered into, and rules are given. Rolled and cast-iron beams form another useful part of the treatise, the moment of inertia is clearly explained, and examples are given showing the application of the rules. The question of framed girders and roof trusses, with the graphical modes of obtaining the strains, is minutely entered into, and the tables at the end will be found of service. It would have added to the practical and general value of the work if the leading rules had been stated in words, as there are many in the profession unable to understand symbols. Taking the work as a whole we consider it to be one of the best and most thorough treatises on the theory of transverse strains we possess, and we have every confidence in recommending it to the architect and student.

THE LOCAL GOVERNMENT BUILDING CODE.

A SERIES of "model bye-laws" have lately been published by the Local Government Board relating to sanitary regulations connected with building, streets, lodging-houses, &c. The Board have sought for advice from the Institute of British Architects and other sources, and the result has been that a series of bye-laws have been framed that may at least be found to be a provisional step towards a more uniform code of building rules and practice. In relation to new streets it is proposed that they are to be laid out with easy gradients; if for a carriage road the width to be 36ft. at least, and every street exceeding 100ft. in length is to be laid out as one. If less than that length, a width of 24ft. is provided if it is used as an approach to any building. In new streets the carriage-way is to be 24ft. wide at least, and the slope to be $\frac{3}{4}$ in. to $\frac{1}{2}$ in. per foot in width; the footways to slope $\frac{1}{4}$ in. to the foot if not paved, or $\frac{1}{2}$ in. if paved or asphalted. Respecting new buildings, the bye-laws provide that they shall not be erected on a site filled up with fecal matter, or with material impregnated with animal or vegetable refuse. We are glad to find that the suggestion so often urged by us has been adopted, that the area of every house is to have a layer of asphalt or good cement concrete 6in. thick rammed tight. With regard to the cementing medium, mortar of good lime and clean sharp sand is to be used, or good cement. For footings, the usual regulations of the Building Act are followed, half the thickness of wall to be the measure of projection of the widest part on each side; but when an adjoining wall exists, the projection may be omitted. Relating to external party walls, the rules follow those laid down by the Building Act. Thus, taking a wall 60ft. in height, with a length up to 45ft., the thickness of two stories is put at 18in. and the remainder 13 $\frac{1}{2}$ in. If length exceeds 45ft., one story is to be 22in., two stories 18in., and the remainder 13 $\frac{1}{2}$ in. Taking an ordinary case for height up to 25ft., with length up to 30ft., if two stories the thickness to be 9in., if more than two to below the topmost story 13 $\frac{1}{2}$ in., and the remainder 9in. It is somewhat questionable whether these rules were wanted, as the Building Act has given a complete scale. Another rule states that if the height of a story is in excess of 16 times the prescribed thickness of its walls, then the thickness of each external and party wall throughout the story is to be increased to 1-16th part of the height of story, and the thickness of each external wall, and of each party wall below that story, is to be proportionately increased, subject to the provision as to piers. Every external and party wall of any story which exceeds 10ft. in height is not to be less than 13 $\frac{1}{2}$ in. in thickness. Where greater thickness is required in a wall which exceeds 60ft. in height, and 45ft. in length, or in the case of a story exceeding 16 times the thickness prescribed for its walls, or in the case of a wall below that story, the increase may be confined to piers properly distributed, of which the collective widths amount to one-fourth part of the length of

wall. The projection of a pier is never to exceed one-third of its width. For the external and party walls of warehouses, &c., the proposed rules follow pretty closely the schedule of the Building Act; and the provisions for openings, parapets, bond-timber, chimneys and flues, holdfasts, roofs, &c., are in the main a repetition of those in that Act.

Passing on to those bye-laws relating to sanitary objects, the sufficiency of space round buildings, their drainage, &c., we find a few rules that may be useful. Thus, in front of every domestic building, there is to be an open space of 24 feet between the frontage and the opposite lands and premises—this space to be left quite free of obstruction except a portico, porch, step, or projection, not exceeding 7 feet in height. In the rear there is to be an open space of an aggregate extent of not less than 150 square feet, free from any erection except it be a water closet, privy, or ash-pit. The space is to extend laterally throughout the entire width of the building, and any opposite or adjoining premises or lands not to be nearer than 10 feet to any part of the building. If the building is 15ft. high, the distance is to be 15ft.; if 25ft. high the distance is to be not less than 20ft.; and if the height is 35ft. or more, the distance to be at least 25ft. The lowest floors are to have a space of at least 3in. from the asphalt or concrete to the lower side of joists, and the space is to be ventilated by air-bricks. Every habitable room is to have one window at the least opening externally, and the total area of window or windows clear of sash frame is to equal at least one-tenth of the floor area of room; and one-half of the window at least is to be constructed to open—this opening to extend to the top. Every room without a fireplace must have efficient means of ventilation by a shaft whose sectional area shall be at least 100 square inches. Regarding drains we may briefly say, that every damp site is to have the subsoil drained by earthenware field pipes; suitable ventilating trapped connections are to be made; no drain is to pass under a building, except in cases where any other mode is impracticable, and when so laid it is to be in a direct line for the whole distance beneath the building, and be embedded in concrete at least 6in. thick all round, with ventilation at each end. Means of disconnection by means of a shaft-pipe or chamber is to be provided near to a trap, and a second opening is to be made, as far distant from the first as possible, carried up by a pipe to such a height as to prevent escape of foul air into any building, and to be not less in any case than 10 feet high. Closets are to be placed so that one of the sides is to be an extreme wall, with a window of not less than 2ft. by 1ft., exclusive of frame, and one air-brick is to be built in the outer wall, or there is to be a ventilating shaft to give constant ventilation. A separate cistern or flushing box is to be provided for the w.c., and no connection to be allowed between it and any service pipes. D-traps and containers are prohibited.

WORKS IN HAND AT SUNDERLAND.

A NEW line of railway is being constructed through this town, causing a vast amount of old property and works to be pulled down in the centre of the town, in the course of the railways. There is nothing of note or interest except a bridge over the river Wear, within a few yards of the (once) celebrated iron bridge. It is 100ft. above high water mark. Messrs. Waddell, of Edinburgh, are the contractors. Two banks are being built in the town, and a library adjoining one of the banks. The N.P. Bank are building a handsome stone bank in High-street. It is too early to form any decided opinion of it, as the second story is only up; however, it is to be a very costly affair, and no doubt will be an ornament to the town. The block of buildings now in course of erection in the Shrubbery, Fawcett-street, are by far the best, in every point of view, in Sunderland. The town up to this time has been at least a generation behind every other town in its buildings, but these handsome structures have raised the tone of architecture and building construction amongst the people (and especially the professional portion) in a very marked degree. A new county court has also been built.—W. C.

NOTES FROM DUBLIN.

A NEW Catholic church is being erected at Rathfarnham, in the suburbs of Dublin, from the designs, &c., of Mr. G. C. Ashlin, architect, partner of the late Mr. Pugin. It is in the Early English style of architecture, and consists of nave, aisles, two side chapels at east end of aisles, and sacristy. The building is being erected by Messrs. Meade, of Dublin. Another new church (Roman Catholic) has just been finished, except vestries and chapels, at Dundrum, near Dublin, from the designs of the same architect. Excavations are being made on Stephen's-green for the erection of new schools attached to the Wesleyan church in the same locality. The designs are by Mr. Jones, R.H.A., and it is stated that the new works will cost about £1,700. Messrs. Gahan and Sons, of Harcourt-street, have been appointed contractors. The Scottish Widows' Fire and Life Insurance Company's offices have been erected in Westmoreland-street, according to designs by Mr. Thos. Deane, R.H.A., Inspector of Public Monuments in Ireland. A new mansion is nearing completion at St. Ann's, Clontarf, for Sir Arthur Guinness, Bart., under the direction and from the drawings of Mr. J. H. Fuller, F.S.A., architect. There are already five or six skating rinks in and on the suburbs of this city, and it is said that another is about to be commenced at Kingstown, eight or ten miles hence. Two or three of those in the city have long since been closed. One, at the Rotundo, is occupied daily for Evangelical service, at which, it is said, about ten or twelve attend.

COMPETITIONS.

DURHAM.—The Medomsley School Board (county Durham) having advertised for plans of schools and master's house to be erected at Westwood, within their district, received nineteen competitive designs, and awarded the first premium to Mr. Fox, of Durham, the second to Messrs. S. Oswald and Son, of Newcastle, and the third to Mr. Oliver, of Newcastle.

SOUTHPORT.—In answer to the advertisements for designs for new covered markets at Southport, twenty-five designs have been received bearing the following mottoes:—"Bon Accord," "Bona Fides," "Debut," "Dexter," "Excelsior," "Experientia Docet," "Haut et Bon," "In the Market," "Iron," "Luminous Mark It," "H. O. P. F. in a crossed circle, 1877," "Palnam qui Meruit Ferat," "Practical," "Regardez Moi," "Rouge et Noir," "Southport," "Salus Populi," "Sanitas," "Suum Cuique," "Tenez," "Victoria," "Utility," "X. L." They are under the consideration of the market committee, and will be open to public inspection in the large room of the Town Hall after the committee have decided upon the best three designs.

ARCHÆOLOGICAL SOCIETIES.

WILTSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY.—The annual meeting of this society was held last week, the proceedings being opened on Wednesday in the Town Hall, Warminster, by the President, the Marquis of Bath. Some old documents, recently discovered in a lumber room at Pyt House, and lent by Mr. Bennet Stanford, M.P., were exhibited. A paper on "The Vale of Warminster" was read by Canon Jackson, and in the evening papers were read by Mr. W. W. Ravenhill, on "Justice in Warminster in the Olden Time;" by the Rev. H. T. Kingdon, on "An Early Service in the Vernacular;" and by the Rev. A. C. Smith, on "Some Account of the Tavern Signs of Wiltshire and their Origin." On Thursday the members visited Longbridge Deverell, Brixton Deverell, Monkton Deverell, Kingston Deverell, and Mere, and were entertained at luncheon by Miss Chafyn Grove, at Zeals House. Stourton Church, Maiden Bradley, and other places of interest were also visited, and in the evening papers were read by Rev. J. Baron and Sir John Lubbock. On Friday the members visited Longleat, Horningsham, Shearwater, and—by invitation of Lord Heytesbury—Heytesbury House.

Building Intelligence.

BELFAST.—On Saturday week the foundation stone of a new Presbyterian church at Belfast was laid. The style chosen is Romanesque, and the materials, Serabo sandstone for the external walling, with granite columns and Dumfries stone dressings. The cost of the church will be about £10,000. The contractor is Mr. W. M'Cammond, Antrim-road, Belfast, and the works are being carried out from the plans and under the superintendence of the architects, Messrs. Young and Mackenzie, Belfast.

CAMBRIDGE.—Some of the colleges at Cambridge are undergoing extensive alterations. The works at Pembroke, one of the oldest in the town, are nearly brought to a conclusion, very little remains of the college as it was. A new master's lodge and dining-hall have been erected, and a fine library is in course of construction, and will, it is believed, be completed by the October term. The Society of King's is about to add to its fine buildings in a manner that will considerably enlarge the college. At Trinity, near to Gerrard Hostle-lane, new sets of rooms are being built, and at Christ's College a new dining-hall. Great improvements have been made at Downing, Magdalene, and St. Catherine's Colleges.

CLAYDEN.—The parish church of Clayden was reopened on Thursday week after restoration. The former unsightly and unarchitectural church has been entirely removed, with the exception of the western tower and the chancel. The tower, which stands west of the nave, is constructed in the style of the 15th century. It is two stages in height, with embattled parapets. The tower has been opened. The organ gallery in the tower has been removed. The gallery, which ran along the west and south sides of the body of the old church has shared the same fate. The arch between the chancel and nave has been restored, and the new church now consists of tower, nave, north and south aisles, chancel, organ chamber on the north side of the chancel, and a similar one on opposite side of the chancel. The floor of the chancel is laid with Minton and Hollins' tiles; that of the nave and aisles is covered with the Poole Architectural Pottery Company's tiles. Mr. Ewan Christian was the architect, and the contractor, Mr. A. Sheasby, of Leamington.

HARROGATE.—The foundation stone of a new Baptist church was laid at Harrogate last week. Mr. W. Peachey, of York, is the architect. The style adopted is Gothic of the Early Decorated period. The church will consist of nave, aisles, and transepts, with a narthex to protect the entrances, and a tower and a spire at the south-west corner of 100ft. in height. The church will seat on the ground floor about 500. At the north end of the church will be a school-room, class-rooms, and vestries. The whole will be built of stone, lined with brick. The door and window dressings will be in local stone, and the walling of pitched-faced Pateley Bridge sets. The total cost is estimated at about £8,000, exclusive of the site.

LODGE.—The foundation stone of a new church was laid at Lodge, on Thursday week. The building, according to the plans of the architect, Mr. Kennedy, of Bangor, will be of the Early Decorated style, and consist of a nave, chancel, north porch, and robing-room, surmounted with a bell-turret at the west end. The internal fittings are to be of pitch pine, varnished, and the roof of similar wood, stained. The exterior will be built of dressings of freestone, and the roof covered with slates. When completed the building will accommodate upwards of 250 people. The total cost of the church will be £2,100.

WARRINGTON.—The new Roman Catholic Church of St. Mary, at Warrington, was opened on Thursday week. Messrs. C. and P. Pugin, of Ramsgate, are the architects. The church is in the Early Decorated style. It is of cruciform shape, and consists of nave, aisles, chancel, transept, and gallery. It is 145ft. in length by 54ft. in width, the materials employed in its erection being Yorkshire stone, Pierpoint, and dressings of Runcorn stone,

which material is principally used in the interior also. The sanctuary is 32ft. by 30. The expense of the spire will be an additional £2,000, and already the building has cost some £11,000 or £12,000. The builder is Mr. Hugh Yates, of Everton-crescent, Liverpool.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published September 7 contains articles on The Influences of Local Conditions on Public Health, The Bournemouth Outfall, The Air of Glasgow, The Health of Plymouth, The Storage of Water, Boring for Water at Stafford, The Incubation and Duration of Infection, Stimulants of Savages, A Manual of Domestic Medicine, The Sewage of the Thames Valley, A County Medical Club, Malt Syrup and the Manufacture of Beer, Public Health Reports, Local Intelligence, Water Supply and Sanitary Matters, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c. Price 2d. Annual Subscription, post-free, eleven shillings. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces. Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 6s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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(Payable in Advance.)

Including two half-yearly double numbers, One Pound per annum (post free) to any part of the United Kingdom; for the United States, £1 6s. 6d. (or 6dols. 40c. gold). To France or Belgium, £1 6s. 6d. (or 32f. 60c.). To India (via Southampton), £1 6s. 6d. To any of the Australian Colonies, New Zealand, the Cape, the West Indies, Canada, Nova Scotia, or Natal, £1 6s. 6d.

N.B.—American and Belgian subscribers are requested to remit their subscriptions by International P.O.O., and to advise the publisher of the date and amount of their remittance. If the last-mentioned precaution is omitted, some difficulty is very likely to arise in obtaining the amount. Back numbers can only be sent at the rate of 7d. each, the postage charged being 3d. per copy. All foreign subscriptions, unaccompanied by an additional remittance to cover the extra cost of forwarding back numbers, are commenced from the next number published after the receipt of the subscription.

Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—H. Lindley.—S. and H.—H. and B.—M. D.—J. J. W.—J. C.—E. H.—J. and E. G.—L. and N.W. Ry. Co.—J. B.—J. M.—H. and G.—E. S.

A SUFFERER. (We quite believe what you say, but if we were to print the names and addresses of all the pretenders, as you suggest, we should have to add a four-page supplement every week to our pages.)—G. H. BRETTEL. (Can only appear as an advt.)—L. A. S. H. (Write to Lockwood and Co., 7, Stationers' Hall-court.)—A SUBSCRIBER. (Yes, unless there was an agreement to the contrary.)—STUDENT. (The mark you ask about indicates that the boundary or piece is straight: it is often used in the field-book.)

Correspondence.

CYMMER AND VALLE CRUCIS.

To the Editor of the BUILDING NEWS.

SIR,—I am exceedingly glad that the Association have included in their progress visits to Cymmer and Basingwerk, for both are in a lamentable state of neglect. Strata Florida and Neath, alas! are in no better case, and a powerful remonstrance on their part, headed by "Sir Watkin," and supported by the Bardic and Archaeological Congresses of Wales, may lead to timely and immediate measures for the preservation of the little that remains, and the excavation of the soil in the buried portions of the ruin. Of Basingwerk I have already written in your columns.

Cymmer, with its long coterminous north aisle and rudimentary arcading in three bays (now occupied as a granary, &c.), must have had the appearance of a double church: an amorphous plan, which had its parallel in a Scottish minster. The western tower (with traces of a newel staircase, either corresponding to one in the south-west angle of Valle Crucis or else leading to the upper story of the western range of claustral buildings) bears a humble likeness to its fellow at Furness. But

the remarkable point is, that Cymmer could never have been cruciform, although the original plan may have been abandoned for want of funds, as all churches were begun at the east end, the transept being never built whilst the church was continued westward. There are traces of three archways on the south front of the detached building to the west, and of ancient masonry in a stable on the north-east, which may mark the infirmary.

The departures from the strict Cistercian plan are not so very uncommon. The chapter-house at Cleeve is an aisleless oblong; at Margam, polygonal; Croxden had (perhaps) a chevet; Beaulieu was apsidal; Abbey Dore and Fountains have a transverse eastern aisle; Kirkstall had a central; its sister, near Ripon, a transeptal tower; whilst Melrose has an outer range of nave chapels. Some of the small Devonian abbeys may be well compared with Cymmer.

After I was at Llangollen in 1873, at the desire of the excellent vicar I published in his local magazine an account of Valle Crucis, which, with many subsequent annotations, is now among the additional MSS. in the British Museum. The ground plan was separately produced as a woodcut in Black's "Guide to North Wales." In it may be seen the similarity in the position of the Daystairs to that of Cleeve; but on the opposite side of the chapter-house is a small cell, quite unique as far as my experience goes. My impression is that it was the carol of the Scriba Capituli, and also used for conference, *submissa* voice, in chapter time. The curious oblique door in the dormitory of Cleeve I suggested was used by the sacristan, as the chancel wall passage was at Valle Crucis; the oriel in the aisle of Worcester; the gallery at Lichfield; and the watching-chamber in the transept of St. Alban's, for the supervision of lights. I am inclined to believe that it had a further use—as a means of communication over the vaulting of the southern transept chapels with the belfry.

Whilst preparing a forthcoming memoir on Buildwas Abbey, which will form a portion of a work on the four minsters round the Wrekin, I detected a remarkable similarity between the Salopian and the Welsh transept. The position of the claustral buildings is reversed; but in the eastern angle of the transept, in both instances, there is a staircase near a doorway. The latter was the entrance of the lay-folk on the side away from the cloister garth. The former was used by the sacristan, who occasionally slept in a corner of the church, and thus was enabled at once to proceed by an intramural passage to the central tower, in order to ring the bell for matins. The Porta excubitorum is still left adjoining the transept at Benedictine, Rochester; and at Lincoln (a secular church) the tradition of the watchers' chamber (slept in by those who searched the minster at night for fear of fire, and rang the matin mass bells), also near a transept, lingered on to the time of Browne Willis.

The presence of fireplaces over and above that of the calefactory or common-house is another instance of decadence in the observance of the ancient rule; and in the fifteenth century a Canon of Council forbade their continuance in Cistercian dormitories on the Continent. The abbot's cell was probably at the south end of the dormitory of Valle Crucis. Only in very large abbeys there was a separate house for the use of the superior.

Mr. Loftus Brock is in thorough sympathy with his subject, and his extended paper will be doubtless full of new interest. I may mention that the last Abbot of Cymmer, Lewis Thomas, was Suffragan Bishop of Shrewsbury.—I am, &c., MACKENZIE E. C. WALCOTT.

SHORES.

SIR,—“E. W. T.” surprised me by the intimation that, under the name of shores, I had really been treating of lean-to roofs! He goes curiously aside to introduce “Tredgold's Carpentry,” though the book is absolutely silent upon shores. Tredgold has been dead these fifty years, but had he lived he would in all probability have discussed the subject, not only in a far more able way than I can hope to do, but without creating “a much more complicated problem.”

Unless people see a thing in the same light

their reasoning will lead to different conclusions, and I am sorry not to coincide with "E. W. T." My definition and figure can be referred to, and the sloping timber was hardly to be taken as the alpha and omega of a shore, but rather to indicate the forces it exerts. A ladder with a man upon it would have done better, because its effect would vary with each change of the man's position, but every one can recognise the pressure against the wall, the effort to sink into the earth, and the tendency to slide upon the surface. Let there be one man at the middle, or one at each end, or a file of men uniformly loading the whole length, and still that important mechanical point, the centre of gravity, will be equidistant from the ends. But, according to "E. W. T.," more is expected from a shore than the weighted ladder or the flying buttress could accomplish, and that not merely in degree, but in principle. "It has," he says, to assist in supporting the weight of the upper portion of the wall as well as to prevent the wall itself from falling outwards. . . . It is for this reason that the two ends of the raking shore are tightly wedged up, so that its full strength as a 'post' may be utilised." Now, the utility of the raking shore for vertical support is manifestly small, and practically disregarded, except as conducing to the horizontal pressure properly opposed to an inclining wall. Shores are commonly pitched so high that leverage from the base of the wall seems a leading idea of the operator, and the portion above is so inconsiderable as barely to give the necessary resistance to an upward sliding of the shore. Friction comes into use, and the stud is chiefly intended to increase friction. Action and reaction being equal, the force at the base must have its counterpart at the crown. The stress at the ends, and throughout the length of the shore, is uniform, and the centre of gravity is therefore at the half-way point, as shown in the diagram, Fig. 4, p. 189.—I am, &c., T. M.

SANITARY DWELLINGS.

SIR,—Just now when so much has been said and written on the subject of sanitation, it may not be inappropriate to draw your attention to the buildings now erected adjoining Goldsmith's House, Peckham, formerly the residence of the poet.

I yesterday inspected the three handsome blocks of buildings known as "Goldsmith's Residences," erected by the Sanitary Dwellings Company, Limited. It consists of something like 40 sets of superior artisans' dwellings, constructed on the flat system, with the best principles of sanitation.

The sets consist of parlour, scullery, kitchen, with oven, and two good bedrooms, water laid on, and a separate w.c. to each set. These sets of chambers would be in great request, and fetch fancy rentals in the Temple or any of our Inns-of-Court, but here they are let at the moderate rental of from 5s. to 6s. each. The passage contains shafts to empty and sweep dust into, and the ventilating arrangements deserve more notice than can conveniently be given here. The usual objection to these associated dwellings is, that they present too much of the charitable institution appearance and style about them to be acceptable to the class they are intended to benefit; but that element is quite absent here. The better class mechanic and the City clerk will find in these residences the privacy and independence of a set of chambers, at the small rent I have indicated.

The attention of the Legislature will shortly be drawn to this subject. In the meantime, if the public will visit the buildings every information and explanation will be afforded there. Orders to view can be obtained upon application to the secretary, Mr. Walter West, 29, New Bridge-street, E.C.—I am, &c.,

THOMAS YEO.

GOVERNMENT OFFICES.

SIR,—I observe that one of your professional contemporaries is exercised in its mind as to the concentration of the Government offices, and has published a proposed plan with many comments. The gathering together of Government offices is no doubt highly desirable, but it

is by no means essential that the bulk of them should be under one roof. Why, for instance, should the Colonial Office open into the Duchy of Lancaster Office, or the War Office have a covered way into Queen Anne's Bounty? Instead of pulling down blocks of the most costly house property about Parliament-street and Whitehall, let me make the suggestion that a block of offices could be erected at a vast saving of expense on the ground already vacant in Northumberland-avenue, or in Victoria-street, or both. It would be a further advantage to have these howling wildernesses, which are eyesores to London, covered with handsome and monumental buildings.—I am, &c., ESTATE AGENT.

FORCE OF WIND.

SIR,—The writer of the article on "The Force of Wind," in the BUILDING NEWS of the 31st ult., in giving the pressure on sloping roofs, which he has based on theory, appears to have overlooked the experiments of Hutton—the results of which have been carefully worked out by Professor Unwin in his excellent work "On Roofs and Bridges." There is also a capital article on the same subject, with tables for roofs of all slopes from 0° to 90°, in the last edition of Hurst's Handbook.—I am, &c., J. S.

Intercommunication.

QUESTIONS.

[5114].—Warming Wooden Office.—What is the best means of warming a wooden office 7' 6" x 3' 6", so as to make it possible to spend an hour or two a day in it during cold weather?—CLERK OF WORKS.

[5115].—Wood for Field Gates.—Is Spanish chestnut a durable wood for outdoor purposes—such as field gates, &c.?—C. S. W.

[5116].—Measuring and Sketching.—Will any gentleman knowing places between Caen and Bayeux, St. Lo, Carentan, and Cherbourg, containing buildings worthy of study, kindly give me information through "Intercommunication," that I may assist a fellow-student now at Caen?—M. J. L.

[5117].—Mortar.—Will any correspondent kindly inform me if it is better to slake the lime as soon as it is brought from the kiln, and mix it immediately with sand for mortar, or to slake it, and leave same for some time exposed to the action of atmosphere, turning it all throughout occasionally, prior to its being mixed with any other material? Also whether the mortar is better from being left in a heap long before use, and beating it up when required, or used in the building as soon as mixed?—EFF TEE DOUBLE U GEE.

[5118].—Old City Churches.—I have heard that some of the old churches in London are being pulled down, and that it might be practicable to buy the material and have the churches or one of them re-built in another situation. Will any one kindly inform me from whom to obtain particulars respecting the subject—such as what churches are condemned, and who has the disposal? Is it probable that the cost of the re-building (say, 100 miles from London) would be less than if entirely new materials were purchased? Also any further information.—STAFFORDSHIRE.

REPLIES.

[5100].—Hollow Walls.—As a practical clerk of works I will give you the result of my experience, extending over a period of 30 years. The outer portion of the wall (except a single 4½ in. adjoining the openings) should be 4½ in. throughout, without any connection with the inner 9 in., and built entirely with stretchers, with a weather-point. This gives a neat, solid, and damp-resisting face to the wall, the only connection with the inner 9 in. being made with iron ties well gas-tarred and built in the bed joints. The joists may have 4½ in. or 9 in. bearing according to requirements. The idea of blue bricks resisting damp is simply ridiculous; they absorb water like a sponge. I know a building faced with blue bricks, laid English bond, and the proprietors have painted the exterior to keep out the damp. I have also observed that where headers are used, there is always a damp patch in the plaster. The advantage of English bond in hollow walls is quite equal to the "notion" of blue bricks.—JAMES THORNCLOE.

[5100].—Hollow Walls.—I should have always preferred, in my own practice, to put the 9 in. thickness outside, and the 4½ in. inside. But do not let the timbers rest on the outer thickness or they will draw in the damp, and destroy the value of the hollow. Do not bond with bricks, but with hoop iron or galvanised iron cramps placed every 5th or 6th course. These should be laid in cement. No sash or door frames should be inserted without a

lead apron or slate in cement to throw off the water that comes through the outer thickness. If this precaution is not adhered to, damp spots will appear despite the hollow wall. The main advantage of putting the 9 in. outside is that the reveals of the openings are deeper. As to the weight of floors, &c., resting on a 4½ in. wall, there is no risk if the thicknesses are well bonded together at intervals. I have carried up 3 stories on a 4½ in. inner wall; if more, two 9 in. thicknesses should be used.—G. H. G.

[5102].—Fair Wear and Tear.—If the lease contains a clause of "fair wear and tear excepted," I consider, contrary to "W. R.," that Mr. Vernon would be relieved from cutting out and rebuilding the cracked brickwork; but, practically, very few "leases" contain such a clause, though almost always inserted in "agreements."—H. P.

[5103].—Iron Bridge.—The main girders must be determined as to form and construction before any rule can be applied. The load of 2cw. per foot super will be distributed over the two or more girders the bridge is intended to have. If there are only two main girders, then the cross girders carrying the roadway will distribute the weight on both of them, and the greatest load will have to be divided by 2. When the greatest load is determined, and the depth of girder approximately fixed, the strain on either flange in centre (in case the load is central) may be found by multiplying the weight by the span, and divide product by 4 times depth of beam. This will give strain in terms of the weight. As regards the web, the shearing strain will be one-half of the load. If the load is distributed divide product by 8. Having found these strains, the sectional area of the flanges and webs, allowing for rivets, must be determined, allowing 4 tons per sq. inch in tension and compression. Dividing the tons' strain by 4 we obtain the area of flanges at centre. As regards plate girders, a proportion of span to depth of 12 to 1 is considered economical. The size of the piers can soon be determined by finding the crushing strength of the material used. They should be of brick in cement or stone.—ARCHITECTUS.

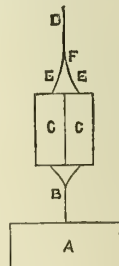
[5106].—The Largest Station.—In reply to "Alpha" in THE BUILDING NEWS, the new station at York is the largest in the world. The length of platform is to be 1,500ft., the covered portion is 800ft. in length by 234ft. in breadth; area of platform at York is 171,951ft.; St. Paneras, London, 165,360ft.—R. Q. LANE.

[5108].—Strength of Materials.—If "C. J. E." consults the questions and replies with the remarks made in the summaries of the "Architectural Science Class," he will soon understand the principles upon which the strength of materials depend. He had better not study any formula till he has gained a tolerably correct idea of the forces called into play in the breaking of a beam. Let him take a model beam, say an inch square and a foot long, and load it in the centre, and ask himself what effect the weight produces. He will perceive that two opposite forces are called into play—one the resistance of the upper part of the beam to be crushed, and the lower half to extend or tear asunder. He will perceive that at some point the effects are neutralised, and he will begin to see that the effect of the load and the resistance of the beam are two distinct forces, and have to be studied apart, and that when the beam is on the point of breaking, these two forces are in equilibrium. In this manner he will find that the strength of a beam to resist cross strain depends on its sectional area, or that it is directly as the breadth and square of the depth. Let "C. J. E." put another question which no doubt some correspondent of the BUILDING NEWS will answer.—G.

[5109].—Illuminator.—If "Papyrus" gets Owen Jones' and Digby Wyatt's works on illumination, he will find all he wants. Messrs. Audsley, I believe, have published also a work on the subject.—A CORRESPONDENT.

[5109].—Illuminator.—The best book I know of on the art of illuminating is by Henry Shaw, F.S.A., with description of pigment, initials, and processes employed by the artist at different periods, with highly-finished plates. Batsford has a copy for 16s. 6d., published at £2 2s.—R. Q. LANE.

[5110].—Separating Fine Sand from Water.—If "X. Y. Z." will proceed as follows, he will be able to keep any sand from entering his filter-bed:—



Let A be the filter-bed; B, pipe to convey the water into the filter-bed; C C, a water-tight cistern with a strong partition in the centre; D, pipe or channel bringing the water from the spring; E E, branches to turn the water alternately to the right or left

Our Office Table.

A GENERAL meeting of the Northern Architectural Association was held at Newcastle-on-Tyne, when the President, Mr. Thomas Oliver, delivered an address on "Newcastle in the Future." Mr. Oliver was afterwards, in the name of the members of the association, presented with a handsome gold watch, suitably inscribed, in appreciation of the valuable services rendered by him as honorary secretary to the association during a period of 20 years.

A TUNNEL six and four-fifths miles long—36,510 feet—is being built underground in Baltimore, for over four-fifths of the distance through hard gneiss and granite. It will be the longest tunnel in the country, and there will be only two larger in the world—the Mont Cenis, which is eight miles in length, and the St. Gothard, now in progress of construction, and which is to be nine and one-quarter miles. The tunnel is a circle of 12 feet in diameter, and extends from the Gunpowder river, about eight miles from the city, to Lake Montebello—the distributing reservoir—near the Hartford turnpike, about one mile and a-half from the city, the direction being 26° west of south. This tunnel will conduct the water from the Gunpowder river to Lake Montebello. Thence a conduit, 4,120 feet long, known as the Clifton Tunnel, from the fact that it passes under a portion of Clifton Park, conducts the water to a point just south of the Hartford road, where it enters six mains, each 4 feet in diameter, which convey the water to the city, a distance of 1,900 feet. The country along the line of the works is hilly, and the tunnel varies in depth below the surface from 67 to 353 feet. There are 15 shafts in the main tunnel, the deepest extending 294 feet below the surface. The work of the tunneling is all done by hand, it being cheaper than the machine work in a drift of such narrow diameter.

A VERY extensive plan of street improvements is occupying the attention of the Liverpool Corporation, and it is also proposed to bring the tramway system into general use in all parts of the town. Tramways have been strongly opposed by a portion of the inhabitants, who complained that the lines laid down in the streets tended to wrench off carriage wheels. Improved lines have been laid down, however, which do not involve this difficulty, and it is probable that the proposition for the extension of the tramway scheme will be carried. The borough engineer has reported that the street improvements determined upon by the Corporation will involve a net cost of £1,073,845. The acquisition of land is set down at £1,196,278, and the cost of works £137,862; but a sum of £260,295 is deducted as the estimated value of surplus land. The principal improvement is the construction of a high level road from the plateau of the Public Library in William Brown-street to Dale-street, the cost of which is estimated at more than a quarter of a million sterling.

Two large schools erected for the Pudsey School Board were opened on Monday. Both schools are in the Gothic style. One is arranged to accommodate 600 children, and the other 400 children. The cost of the Richardshaw-lane school, exclusive of the site, is £4,535, and that of the Laisterdyke school £2,952.

The foundation stone of the new Church of the Holy Rood, Crofton, Hants, was laid on Thursday week. The style will be Early English. The church will consist of nave and two side aisles, with chancel and organ chamber and vestries. It will be built of flint, with Bath stone dressings, and will cost when completed about £6,000. The contractors are Messrs. Plummer and Gamblin, Fareham; architect, Mr. Goodchild, Adelphi.

SLATES — SLATES — SLATES. — Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each; 28ft., 2d. per foot; 35ft., 2d. per foot.

DEALS—BATTENS—FLOORING. — Send for price list.—R. MAY & SON, Timber and Slate Merchants, Acorn Wharf, Old Kent-road, London, S.E.

Trade News.

WAGES MOVEMENT.

LONDON.—At a meeting of labourers employed in the building trade, held on Saturday night, it was stated that of the 1,200 men thrown out of employment by the masons' strike, only twenty-four were out of work, and it was resolved that it was unnecessary to make any further collections on their behalf. A resolution was also unanimously adopted, empowering the general secretary to request the Master Builders' Association to kindly take into their consideration the claims of the labourers for an increase of 1d. an hour. This increase, the resolution stated, "is urgently needed on account of the loss sustained by them by the operation of the Education Act, which deprived them of a few shillings earned weekly by the children, and which went to supplement their small and precarious wages—a fact which is as well known to the masters as it is to the labourers by bitter experience."

MANCHESTER.—At a crowded meeting of the carpenters and joiners on strike, held on Monday evening, after considerable discussion the following resolution was adopted unanimously:—"That this meeting considers it advisable to continue the strike until our requests be complied with, as it would be an injustice to the 180 employers who have already paid the advance to make any concession whatever."

NEWTON ABBOT.—The strike between the masons and master builders of Newton Abbot, after extending over three months, has resulted in a compromise, the masons receiving 6d. per hour, and all sub-contracts to be abolished.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—[ADVT.]

Holloway's purifying, cooling, and strengthening Pills are admirably adapted for all irregularities of the human body, and should be at once resorted to when the stomach is disordered, the liver deranged, the kidneys inactive, the bowels torpid, or the brain clouded. All these and greater inconveniences will yield to this medicine.

TENDERS.

ANNOVER.—For two semi-detached cottages for Hy. Dowling, Esq. :—
Beale (accepted) £160

ATHERSTONE.—Warehouse for Messrs. Bourne and Sale. Mr. William B. Tomlinson, Coventry and Nuneaton, architect :—

Norton £1,995 0 0
Fox Bros. 1,973 0 0
Spencer (accepted) 1,888 10 0

BRISTOL.—For warehouse in Fairfax-street, Bristol. Mr. H. Williams, architect; quantities supplied :—

Kidner, Bristol	...	...	...	£5,696
Trout, London	...	...	...	4,525
Kraus, Bristol	...	...	...	4,486
Baker and Sons, Bristol	...	...	...	4,380
Thompson, Bristol	...	...	...	4,372
Howell, Bristol	...	...	...	4,215
Heal, Bristol	...	...	...	4,100
Brock and Bruce, Bristol	...	...	...	3,975
Stevens and Gardner, Bristol	...	...	...	3,950
Bevan and Sons, Bristol	...	...	...	3,944
Stamp, Phillips, and Jeffries, Bristol	...	...	...	3,899
Stephens and Bastow, Bristol	...	...	...	3,894
Veals, Bristol	...	...	...	3,845
Davies, Bristol	...	...	...	3,845
Crocker, Bristol	...	...	...	3,508
White, Swansea	...	...	...	3,500

CHESTERFIELD.—For the erection of a lodging house for workmen at Chesterfield. Mr. Geo. R. Isborn, architect; quantities supplied :—

	For the buildings having 4 floors.	For the buildings having 3 floors only.
Marriott	£5,223 19 10	£4,404 2 2
Bell and Son	5,100 0 0	4,500 0 0
Wood, Geo., & Son	5,000 0 0	4,265 0 0
Bakewell, Thos.	4,850 0 0	4,107 0 0
Hodson and Paeon	4,614 0 0	3,968 0 0
Dennett, R., & Co.	4,610 0 0	3,933 0 0
Wood, John	4,570 0 0	3,890 0 0
Hind, Enoch	4,437 0 0	3,817 0 0
Clubley & Shingfellow	4,352 0 0	3,702 0 0
Stevens, Robt.	4,344 0 0	3,656 0 0
Wood, E. (accepted)	4,300 0 0	3,650 0 0

DORRING.—For offices for the Dorking Gas Company. Messrs. Fredk. Bargman and H. S. Benison, architects :—

Putney	£677 15 0
Haselgrave	667 12 0
Goddard and Sons	667 10 0
Edser	619 10 0
English	561 3 3
Hamblin Bros.	554 0 0
Lynn and Dudley	498 0 0
Shearburn	486 5 0

FOREST HILL.—For new road and sewers at Forest Hill for G. T. Congreve, Esq. Mr. E. Witts, surveyor :—

Cuxths and Ross	£1,065
Rutty	950
Woodham Bros.	840
Pearce	820
Harris (accepted)	794

hand; at F let there be a valve or shuttle, as occasion may require. The cistern should be 12ft. long, and each cell 6ft. wide, and 3ft. or 4ft. deep, the water to be admitted at the top. The sand will settle to the bottom of the cistern, and when one side is full, all he will have to do is to alter the valve or shuttle at F, and turn the water to the other side of the cistern, and throw out the sand on the other side. Each chamber should have an outlet 6in. below the outlets, B, and when the sand reaches this bottom outlet the water should be turned to the other side. Use the corner outlet to let off the water that remains on the top of the sand. I have no doubt he will find this an effectual cure, and the cost small.—AQUA.

[5112.]—House Ventilation.—A correspondent ("R. M. D.") inquires in your last issue if any one who has had experience can advise him as to ventilating the rooms of a rectory house that he is about building. The question of ventilation is a vexed one—some persons advocating the admission of cold air from the floor line, and its emission from that of the ceiling; others *vice versa*. If your correspondent wishes for an effective and economical mode of accomplishing his purpose, I would simply refer him to Messrs. Limetre and Bennett, of 107, Cannon-street, E.C., and to see for himself their plan as carried out at some of the banks, insurance offices, clubs, and numerous private offices and buildings. As an architect who has written much on this question, and dealt rather largely in it, I can safely say that rooms thus dealt with possess all that sanitary laws require.—F.R.I.B.A.

[5112.]—House Ventilation.—I should recommend "R. M. D." to construct flues, say, 4½ in. square, in the walls, through which fresh air may be brought to every floor, the inlets being about 6ft. high, or lower if the air can be warmed by being made to pass round a stove or fireplace. A simple plan is to form flues to enter a warm air chamber at the back of a fireplace. Besides these inlet flues the chimney or smoke flues should have a ventilator or Arnott's valve at the ceiling level, so that the foul air may escape. If the walls are built with a hollow there would be no need for inlet flues, as the openings at any point could be made and fitted with valves or gratings. But no ventilation is complete unless provision is made for fresh air at or near the floor level, besides a foul-air outlet into the smoke-flue or otherwise.—ARCHITECTUS.

[5113.]—Contract Plans.—By a recent decision an architect is obliged to give up the contract drawings if called upon to do so, though the custom of the profession is in favour of the architect's retention of the plans, the idea being that they are simply his instruments in carrying out his design. An architect cannot refuse to show the drawings.—ARCHITECTUS.

CHIPS.

On Saturday afternoon Cardinal Manning blessed the corner stone of St. Bridget's new Roman Catholic Schools, Mill-street, Bradford, near Manchester. The cost of the buildings will be about £2,000. Mr. J. L. Ward, of Upper Brook-street, Manchester, is the architect and builder. The warming and ventilating throughout is by means of Shillito and Shorland's Patent Manchester School Grates.

A number of workmen are engaged in laying mains in the cloisters and near the north side of St. George's Chapel, Windsor Castle, in order to provide a sufficient supply of water in case of fire. The new system has been connected with the service on the Castle Hill, which is supplied with water from Cranbourne; the hydrants will, it is understood, be erected in the cloisters and about St. George's Chapel. The upper part of the Castle has an excellent water supply, which, on more than one occasion, has proved of great service in assisting to extinguish fires in Windsor near the palace boundaries.

A new golf club-house, at Elie, N.B., was opened on Wednesday week. Mr. Currie, of Elie, was the architect, and the building, which is on the Italian style, has cost £1,000.

A new Methodist chapel was opened last week at Gosforth. The building has cost £5,000, and will seat 750 people. Mr. Oswald, of Newcastle, is the architect.

A new theatre, at Leicester, was opened last night. Mr. C. J. Phipps is the architect, and Mr. Keelett the builder, the amount of the contract being £10,825. Mr. Frank Stripling is the clerk of the works. The building accommodates 2,550 people.

On Saturday the corner stones of a new chapel, belonging to the Methodist New Connexion, were laid at Newton Heath. The style will be Gothic, from designs by Mr. Gregory Gill, architect, Staly-bridge. The cost will be £3,300.

A new Methodist chapel is about to be erected at Mullion, Cornwall. Mr. J. Hicks, of Redruth, is the architect. The building will accommodate 350 people, at a cost of £900.

In the description of Shrewsbury in our last issue, in line 29 from foot of p. 197, mention is made of the "wooden" English Bridge; it should read "narrow."

HASTINGS.—For public-house, Whitefriars-road, West-hill. Messrs. Jeffrey and Skiller, architects:—

Table with 3 columns: Item, Price, Total. Includes Parks, Vidler, Hurman, Woodall.

HASTINGS.—For house and shop in Mann-street, for Mr. John Smith. Messrs. Jeffrey and Skiller, architects:—

Table with 3 columns: Item, Price, Total. Includes Hurman, Vidler, Picknell.

HASTINGS.—For converting warehouse into stables, &c., at Cornwallis-street. Mr. W. H. Murray, architect:—

Table with 3 columns: Item, Price, Total. Includes Vidler, Eldridge.

HASTINGS.—For parsonage at Kites-nest. Mr. H. Carpenter, architect:—

Table with 3 columns: Item, Price, Total. Includes Howell and Son, Vidler, Eldridge, Coussens, Womersley, Hurman.

HATHERDEN, ANDOVER.—For sundry repairs and warming Hatherden church:—

Table with 3 columns: Item, Price, Total. Includes Beale (accepted).

KINGSWOOD.—For water supply for the parish of Kingswood, for the Dursley Rural Sanitary Authority. Mr. James Payne Curtis, C.E.:—

Table with 3 columns: Item, Price, Total. Includes Bloodworth, C., Mark, Terret Bros., Fountain and Boyd, Simmonds, A., Williams, A. G., Munro, Wm. (accepted).

LONDON.—For building new offices at 118, Bishopsgate-street, for H. Page, Esq. Mr. H. H. Collins, 61, Old Broad-street, E.C., architect; quantities supplied by Messrs. Batstone Bros.:—

Table with 3 columns: Item, Price, Total. Includes Hayward, Mark, Kirk and Randall, Brown and Robinson, Ashby Bros., Abraham, Ashby and Horner, Waldram and Co., Scrivener and White, Nightingale, Bayes Bros. and Allen, Brass, Newman and Mann, Merritt and Ashby.

LONDON.—For alterations, additions, and decorative works for H. Burkin Young, Esq., at 85, Cornwall-gate, Queen's-gate. Mr. H. H. Collins, 61, Old Broad-street, E.C., architect:—

Table with 3 columns: Item, Price, Total. Includes McIntosh, J., New window, New attic.

Table with 3 columns: Item, Price, Total. Includes Battam and Heywood, New window, New story.

Table with 3 columns: Item, Price, Total. Includes Marolda, New window, New story.

Table with 3 columns: Item, Price, Total. Includes Vernal and Griffiths, New window, New roof.

Table with 3 columns: Item, Price, Total. Includes Poole (accepted), New window, New floor.

LONDON.—For rebuilding No. 64, High Holborn. Mr. C. Herbert Shoppee, architect:—

Table with 3 columns: Item, Price, Total. Includes Drew, Lawrence, Braid and Co., Pracher and Co., Bishop, Langmead and Way, Newman and Mann, Nightingale, Axford (accepted).

LONDON.—For fittings to Ship public-house, Hackney. Mr. G. T. Holt, architect:—

Table with 3 columns: Item, Price, Total. Includes Rogers, Cocks, Steel Bros. (accepted).

LONDON.—For alterations and repairs at Trinity schools, Bow. Messrs. Lamb and Church, architects:—

Table with 3 columns: Item, Price, Total. Includes Woods, Shurmer, Steel Bros. (accepted).

LONDON.—For alterations to White Hart public-house, Cambridge-road, E. Mr. G. T. Holt, architect:—

Table with 3 columns: Item, Price, Total. Includes Steel Bros., Andrews, Huntley (accepted).

LONDON.—For the erection of shops and offices corner of London-wall and Moorgate-street, E.C. Mr. Wm. Bradbear, 23, Finsbury-circus, architect; quantities by Messrs. Lamb and Church:—

Table with 3 columns: Item, Price, Total. Includes Saby and Son, Rider and Son, Sewell and Son, Higgs and Hill, Ashby Bros., Dove Bros., Downs, W., and Co., Perry and Co., Merritt and Ashby, Newman and Mann.

LIVERPOOL.—For Primitive Methodist church and schools, Princes-road. Mr. Owens, Breck-road, architect:—

Table with 3 columns: Item, Price, Total. Includes Webster, Thornton and Sons, Ray, Hall and Owen, Urmason, Chappell, Black and Soul, Nicholson and Ayre.

NOTTING-HILL.—For the erection of five cottages. Mr. J. Randall Vining, architect:—

Table with 3 columns: Item, Price, Total. Includes Beach Bros., Thompson and Jordan (accepted), Gooding, M., [N.B.—This list appeared incorrectly last week.]

SALISBURY.—For new bank at Salisbury. Mr. H. Hall, architect; quantities supplied:—

Table with 3 columns: Item, Price, Total. Includes Krauss, Bristol, Sanders, Young, Stephens and Bastov, Bristol, Crook, Hall and Sons, Sawkins.

SHOREHAM.—For the erection of Wesleyan chapel at Shoreham, Kent. Mr. Charles Bell, architect; quantities by Mr. Henry Lovegrove:—

Table with 3 columns: Item, Price, Total. Includes Wiltshire, Willis, Thompson.

TOTTENHAM.—For alterations at the Seven Sisters Tavern, Page Green, Tottenham, for Mr. Oddy. Mr. Edward Brown, architect:—

Table with 3 columns: Item, Price, Total. Includes Marr, R., Linzell and Son (accepted), Chapman, Simmons.

TUNBRIDGE WELLS.—The directors of the Tunbridge Wells Gas Company, at their meeting on Monday evening, the 27th of last month, opened the following tenders for the erection of a retort-house, coal store, clock tower, meter-proving room, station, meter-house, photometer and experiment rooms, and other buildings, exclusive of the ironwork of the roofs of the several buildings, as designed for the company by Mr. R. P. Spice, of Parliament-street, and accepted the lowest:—

Table with 3 columns: Item, Price, Total. Includes Willicombe and Oakley, Tunbridge Wells, Trimm, R. C., Hersham, Surrey, Perigoe, J., Tunbridge Wells, Punnett, J., and Sons, Tunbridge, Potter, Henry, Stepney.

UGBOROUGH.—Tenders for building coach-house and harness-room at Kingsbridge-road Hotel, Ugborough, Devon:—

Table with 3 columns: Item, Price, Total. Includes Lethbridge, A. R., Dacket, Steer, Pellow, Crespin, Laphorn and Goad, Veal (accepted), Consins, White, Onsworth.

LONDON.—Building dwelling-house on Woodford Hall Estate for Mr. F. Lovell. Mr. E. Baxter, architect:—

Table with 3 columns: Item, Price, Total. Includes Steel Bros. (accepted).

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most agreeable, and the preventive of FEVERS, BILIOUSNESS, SMALL-POX, SKIN DISEASES, and many other spring and summer ailments. Sold by chemists throughout the world and the water, 113, Holborn Hill. [ADVT.]

SOCIAL SCIENCE CONGRESS.

ABERDEEN, September 19th to 26th. President: The EARL of ABERDEEN.—In addition to the business of the Jurisprudence and Education Departments the following Special Questions will be discussed in the H. H. Economy, and Art Sections.—What is the best mode of providing suitable accommodation for the Labouring Classes, and of utilising Open Spaces in Towns? How can the Sanitary Condition of the population engaged in the Coast Fisheries of Scotland and other parts of the United Kingdom be improved? The present state of House Accommodation in Rural Districts. Can its evils be remedied? What are the causes of the present General Depression of Trade all over the world? What are the social effects of Trade Unions, Strikes, and Lock-outs? What are the results of the Administration of the Poor Laws in Scotland as compared with those in other parts of the United Kingdom? What principles should govern the Restoration of Ancient Buildings, or their Preservation as Memorials? Are Art Competitions favourable or unfavourable to Art Progress? How can Art be best introduced into the Houses of Persons of Limited Income? Papers volunteered on other subjects will be read and discussed.—For particulars apply to the SECRETARY, 1, Adam-ct., Adelphi; or City Buildings, Aberdeen.

BUILDERS' BENEVOLENT INSTITUTION.

The THIRTIETH ANNUAL DINNER IN AID OF THE FUNDS of this Charity will be held at WILLIS'S ROOMS, King-street, St. James's, on THURSDAY, the 28th November next, WILLIAM HIGGS, Esq., President, in the Chair. Gentlemen desirous of promoting the interests of the Institution by becoming Stewards, will be pleased to forward their names to the Treasurer, GEORGE PLUCKNETT, Esq., 233 Gray's-inn-road, W.C., or to the Secretary at the Office, 4, Vernon-place, Bloomsbury-square, W.C. R. A. BRUTTON, Major-Sec.

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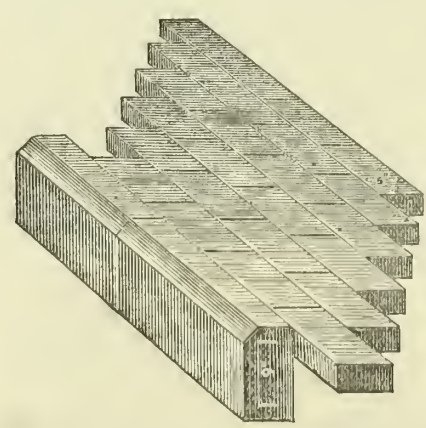
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THE BUILDING NEWS.

LONDON, FRIDAY, SEPT. 14, 1877.

THE STUDY OF DETAIL IN ARCHITECTURE.

WE have in one or two previous articles referred to the want of method in our architecture, and have noticed the admirable remarks of Viollet-le-Duc under this head. In his tenth lecture that far-seeing critic asks how it is our architects are destitute of invention when their studios are loaded with details and their heads are surfeited with materials? As we have observed, the present age seems to be one of accumulation, investigation, and analysis; though we are afraid the latter faculty is poorly represented. Our artists and sketchers bring home with them from their holiday tours an abundance of artistic wealth in the form of scraps and details; but few of them ever attempt to classify, compare, and arrange their materials. The same may be said of our archæologists. They search and investigate, adding to their stores of past data, but seldom or never attempt to generalise and arrange. The present age is unquestionably one of individual research and collection, but there is a sad want of method. Even in scientific research the same spirit to investigate minutely and to experimentalise is manifest. The fact is, there are fewer generalisers than detailers; the broad sketch and general outline of the true artist is neglected in the multitudinous efforts at little things, which perplex and bewilder. When the landscapist takes a view he sweeps his eye over the prospect before him, or he partly closes it, with the object of discerning the general forms and colours, and of excluding the distracting details which crowd upon his foreground. In this way only the true value of each little thing is relatively determined and sketched. Perhaps a couple of lines may be sufficient to express the meaning, where a dozen would have been ill-spent, and have rendered after all a confused impression. It is this knack of catching at a glimpse any detail, and placing it in its proper relation to the rest, that makes the true artist, as it does the discerning critic or philosopher. But somehow the architect likes to pour his admiration over some little thing that gives him present interest. Details and mouldings are copied without reference to their height, situation, importance, or lights and shadow. We look in vain through huge folios of sketches, admirably depicted, and which cost their authors days of labour, for a *motif*, or any object in bringing together the *olla podrida* they have done. The modern architect, of average knowledge, takes them and combines the details or features of two buildings, perhaps separated a distance of a few hundred miles, and designed for two totally different climates and uses. The bases of design, the material, and everything the original architects had in view are lost; but by the whim of a modern designer they are juxtaposed. What can we expect from such an idiotic proceeding than a diseased art—one, as it has been aptly said, “dying in the midst of prosperity, dying of excesses and a debilitating régime.” Would not such a procedure in nature produce sterility and disease? and can we expect any vitality from a system which so confuses the aim of art? There is no wonder our architecture abounds with hybrids. It may be said, perhaps, the discriminative architect uses his materials more judiciously; but we ask, has he a method of use? Is he adopting a principle in his selection, for if he is not he is blundering.

The eye may be a skilled guide in select-

ing forms that harmonise together, and the educated architect may depend mainly on his visual detection of suitability and adaptation; but, unless each form has passed the crucial mental test, the result cannot have the freshness of a work thought out by the artist's mind. The value of applying a vigorous principle to those forms we accept at second-hand is becoming daily more evident. The Classicists of the last century selected forms, but troubled little to understand the principle—hence the decay of their system; but let it not be said in our infatuated revivals we are repeating the mistake a second time. It is but too clear that we are. We already discern this in the two schools of “Queen Anne,” now somewhat in vogue. One is essentially a reproduction of details; the other, the resuscitation of the forms which lend themselves readily to our ideas of domesticity and picturesqueness. Our ideas, it is true, may be far-fetched—a sentimental fondness for old things; but if we conscientiously endeavour to understand the principle of the details and features we adopt, we are, at least, honestly employing them. “The more abundant the stores of our knowledge,” says Le Duc, “the more strength and rectitude of judgment is needed to enable us to make a productive use of them, and the more necessary is it to recur to rigorous principles.” As that author says, we must be true in respect of the programme, and true in respect of the constructive processes. The meaning of the former is, that the conditions and requirements of the building must be satisfied; of the latter, that the properties of the materials and the mode of combining them must be consulted. The Greeks, the Romans, and the mediævalists, each displayed these principles of action in their structures. As Viollet-le-Duc shows, the moulded forms of Roman architecture, due to the use of concrete, with which the walls and piers were filled in, were boldly rejected by the mediæval builders for forms that arose out of appliances necessary to create the active resistances required in the new structures. But we in the 19th century reproduce. If we copy honestly—that is, with discretion, knowing why such and such a form was chosen, and reproduce it for the same reason—we do well; but if we were to originate our own forms, or improve on those bequeathed to us by experience we should do better still.

Now, the same writer suggests that the principles that Descartes laid down for his own investigations should be applied to our knowledge of old work. The first was, “never to receive anything as true which was not clearly seen to be so”—in fact, to avoid prepossession. Now, if our students were to bear in mind this golden maxim, a great deal of rubbish would be discarded as useless, and many a page of unnecessary detail would never be given to the world. At present we are literally surfeited with examples—with illustrations without a meaning or aim; we cannot rise above a tradition. It has been observed more than once that the architectural profession is not addicted to study or investigation; its members are negligent in matters concerning public interest, and they are certainly not versatile readers. If they were so they would probably take a very different view of architecture. The modern training of the young architect is one that puts before him pictures instead of problems, a sketch or scrap-book rather than the methods of building or the materials he is called upon to design in. The demand for pictorial literature has been consequently incommensurate, and the public has some pretext for the oft-repeated remark that the architect can “only draw pretty pictures,” and that if we want buildings we must employ

Government officials or matter-of-fact builders. The second maxim of Descartes is to “divide each problem investigated into as many portions as possible, or as required for a complete solution.” The value of this precept instructs us in a most fundamental principle—namely, the necessity of drawing clear distinctions between features and details destined for different purposes or of general and special meaning. Architects are constantly confusing themselves in applying to some portion of a building demanding a specific mode of treatment a general rule founded on immutable laws of proportion. Thus the laws of proportion depend on certain geometrical principles which it would be ridiculous to apply generally without gross error. A certain moulding may be suited as a cornice, but not as a base member—small materials may be well adapted for an interior wall, but not for a portico or external façade in which monolithic pieces are required. Indeed, it is on the clear distinction of different functions of a building, and their reasonable treatment and definition, that the success of any work depends. How very frequently we see this rule violated in ornamentation, where perhaps a principle admirably adapted for a piece of pure ornament in one position is applied to another, the *motif* and purpose of which may be very opposite. By following this division of each problem it will be perceived that the same principle may produce very different appearances under varying conditions and materials. The third rule “is to follow a certain order in one's thoughts, beginning with the simplest objects and ascending by degrees to the knowledge of the most composite.” The value of this precept we have very often expatiated upon in these pages; it leads to a classification and arrangement of our principles and materials. Thus Viollet-le-Duc reminds us of three classes of architecture—wooden, concrete, and the architecture of jointed stones carried to perfection by the Greeks, the two last of which led to the composite system of the middle ages. The last precept of Descartes is to make complete enumerations and inquiries in every field of study, or the value of collecting the greatest possible amount of data so that we may profit by what has been done. That we have already done this in some measure may be admitted, but without classification and method such nomenclature and data are more perplexing than useful. Again, the instruction of the artists of the middle ages, that the Gothicist so admires, was precisely that propounded by Roger Bacon in his observations directed against the Aristotelian school in his time, the sum and substance of which is the necessity of experimental verification before accepting any conclusion. Do those who follow mediæval art take these principles to guide them? After all, this should be the test of their allegiance to the past. If we were to apply the above rules the whole of our architecture would be revolutionised; we should, in truth, be better followers of our ancestors than we affect to be now, for we should be entering into the spirit of their thoughts and arts, whereas at present we are only repeating their utterances, without being influenced by their aims and necessities. It is to be feared the commercial spirit has operated to check the thorough study of art, and to fill the markets with products and imitations rather than with the products of skill.

“QUEEN ANNE” OUT WEST.

FEW parts of the metropolis have more interest to the student of the Hanoverian epoch of our history than that bounded by Piccadilly on the south. Admirers of seventeenth century art and manners are wont to recal the time when

this district was more or less open; when great mansions, such as those of Burlington, Clarendon, and Devonshire Houses became the haunt of men famous in politics, literature, and art; and when Lord Burlington revived a taste for classic architecture by publishing the designs of Inigo Jones and Palladio, and by building the celebrated entrance and colonnade to his house in Piccadilly, long the home of art and artists. Pope has even acknowledged the taste of this patron of the art of the period, in the well-known line—

Who paints like Bathurst, and who builds like Boyle.

Piccadilly itself is a thoroughfare full of historic reminiscences. In 1642 the west end was entrenched to stop the advance of Charles I. and his army, and its very course is marked by buildings associated with great names in past history. Devonshire House, built in 1737, was celebrated for its fashion and literary entertainments, and as the head-quarters of the Whig party, an honour it divided with Holland House; it was designed by Kent, in the heavy Classic of his day, with a centre and two wings, and is enriched by some of the choicest works of the great masters. Bath House contains a splendid collection of the works of the Dutch and Flemish painters, and was the seat of Pulteney, Earl of Bath. Grafton House, Egremont House, Coventry House (now St. James's Club), Gloucester House, are all noteworthy buildings that have stamped the neighbourhood by their associations. During the 18th century Piccadilly was mainly composed of these large mansions, with houses of one or two stories; and even after all the changes time has effected it still retains traces of its original character as the great "coaching" thoroughfare. But our main purpose now is to trace the tide of modern architecture, and especially to note the efforts to revive the style of the 17th century that have recently been made in the neighbourhood.

Commencing on the north side from Old Bond-street, through New Bond-street, taking a westerly direction down Oxford-street, and again returning southward down Audley-street, we make a circuit of a locality in which modern "Queen Anne" has been treated by some of the leading followers of that school. Let us casually jot down the impressions these works have made upon us. At the Piccadilly end of Old Bond-street we are first struck with a new deep-red brick building of exquisite cut brickwork on the left-hand side—Messrs. Agnew's premises, called the Old Bond-street Galleries. The style seems at least admirably suited to a street which dates from the latter end of the 17th century, and which was first inhabited by the nobility and gentry. Even now it is a region of fashion, and one of the chief emporia of goldsmiths and virtuosi. No wonder, then, the architects of Messrs. Agnew's new premises—Mr. E. Salomons and Mr. R. S. Wornum—have adopted a style associated in every respect with the artistic predilections of the locality. A departure from the straight frontage has been made, the line of front being broken by a flat bay of segmental plan on one side. This is set between two pilasters of cut red brick, the lower story being occupied by a segmental pedimented porch of slight projection. The bay is corbelled from the front above the porch, between them being two circular lights, which are rather out of place. The flat windows are pleasingly united with brick architraves, and have pedimental heads at the top, formed of brickwork, the front being surmounted over cornice by a rather weak and attenuated row of balusters of wood painted. The general impression is neat, the brickwork is executed with extreme care, and the moulded and rubbed and carved portions are exceedingly well

worked; but if the front had been double the size and height, the scale of the details would have been more in consonance with the design. The fact is, the front strikes us as being small-featured, or as if its authors had given us a finely-executed miniature copy of an old building. We shall give illustrations in an early number. Passing on we note a house with a compo front bearing a tablet with the record that Nelson lived here in 1797; and we are incidentally reminded that many illustrious names are connected with Old and New Bond streets, among them being Laurence Sterne, who, according to Mr. Cunningham, died at No. 41, on the west side; Boswell had lodgings here, and his literary and other acquaintances often visited him; Sir Thomas Lawrence lived here; the Clifford-street Club held its meetings in this street, and various incidents are mentioned by Cunningham and other writers in connection with it. At the corner of Brook-street, Mr. R. W. Edis, F.S.A., has erected a very picturesque building in a style verging on Queen Anne, for Mr. George Donaldson. The design, which we illustrated in our last volume (p. 88), has some points of merit. The shop front is arched, and is pleasingly divided into one wide and two narrow bays by pilasters of red brick and stone, between which is an oak frame, that has the merit of giving large sheets for the display of objects of art, with a filling-in of painted glass in the spandrels. These pilasters are carried up the front towards Bond-street, as brick piers and figure subjects in tiles have been introduced in the pilasters. The brick mouldings are simple and effective. The upper story is hung with ornamental tiles, and forms a quaint gabled structure with a tiled roof, the meaning and value of which architecturally must be disputed, and we might indeed imagine it to be a subsequent addition. There is, at least, a lack of agreement between it and the lower part of the building, but Mr. Edis has given us a little of the architectural nonchalance or Quixotism of the school, and we suppose we must not find fault. The bay front towards Brook-street is pleasing. No. 94, New Bond-street, presents us with a contrast in the shape of a plasterer's front in a thorough gimerack style of Classic. We must not omit to notice that Mr. T. H. Watson and Mr. F. H. Collins are here building a clever adaptation of Queen Anne in the new Clifford Chambers, exhibited at the Royal Academy and illustrated this week. The oriels (iron?), the pediments, and the chimneys indicate a marked refinement of the style that is pleasing to witness. Turning into Oxford-street we are struck with a palatial pile of buildings on the north side, the premises of Marshall and Snelgrove, now being extended along the Oxford-street frontage in a florid semi-rococo style of Renaissance, with the usual pavilion roofs. We note, in passing, the very awkward arrangement of the roofing and chimneys over the circular corner. The extension is, we understand, being carried out under Mr. Hansard, architect, of Argyll-place, and will complete the block to Vere-street.

Continuing our walk westward along Oxford-street, we notice that in Queen-street, behind Mr. Blomfield's clever octagon church, St. Saviour's, is a five-storied red brick building, in connection with the school, carried out in a sensible style, with a very nicely treated gabled summit and chimney-stack, and exhibiting some good moulded brickwork in the cornice. At the top of North Audley-street, at its junction with Oxford-street, is an extensive block of shops, also in the fashionable red-brick style, though with a decided mixture of Elizabethan features. We illustrated this corner block of premises in our number for

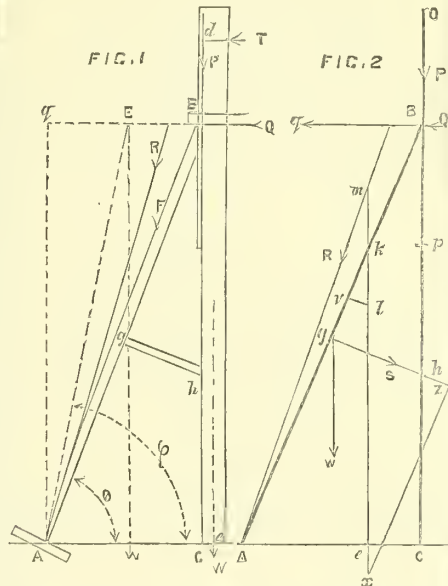
July 13th last (page 28), and gave some particulars. Mr. J. T. Wimperis, of Sackville-street, was the architect. The executed building is of red bricks and terracotta, with which Mansfield stone has been judiciously blended in the shop-fronts. The architect has succeeded in giving a modern stamp to his building, the upper portion of which is broken by brick piers, with bay-windows at the angles—perhaps a little too cut up—the roof being relieved by a series of hipped dormers, with three large gabled dormers at the corner; the roof is curved and tiled, and at the corner a pyramidal spirelet emphasises the return; the latter feature, however, is not so successful, and has a rather crowded effect. The sandstone piers of front do not harmonise with the superstructure, and the carving to the corner entrance pilasters, with their large corbels, is coarse. The whole shop-front, in fact, looks rather poor and hackneyed, and scarcely brings down the upper treatment. The work, nevertheless, is a step in the right direction, and we should like to see a few of the dingy and commonplace premises in Oxford-street give place to buildings of similar style. There is just the fault here we are continually seeing committed—namely, a trifle too much effort is apparent. North and South Audley-streets are still rich with the remains of several old houses, dating from a century and a half ago; and in Grosvenor-square may be found examples of the genuine brick structures which graced the West-end of that period. Heavy and gloomy-looking, they are still veritable instances of massive building and grand interior arrangements. Before some of the old mansions, attached to the iron standards of the entrances, are still to be seen a remarkable relic of the era before the introduction of gas-lighting—namely, the iron link-extinguishers, which were employed when oil-lamps were used. Some of them with their standards are very interesting specimens of wrought-iron work, and we believe Grosvenor and Berkeley-squares were the last neighbourhoods which resisted the introduction of gas in our streets. In Grosvenor-square, that focus of fashion and hospitality, lived Beckford, the author of "Vathek," and the builder of Fonthill Abbey; many of the Ministers of George III. and IV. resided in and frequented the square, and for a long time it was a rendezvous of politicians, men of letters, and artists. The Earl of Harrowby resided at No. 29, and the Cato-street conspirators formed the plot—prevented on the very eve of the event—of assassinating the Cabinet Ministers of George IV., who had arranged to dine at that mansion. At the corner of Grosvenor-street is to be seen one of those genuine old houses of the "Queen Anne" style of which London has few left. It is surmounted by a massive and enriched cornice, and the first-floor windows are crowned by the characteristic cushion-friezed pediments, curved and triangular, while one sees the old-fashioned bold architraves of the cyma-reversa sort round all the windows. On the north side is another mansion with Ionic pilasters. But let us resume our notes of modern work. In South Audley-street are the well-known art-façade galleries of T. Goode and Co., the new premises were illustrated by us Vol. XXX., p. 466—the architects being Messrs. Ernest George and Peto. The building of red brick is a corner block, and is marked by three bold gables, in a style having mixed features of Flemish and Queen Anne. The gables and fronts are boldly treated, being divided into vertical panels by pilasters of brick. The circular corbel balconies are novel features, and the carved brick tympana of gables and the frieze panels are boldly executed. The chimney treatment on the return front

is piquant, though we hardly admire the general ensemble or groning of the masses at the corner, and the corner gable and roofing do not please us. The earving is the work of Mr. Harry Hems, of Exeter. We published details of this building in our 30th Vol. One point in the work as executed is the light pointing to the brick-work, which is finished with a wide struck joint. Unlike the work in Bond-street there is no gauged work; the result is that the brickwork has a lighter and rather coarse look, which, however, will get toned down in a few months. We are not sure whether this plan is not the best. We certainly think, however, the ebonised woodwork and granite shafts of the ground-floor are not at all in keeping with the superstructure—they appear the work of another taste and age. In Audley-square may be noticed a corner house, its flank facing the square, in a red-brick semi-Elizabethan style, with florid embellishments in brick, as the festoons in the gable. The loggia over the side porch is a noticeable feature. We believe Mr. T. H. Wyatt is the architect. South Audley-street has still some old gloomy brick fronts, and we might pass them by, never thinking that in Curzon House, now being bedecked with Renaissance insertions, in the shape of window-architraves, Queen Caroline, when she arrived from the Continent, before her ill-starred marriage with George IV., took up her residence; nor that the Duke of York and Earl Howe lived here. Another heavy house, at the corner of South-street, is attributed to Inigo Jones, and displays all the characteristic features of Queen Anne—massive cornices and window-sashes, small panes, &c. The most interesting object is a large, square, dingy white-brick house, with stone quoins and pedimental windows, crowned by a massive stone block cornice of the veritable 17th-century type, standing between South Audley and Curzon-streets, in that fashionable, though somewhat undefined, quarter known as "Mayfair." It is Chesterfield House, designed by Isaac Ware, the author of the "Treatise on Vaults," for the fourth Earl of Chesterfield. This stately mansion is still seen, with its green-slated roof, as if toned by time, surrounded by walls and gates. Its interior contains a grand double marble staircase and hall of two orders, a spacious library and music salon, some sumptuous mantel-pieces, and was once filled with choice works of art. The colonnade and garden front were choice of the kind; the former it is said, and the marble staircase, came from Canons, near Edgware, the residence of the Duke of Chandos. We have here at least one of the few remaining princely mansions of the last century. On the garden side, leading out of Curzon-street, a row of mansions, stone-fronted in a Renaissance dress, has been built, Mr. Wimperis being the architect. The panelled porches are over-carved, the salient feature of the front is an octagon bay, with an open loggia over, crowned at the summit by a domed roof, with heavy zinc and metal crestings. Three reception-rooms are provided on the ground floor of each of these mansions. In Curzon-street are to be seen some authentic Queen Anne and one or two new buildings in the style, besides Curzon Chapel, celebrated in the days of the first Georges for clandestine marriages, in which Keith defied the authority of Church and State. It is a heavy classic structure, and somewhat betrays the secret character of its original use. Passing these reminiscences of the morals and fashion of "Mayfair," we glance at Berkeley-square, another illustrious locality, built in 1698. Here are to be seen the works of Robert Adam and some choice bits of Queen Anne, the old iron link-extinguishers, and other remnants of the Regency. The

residence of the Earl of Powis has a stone front, its old iron railing and extinguishers still flanking the doorway. Near Manchester-square new houses are being built in the fashionable styles of the day, and we see works of T. H. Wyatt, R. W. Edis, Mr. Hesketh, and Messrs. John Norton and Masey. In Mandeville-place the latter gentlemen have designed a whole row of red brick mansions, relieved by stone dressings in a Renaissance style. Looking at them as we pass we are constrained to confess the repetition, inseparable from rows built by the mile, has given a rather flimsy look to the detail—the porches, dormers, parapets, and pavilion roofs lacking solidity of character. We find the smallest contain four reception-rooms and fifteen bed and dressing-rooms, and that the rents range from £375 upwards. The range forms a conspicuous frontage to this street.

THE MECHANICS OF SHORING.

THE erection of raking shores against old buildings is one of the commonest operations which have to be performed in connection with the work of the builder in large towns, their use being necessary, in order to prevent the walls from bulging and ultimately overturning, during the execution of certain works either upon the walls themselves, or on those of an adjacent building. A shore must, therefore, be of such strength, and so firmly fixed as to be able to counteract any force that would tend to overturn the wall against which it is placed; although it may seldom happen that its full power of resistance is brought into requisition. The shoring-up of buildings is usually left to the discretion of an experienced carpenter, but it is advisable that the architect should be acquainted with the mechanical principles involved in the construction of shores, and the nature of the forces which are brought into play.



We will suppose CB (Fig. 1) to represent the section of a wall that requires to be supported by the raking shore, AB, resting on the ground at A; AC being the ground line. Let there be a horizontal force, T, near the top of the wall at d, tending to overturn it about its bottom edge, C; the moment of this force, which measures its tendency to overturn the wall is—

$$T \times C d.$$

This is resisted by the weight of the wall (W) acting vertically at its centre, and having a moment about C of

$$W \times C e,$$

where Ce is generally half the thickness (t) of the wall. When these forces just

balance, the wall will be about to fall over, and the two moments will be equal; therefore—

$$T \times C d = W \times C e.$$

Now, in order to restore the wall to its original condition before the force T acted upon it, we must find some means of completely balancing this force, and this can be done by placing the shore, AB, against the wall at B, where it is firmly fixed against a plank or *walling piece* by means of a *needle* driven through both the plank and the wall; then by wedging up the base, A, a horizontal pressure, Q, is produced against the wall, such that the moment of Q about C balances that of T, or

$$Q \times B C = T \times C d = W \times C e$$

$$\therefore Q = \frac{W \times t}{2 B c} \dots \dots \dots (I)$$

In this formula, BC and t should be expressed in feet, W and Q in cwts. If the shore presses against B with a horizontal force, Q, there must also be a reaction of the wall against the shore equal and opposite to Q, so that Q represents a horizontal pressure against the head of the shore.

In order that the raking shore may have its full effect in counteracting the outward thrust or reaction, Q, it is essential that it should be prevented from sliding upwards by having a sufficient weight of wall above B, so that when the pressure, Q, comes upon it, the head of the needle may be kept immovable by means of the superincumbent load. If, therefore, the top of the shore is put very high up against the wall, it will be of little service in preventing it from being overturned. Let P be the vertical pressure necessary to resist a horizontal thrust outwards, equal to Q at B, and w the weight of the shore itself, acting at its centre, g. Then the sum of the moments of P and w, about A, the base of the shore, must balance the moment of Q about that point; therefore, we have—

$$Q \times A q = P \times A C + w \frac{A C}{2}$$

Bq being a horizontal line meeting a vertical from A at q. This equation may be put into the form—

$$Q \sin. \theta = (P + \frac{w}{2}) \cos. \theta.$$

θ being the angle, BAC, which the shore makes with the horizontal; and from this we obtain—

$$P = Q \tan. \theta - \frac{w}{2} \dots \dots \dots (II.)$$

So that when Q and w are known, and also the angle of inclination of the shore, we can find from this equation what vertical pressure, P, must be brought to bear on the head of the shore, in order to keep it in its place when the force, Q, tends to thrust it out. If the value of P is known beforehand, we can also find what amount of horizontal force (Q) it will be able to counteract; for

$$Q = \frac{2 P + w}{2 \tan. \theta} \dots \dots \dots (III.)$$

The horizontal and vertical forces at B being thus determined, we can find the compression (F) down the shore by resolving P and Q, in the direction of AB, and adding their resolved parts together; therefore, we have—

$$F = P \sin. \theta + Q \cos. \theta \dots \dots \dots (IV.)$$

In order to find whether the shore is strong enough to resist this compression, we must use the formula for a long pillar—namely,

$$L = a \times \frac{d^4}{l^2}.$$

Where a = 15.5 for fir, d is the diameter or width in inches, and l the length in feet; L being the safe load in cwt. that may be put on the pillar. As, however, the depth of a shore is usually double its width, we shall get twice the resistance, as obtained by the above formula, or F should not exceed—

ECONOMY OF MATERIAL IN BRIDGES—METHOD OF DETERMINING HEIGHTS OF TRUSS GIRDERS.

A paper read at the annual American Convention of Civil Engineers by Mr. Charles E. Emery, M.E., on the "Relative Quantities of Material in Bridges," calls for notice by its suggestive character. The author has investigated the proportions for every kind of girder bridge, with the object of ascertaining the best examples of each type so as to compare them with each other. It is clear that if we increase the height of a girder we decrease the moments of strain and also the chord strains and sections; but on the other hand we lengthen the web members or diagonals. This being so, Mr. Emery found it necessary to arrive at a proportion, or proper height, for each type of girder, to secure the minimum amount of material. To secure economy of material the angle of 45° has been regarded as the best for a diagonal in all cases, but other writers have shown that some modification of the angle should take place when circumstances vary. In Professor De Volson Wood's work on "Bridges and Roofs" it is shown that the vertical angle of the diagonals should decrease with the number of panels. Mr. C. Bender, in a paper on the application of the theory of continuous girders in bridge-building, recognised the fact that continuous girders need not be as high as ordinary girders; that for an ordinary girder of 200ft. span 27ft. is the assumed height, while for a continuous one 25ft. would do. Mr. Emery has followed this line of reasoning apparently, and has developed a method in which the weight of any girder "is expressed by an equation of which the minimum value may be obtained by a simple original method, and thereby the proper height of the girder and angle of diagonals be determined to secure the minimum weight or cost of material." This method is applicable to any system of loading, and takes account of the increased sections necessary for material in compression. The difference in cost per lb. of compression and tension material, and the comparative costs of different materials which may be necessitated in certain parts may be found, "when the height will be ascertained at which the relative amounts of the several kinds of material used will be so proportioned as to secure the minimum cost." We may endeavour here to explain the process the author adopts without the help of diagrams. The general result, the author says, appears to be "that the height of all forms of bridge, except the continuous girder, may be materially increased—as compared with ordinary practice—with a saving of material, even when provision is made to secure the stability of the longer struts, and counteract the effect of wind pressure. In fact, the ordinary heights of some forms of girder may be nearly or quite doubled without loss." Now, the plan developed by the author has no novelty about it; it is founded on the properties of the triangle, or the graphical method of representing strains by lines at right-angles to the direction of the members—a system that has been found of service in considering fluid pressures, and one that has often been explained in these pages. If we conceive a system of strains in a diagonal framed girder to be represented by lines at right angles to the members, a polygon is formed, the sides of which become equal, and are normal to, the real forces. The advantage of the lines being normal to the several forces is that the strain diagram so formed does not confuse the drawing of the bridge or truss. Let us suppose a right-angled triangle, the hypotenuse representing the diagonal

member of a bridge with a horizontal projection equal to the base, and a vertical projection equal to the perpendicular of the said triangle. Then we may represent the load acting vertically at either end of the diagonal by a horizontal line equal to the base, and the strain parallel to the diagonal by a line drawn at right angles to the hypotenuse, and having the same horizontal projection. The shearing strain through a vertical member can be represented by the horizontal line just drawn, while the thrust or strain of a horizontal member can be expressed by a vertical line, and the three lines thus drawn form a triangle of strains. Thus the first triangle may be regarded as the diagram of lengths, and the last the strain diagram, and, by multiplying the length of any member in the first diagram by the corresponding length or line in the strain diagram, an expression is obtained proportioned to the volume of the member from which the volume, weight, or cost may be arrived at by the use of a proper coefficient. Doubling these diagrams, which make a large triangle, about the perpendicular forms a rectangle, the sides of which are respectively equal to the longest sides of the two triangles. Now, calling the coefficient s , we have volume of the diagonal, or D equal $s(Dd)$ (d representing the corresponding line in strain diagram) equal s times area of rectangle. As the triangle = half the rectangle, and is = to half the product of D by d , hence the volume of D = the product of the coefficient into the base or horizontal projection multiplied by the perpendiculars of the two triangles or the diagonal of rectangle. Again, the volume of a vertical member is represented by the coefficient (s) multiplied into the horizontal and vertical projections of the length diagram; and similarly the volume of a horizontal member is the horizontal projection multiplied into the vertical of the strain triangle and by coefficient. The joint volumes of the vertical and horizontal members are thus equal to the sum of these two products. Thus the volumes of any number of diagonals having the same angle may be combined by providing the different terms of the perpendiculars with the coefficients representing the strains on each in terms of the weight, and summing them together. Thus the diagonal, vertical, and horizontal, subjected to strains necessary to hold a load in equilibrio, may be summed with other members under different strains, and the expressions for diagonals of different inclinations and those for horizontal and vertical members may be summed together by varying the coefficients of the corresponding rectangles. The volumes of diagonals, again, at any angle, and of the vertical and horizontal members, may be expressed in terms of the segments of the diagonal of the rectangle multiplied by a constant. Hence, as all the members of a girder must partake of one line or other of a triangle, and as the strains are dependent on the angles, it is evident that the volume of all the members of any type of girder may be expressed in one general form of equation, or $V = sW(mH + mt)$, in which m = the sign of summation of the coefficients H and t , or the segments or factors of the rectangle. The author next proceeds to show how the value of the coefficient s , or strain unit, may be found. It is shown that s , for a wrought-iron member under a strain of 10,000lb. per square inch of section equals the weight of wrought iron 1ft. long, with a section of one ten-thousandth of an inch, or 0.000,337,44lb. The result of this system shows that the best angle of diagonals and height of girder to secure economy in material varies with the length of bridge, the number of panels, the horizontal stretch of diagonals, &c., and very materially with the relative strains

put upon horizontal and vertical members in compression. Thus, in long truss bridges the preponderance of weights in the chords requires for economy that the vertical angles be less than 45° .

Let us take a few of the results of this system given in a tabulated form in Mr. Emery's paper. The first example given is a rudimentary arch of two beams or rafters, loaded at apex, with feet supported by the earth. Here the height for economy—considering that the thrust is met without cost by the earth—is equal to the panel length, or 1.000, and the proper angle of diagonal is 45° . When an iron instead of the earth chord is considered the economical height is increased. The table gives the height as 1.225 times the panel length, and $39^\circ 14'$ for the vertical angles. If a king-post be added the vertical angle returns to 45° . When, as in the case of a partition with floor beams, the chord is not regarded the economical height may be reduced to .58 of the panel length, the vertical angle of diagonals being from 50° to 60° . If we take the examples of long girders with one-panel lengths, the triangular systems of bracing require less height and weight than the quadrangular girders of three panels, as a queen-post roof, upright or suspended, has an economical height of from 1.157 to 1.055, the vertical angle and diagonals being from 40° to 43° . In four-panel girders—as the king and queen post truss—the proper height is put at 1.885 times the panel length; the Fink, or suspended beam, 1.700; in the quadrangular four-panel the height is reduced to .878, and in the triangular four-panel it is 1.013, the vertical angle of diagonals being only $26^\circ 16'$. The weight of material in the triangular form is thus less than in the quadrangular form with inclined ends, and the latter is more economical than the Fink triangular type. We notice also that the quadrangular four-panel truss is far more economical in height than when the upright end-posts are omitted—in the former the angle of diagonals is $48^\circ 42'$, in the latter it is $41^\circ 23'$. These conclusions are based on strains in tension of 10,000lb. per square inch, and in compression for posts and diagonals 0.5, and for chords 0.8 the above. We consider Mr. Emery's method to be a very important one, as the value of scientific trussing resides in the saving of material and the reduced height of the truss, and not in the apportionment of the sectional members to meet a particular load.

NORMAN CASTLES AND NORMAN WORKMEN.

SO much and such earnest attention has now during so many years been devoted to the care and history of the churches of the Middle Ages, scattered here and everywhere over the country, that it would seem not a little strange that some more note has not been taken of the castles, the ruins of which are yet to be found over the face of England. We have no hesitation in affirming that they are not inferior in art-interest to the churches and even cathedrals themselves. And they have at this time a yet more enduring and special interest attached to them from the fact of many of them yet remaining, in part at least, in pretty much the same state as that in which they were left by their first founders and builders. Everything is now all about us so rapidly and entirely changing, and the old and antique is giving place so fast to the new and improved that it is hourly becoming more important to note the existence of that which is left to us of the work of those who have gone before, and who have, indeed, in no small degree taught us what to do. In mechanism, and in mechanical ways of doing work, we no doubt

leave our ancestors far enough behind us, but in art they are yet our teachers.

We have been more than struck with this by a hasty visit to Dover Castle, and by a somewhat close—as far as is, indeed, possible—study and examination of its design and mode of construction, and by the high-art faculty, not usually attributed to Norman work, displayed in it. The history and architecture of Dover Castle, and the fine-art capacities of its Norman builders, who once on a time held such potent sway in England, will be found significant of much. We need not, for our present purpose, say much of the history of this famous stronghold, from its first beginnings in the days of the antique British king who first laid its foundations, or, rather, built on its site. All this has probably long vanished, and the *pharos*, or watch-tower, or lighthouse—the actual ruined remains of which still stand by the chapel, and are to be seen so conspicuously from almost every point of view—is probably, and with little doubt, the oldest building yet remaining on the spot on which this Norman stronghold stands. It is supposed, so say the authorities, to have been erected during the lieutenantcy of Aulus Plantius and Ostorius Scapula, of Roman times and occupancy.

The next work—for we must needs give a short note of what was, in order of time, done, to make more clear to apprehension what is left and the state it is now in—was that of the Saxons, who are said to have extended the work of the Romans, and to have built more lengthened walls and many additional gates and towers—*e.g.*, Godwin's Tower, Cotton Gate and Tower, Clinton and Valance Towers, all on the exterior of the Roman fosse; Harcourt Tower, Well Tower and Gate, the Armourer's Tower, and King Arthur's, or the North Gate. All these (and it is necessary to note them) have been destroyed. There would also seem to have been other towers and gates, built before the Norman occupation of the place, and the authorities we have looked into differ not a little among themselves as to which and how many of these there were, and to have mixed them up a good deal with the genuine Norman work which yet remains, and about which—changed as so much of it is to suit present requirements—there can, as we take it, be no sort of doubt. We are looking now at the actual work itself. There is an interest in the mere names, so suggestive are they, of these gates and towers, whoever first laid their foundations and built up their ponderous walls. In the inner line of walling, next to the keep, square and massive, in the centre, there are the Duke of Suffolk's Tower and Palace Gate. This gate led to the citadel, or keep, and was portcullis-guarded. Other gates are here of quite modern names. The King's Gate was strongly defended, and was doubtless reserved for special occasions. Magminot's Tower and Gore's Tower, together with their halls or chambers, are used now as store-rooms for the most part. Peverill Tower and Gate, in this inner circle of towers, led directly under a covered way to the outer line of towers and gates, all making a vast oval extending from the very edge of the precipitous cliff on which the castle stands westward to the opposite edge of it eastward, thus encircling the whole platform of buildings, with the keep in the centre of all. All were moat-surrounded, the cliff itself forming an insurmountable barrier on the south side. No more complete idea of a Norman fortification can be imagined. All is complete, and a contrast indeed to the additions to it which have been made to meet the requirements of modern warfare.

We might thus go on, and give not a few details that might be a little new to some

readers on these many and individual towers and gates, for no two of them are alike; but without a good and correct plan of the place we could hardly expect to be well understood, for the plan is most irregular and complicated. It may, however, be specially noted by those who can get access to a good plan that *Allbrensis*, or *Averanche's*, Tower, standing in an angle of the wall, is, with others near it, a specially fine example of Norman art and architecture. It was well furnished with platforms, galleries, and loopholes for the archers defending it, and had machines for pouring down hot water, burning sand, and melted lead on to the assailants beneath, so that fiery engines of destruction are not new after all.

Next comes the undoubted Norman occupation, and, we may add, the really artistic interest of the work, both as art and architecture, for all the interest here lies almost solely in the work of the Norman builders, and it is to their work, and to the state which it is now in, and to its artistic merits, that we would call a moment's attention. After the battle of Hastings William the Norman besieged and took this very castle, as it then was, whatever that might precisely have been. He put the then governor, Bertram de Ashburnham, to death, and appointed his half-brother Odo, Bishop of Bayeux, to succeed him, and thus commenced, in fact, the "Wardenship" of the Cinque Ports. The Constable of Dover, thus installed with his knights, went to work with a will, and without any doubt made of this castle what it now is—of course excepting the purely modern and to-day's barrack building, and excavating, and surroundings, and which incongruities all go to make up the immense difficulty of fully comprehending the plan and details of the original work. Indeed, it will be found that these Norman architect engineers did the whole of the work, or nearly so, as we now see it. The old materials they doubtless made liberal use of, but the designing and actual building, as much as you can get to see of it, is without a doubt theirs. And here it is that the real interest of the work, as artistic and expressional work, really lies. It is impossible, in looking, with the help of the mind's eye, and eliminating the frightful modern additions that have been made to it, at such work as this, not to see in no long time the high-art skill and faculty of the Norman builders. We write this on the spot, and feel quite convinced that, rude as the work is, and rough and rude as the stone blocks are which compose it, there was a skill and refinement of mind and art-power at work, which can hardly be excelled, and, indeed, has not been anywhere excelled. This is, of course, saying a great deal, but the proof lies visibly, if patiently looked for, before you. We can only point to a few things and items in proof of this, but the very first glance will show how artistically, instinctively, these Norman workmen went to work, and wrote on that lesson to be read even now.

We hardly know what best to note first, but no small skill was shown in the very placing of the parts of this castle and surrounding walls and towers. They are as firmly placed as a whole, and as skilfully built up out of the ground on which they stand, as the world-famous Parthenon itself, on the Athenian Acropolis, where, as is known to those who have looked closely into it, the very beauty of the building itself is to the full doubled by the position it occupies, and the consequent happy points of sight afforded from which to see it. Nothing can well be better or more artistic than the way in which this has been accomplished. The building seems to grow naturally out of the ground on which it all stands, and to meet the eye

without effort, irregular as all is. Approach this Acropolis from what point you will it is the same. We are here, of course, putting out of sight the modern barrack buildings and elevations, and, as far as may be, the lamentable distortions of the ground itself on which the castle stands, nearly the whole of which has been cut into awkward terraces and artificial slopes, and with formal cuttings every here and there for the requirements of heavy artillery. Much has, therefore, in the mind's eye, to be eliminated, and an effort made to look at the work as it originally was. When this is done, as far, indeed, as may be, we see the work of the Norman castle architect and builder, and can form some true estimate of his high-art power over the materials he found about him, and which he knew so well how to make use of.

But what most, perhaps, of all will strike the architectural student in the work here—and bearing in mind that the architecture he is looking at is Norman and quite plain and unornamented—is the fact of its refinement—refinement of line and detail, and predominating feeling. We here would refer him more especially to the workmanship in the towers in the outer line of walling, and to those specially more or less untouched, and now, as would seem, utilised as storehouses. Any one, we are at times told, can build a common upright wall, with a narrow window. Here may be seen the way to do this, but, as will be seen, it takes artistic power to do it, simple as it would seem. Like, as in the work in the Athenian Acropolis, we are a little at a loss to see which to wonder at most—the art-power of the superintending architect of the works or the executive skill and taste—for he must have had it—of the workman. It is thought in these days that the artist-workman is needful only where ornamentation begins, but here, as in the Greek work, it will be found that he is always needed, and that but little can really be done without such power in the workman, whatever the superintendence may be under which he works. A great art-lesson is most surely here to be learnt.

We had hoped, but our space fails us, to point specially to the work of the keep or citadel, remarkable in very many ways, but must wait another opportunity. It is, all ways looked at, both outside and inside, well worth attentive and lengthened examination. It is right full of poetic feeling, and might be made easily much more so.

C. B. A.

THE YORKSHIRE ARCHÆOLOGICAL ASSOCIATION.

THE eleventh annual excursion of the above society took place on the 29th ult., under the direction of Mr. Fairless Barber. Bolton Abbey and Skipton were the places visited. The party drove from Skipton to Bolton where they arrived about 1 o'clock, and were received by the rector. Mr. J. T. Micklethwaite, F.S.A., read a paper on the abbey. He said that the church of a house of canons had peculiarities which differed from those found in the churches of any of the monastic orders. One of the commonest, and at first sight most unaccountable, of these, was that the nave has only one aisle, as they found in Bolton Abbey, at Easby, at Kirkham, at Briekbourn, and at many other places. Most of these churches were buildings of considerable architectural pretensions, in which the absence of the south aisle—for it was generally the south aisle that was wanting—appeared as a great defect. But this one-aisled plan, in his opinion, came perfectly naturally, and was the legitimate consequence of the conditions under which the work was executed. If they examined the present ruins of the abbey they would find that as usual the work was begun with the choir, and worked gradually westward. The earliest part, in the lower part of the side walls of the choir—

though it was afterwards lengthened and almost wholly rebuilt—kept its aisleless form to the last. The early work there must date from about the time of the foundation. The church had not been long finished before the alterations began, as they did in nearly every other church of the same sort. The canons felt that their churches were inferior to those of the monks, and notwithstanding their length they were cramped for want of breadth. They craved for the addition of aisles, which were becoming common even in parish churches. But here they were met with a difficulty. Along one wall of the nave ran the cloister and important buildings abutted against it towards its west end. To add an aisle on that side would have been expensive and very inconvenient, and so they were content with one on the other side only, where the ground was free. Where there was no cloister, as at Ripon, two aisles were added. The aisle at Bolton was added, as the west part showed, early in the thirteenth century, a very few years after the church was finished. It had been somewhat altered in parts since, but in plan it remained the same. To compensate for the want of an aisle on the south side, the wall was taken down as far as the roof of the cloister, and the existing range of five fine windows set up in its place. In the fourteenth century the choir and transepts were magnificently rebuilt almost from the foundations, and somewhat extended. The choir, even in its present condition, is one of the most beautiful architectural compositions in England. The latest work at this church was especially interesting, because it showed, arrested half way, a process which had been applied to half the parish churches in England, and which had entirely altered their external character. When a church had a tower at its first building it was always in the centre. Whence came it then that in nine churches out of ten, as we now see them, the towers are at the west end? The greater number of parish churches were without towers at first—the little church at Adel was a typical, because unaltered, example of what most others had grown from. But in later times, and chiefly in the fourteenth and fifteenth centuries, towers became fashionable, and it was a very poor parish which was without one in the seventeenth century. These towers were built very slowly, sometimes going on for the greater part of a century. As it was important to avoid disturbing the church, as would have been done by breaking into it, especially in the middle, the new towers were built on fresh ground outside, generally at the west end. Then when the work was done the west end of the nave was taken down and the building joined on to the tower. What became of the original central tower at Bolton Abbey was not known. Perhaps its fall had caused the general rebuilding of the choir and transepts in the fourteenth century. Perhaps it was taken down at that time and not rebuilt. However that may have been, it was thought fit in the sixteenth century to build a tower at the west end, which, according to the inscription on it, was begun in 1520. At the suppression, twenty years later, it had only reached the height of the nave, and in that state it has come down to us. The thirteenth century west part is still standing, and close to it is the large arch of the tower, which, if the work had been allowed to go on a few years longer, would have opened into the nave. Of the ancient furniture of the abbey scarcely anything remains. Though the canons took the general form of their church from that of a parish church, they arranged it entirely in their own way. A parish church is all one, the nave and chancel being only different divisions of the same apartment. But the canons made it two. They wanted the choir for their own services, and so they fenced it off in a way which takes from it all ritual resemblance to the parish chancel. The choir was cut off from the nave by two solid screens, one in the eastern and one in the western arch of the central towers. The screen at the west end contains some old fragments, which no doubt at one time formed part of the inclosure of some of the chapels. There was a story that the screen at Skipton came from here, but that he thought unlikely. In the south transept were the remains of two altars, and

there is the slab of another lying in the tower. This last has a rectangular sinking in the middle, and has been taken for the "sepulchre," a place for the reception of relics which were inclosed there under the small stone, called the seal of the altar. But it was much too shallow for that use, and was probably no more than the matrix of a brass plate which had been let into the stone. Scaled altar stones were exceedingly rare. He only knew of six in England. The three panels over the Early English west door had been painted. The subject appeared to have been Our Lord seated, and with angels on either side. These are the only external mediæval pictures he had seen in England; but there are traces of painting outside the Lady Chapel at Ely. Mr. Micklethwaite then went on to refer to the domestic buildings of the Priory, of which little remains except the foundations.

Returning to Skipton the excursionists lunched at the Town Hall, and afterwards visited the castle of which Mr. Morant gave an interesting sketch. He said that at the time of the Norman Conquest Skipton was in possession of Earl Edwin, son of Leofwine, Earl of Mercia, but his lands were seized by the King and given to William de Romillé, whose descendant, Robert de Romillé, built the first castle here in the time of William II. Of this no remains can be seen except the inside of the entrance, with its groove for the portcullis, hooks for gate hinges and channel for bar, the dungeon and tower on the north side, which retains the original circular-headed openings with some remarkable grooves, the use of which it was difficult to explain. There was no doubt a keep, but of this no trace remains, unless the chamber under the large kitchen is a portion of it. The dungeon he considered very perfect. The old road leading to the original entrance is plainly to be seen winding round to the left of the present path. After tracing the line of descent from the original builder of the castle, Mr. Morant went on to say that it was probably Robert, Lord Clifford, who was born in 1305, was Sheriff of Westmoreland and Warden of the Marches of Cumberland and Westmoreland, who enlarged the castle and built the large towers or rounders, the southernmost of which is a story higher than the others. Probably these, with some apartments on the north side next the cliff, comprised the whole castle. The masonry is very massive, the outer walls being 10ft. in thickness. Lord Clifford would also have built the barbican and outer entrance, and some other buildings, remains of which still are to be seen. One of his sons, Roger, Lord Clifford, obtained a license from King Edward III. to make a park at Skipton, and to inclose there 500 acres of land. With regard to the buildings in what is known as the "Conduit Court," Mr. Morant believed that either during the time of "Black-faced Clifford," who held the castle between 1455 and 1461, or more probably in that of "The Shepherd Lord," who possessed it between 1485 and 1523, the buildings on the north and east sides were erected, and that the whole masonry now seen within the courtyard was built at that time. The "Conduit Court" is so called from the conduit which conveyed water from the Skipton Rocks, about three-fourths of a mile from the castle, terminating in this court. In 1537, the castle received another important addition, for the great hall and octagonal tower at its east end were erected. The hall remained in its original state until about 100 years ago, when it was divided into various rooms. In the winter of 1648 the castle was still further dismantled. In 1655 Anne, Countess Dowager, of Pembroke, commenced to restore the castle, and to make it habitable. As the castle was not allowed to be made capable of being fortified again, the walls were pulled down to a level line and then rebuilt. The old flat roofs were replaced with sloping ones, which would not admit of cannon being placed upon them. She also diverted the roadway, and built the new entrance in a civil style of architecture, with a chamber over it, and a bold flight of steps leading up to the gateway. She also restored the upper part of the outer entrance. The castle was then in the same state in which it now stands, except that the great gallery had

not been divided, and that the building was all in a habitable state. He believed that the roofs had been renewed since then. The party was afterwards conducted through the castle. Thence they proceeded to examine the church of Holy Trinity which adjoins it. With this the day's proceedings concluded.

PROPOSED NEW PUBLIC OFFICES, SOUTHAMPTON.

IT is proposed to erect new public offices at Southampton, and we hear there has been a strong division of opinion as to the site. The public works committee it appears have proposed the site of the old audit-house or fish-market—a position near the bottom of the High-street, and considerably out of the centre of the town; but the majority of the inhabitants, we are informed, object to spend from £12,000 to £15,000 on such an unsuitable site. A much more available and central site is to be had in the Above Bar-street, once the property of Miss Ogle, and is large enough to enable the building to be set back; but from some opposition of a self-interested kind, known only to provincial towns, the advocates of the lower site have actually had plans prepared by the borough surveyor for the accomplishment of their idea. We are told the surveyor has made plans showing the conversion of the audit-house and fish-market for the new offices. Whatever is done, let not the town council commit the absurdity of repeating the blunder they made some years ago in placing their greatest public building, the Hartley Institute, at the very bottom of the town, when far better and more desirable situations presented themselves. The Ogle property, we are told, is still in the market, and would give a site worthy of the civic offices and of the expenditure. We may just mention that Southampton, though three times the size of Winchester, and nearly double that of Wakefield, does not yet possess public offices nor a public hall worthy of the name; while the old county town has had a town hall some ten years, and Wakefield has just commenced the erection of one that will entail an expenditure of nearly £40,000. There are some towns fated to remain behind.

RAPID PLASTERING.

MR. HITCHINS, of Stoke Newington, has introduced to our notice a new method of forming ceilings and other plaster work which, for durability, saving of time, and cleanliness, is unrivalled. By means of this system the plaster is prepared beforehand in slabs, which are fixed expeditiously to the joists, forming the ceiling at once as it would be when lathed and plastered with the two coats of lime and hair in the old process. The slabs or sheets are made in the following manner:—A layer of plaster of Paris in a moist or plastic state is spread evenly on a flat surface surrounded by raised edges of the form to produce the desired bevel of the edges of the slab or sheet, and upon this first layer of plaster is laid a sheet of canvas or other woven fabric of proper size, or a thin layer of loose fibres, which is made to embed itself into and adhere to the plaster. Two laths are then laid along two opposite edges of the canvas, upon which another layer of plaster is spread evenly, and before it sets a rough broom is passed over the surface of this second layer of plaster to form a key for the finishing coat. When the plaster is set the slabs are nailed to the joists, as before mentioned, and the joints are made good with plaster of Paris. The third or finishing layer of lime and plaster is then applied to the ceiling in the ordinary way. Besides the advantages derived from rapid fixing, with the minimum of dirt and inconvenience, the new ceiling is practically uninflamable, and very economical to put up. Moreover, unlike the old plaster ceilings, it can never become detached from the joists; in fact, besides being self-supporting, it braces and strengthens all partitions and slight timbers.

St. Andrew's Church, Feniton, Devon, is being restored by Mr. Harry Hems, of Exeter, from the designs of Mr. R. Medley Fulford, architect.

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ILLUSTRATIONS.

SHOOTING-BOX AT BARNACRE FOR THE EARL OF BECTIVE—
TOWER OF ST. ROMAIN, ROUEN CATHEDRAL—NEW VILLA
AT BURTON-ON-TRENT—CLIFFORD CHAMBERS, BOND-
STREET—ST. MARGARET'S CHURCH, HOLLINWOOD.

OUR LITHOGRAPHIC ILLUSTRATIONS.

CLIFFORD CHAMBERS, BOND-STREET.

THIS building replaces an old and unsightly structure hitherto projecting into Bond-street. The main portion of the new building has been set back to the general line of the adjoining properties. The bay windows, shown in our illustration, have been obtained, with the consent of the Metropolitan Board of Works, in place of the old projection. The interior is arranged on the ground floor for shops, with storage in the basement. The centre doorway gives access to three sets of chambers on the upper floors, each consisting of a sitting-room, bedroom, bath-room, w.c., &c. They are entered through a separate lobby from the common staircase. These chambers are divided from the lower part of the building by fireproof structures. Accommodation for the house-keeper is provided on the top story. Messrs. T. H. Watson and F. H. Collins are joint architects; Messrs. Manley and Rogers are the builders.

ST. MARGARET'S, HOLLINWOOD.

THIS church, the designs for which were selected in open competition, will be built upon the site of an old and ugly brick building which has done duty for some 120 years, and in which accommodation was provided for about 400 worshippers. The new church will be built of stone with Yorkshire stone parpoints, tiled roofs, and yellow deal fittings, with the exception of those in the chancel, which will be of English oak. The general character of the building is plain, and any effect which it may have is due more to careful grouping than to unnecessary ornamentation. It will seat 600, and the estimated cost is about £6,000. The work in the foundations, which are now in hand, has been entrusted to Mr. Robert Wild, of Hollinwood. Mr. Freeman, of Bolton and Derby, is the architect.

BARNACRE SHOOTING-BOX, THE PROPERTY OF THE RIGHT HON. EARL BECTIVE.

THE site chosen for this building is at Brigg's Gill, in the township of Barnacre-with-Bonds, and is situate about 2½ miles from Garstang Station, on the London and North-Western Railway, and about half-way between Preston and Lancaster. The site is 300ft. above the level of the sea, and commands an extensive view of Morecambe Bay and the Fylde district of Lancashire. It is well wooded, and situated in a district abounding in game; large tracts of moorland are also near. The building is entered by a vestibule, to which is attached lavatory, &c.; from the vestibule is a passage leading to the large staircase hall, the front part of which is used as a billiard-room; the main body of staircase hall is 29ft. x 26ft. 6in., the part used for billiards being 18ft. 9in. x 15ft. additional. Adjoining the hall is Lord Bective's room, 16ft. 3in. x 15ft. 2in., with lavatory attached, and connected with this room is Lady Bective's boudoir, 17ft. x 16ft., with lavatory attached. A passage from the vestibule

to the north side communicates with the garden; a door in this passage leads into the dining-room, 22ft. 3in. x 17ft. 9in., exclusive of bay window. Another passage at right angles to the main passage leads to the kitchen, &c.; doors in this passage open into the smoke-room, 17ft. 6in. x 17ft. 6in. The east portion of the building contains the servants' rooms, consisting of a kitchen, 17ft. x 15ft. 8in., exclusive of bay window; scullery, 11ft. 9in. x 9ft. 2in.; larder, 9ft. 2in. x 6ft.; butler's pantry, 10ft. 9in. x 8ft. 9in.; pantry, 10ft. x 9ft.; housekeeper's room, 15ft. 6in. x 10ft.; servants' hall, 15ft. 6in. x 10ft. A passage leads to the outbuildings at the east end. Two pairs of back stairs are provided. The outbuildings consist of a gun-room, 14ft. 6in. x 12ft.; wash-house, 14ft. 6in. x 12ft., with boiler, &c., complete; also rooms for wood, coal, tools, lamps, and two water-closets. Large cellars are provided under dining-room, kitchen, scullery, and larder. The first floor contains ten bedrooms of large size, together with bath-room, lavatory, housemaid's closet, and two water-closets. The attic contains ten bedrooms of an average size of 14ft. x 9ft. The building is erected in the half-timbered style, with cement panels between framework, ornamented with incised floral decoration. Projecting eaves and barge boards are provided, the situation being exposed. The roofs are covered with red tiles. The upper portions of windows are glazed with ornamental lead lights of various designs. The timber for the internal fittings of hall and best rooms is of selected pitch pine. The hall is surrounded with a dado with ornamental panels; this dado runs up the staircase and around landing. The roof of hall is open-timbered, with elaborate principals panelled between. The staircase is in the Elizabethan style, with grotesque figures on the newels, each supporting a cluster of lights. It may here be mentioned that the whole of the building is illuminated by oil lamps, and is heated by steam coils throughout, together with open fireplaces, the fireplace in the hall being massive stone, with ornamental panels, and fitted with dog-grate. A lantern is fixed on the roof for observations. The works have been carried out, at a cost of £9,900, by Mr. R. Saul, of Moor-lane, Preston. Stabling, consisting of four stalls, loose-box, coach-house, and harness-room, are about completion in close proximity to the main block. The whole has been designed and superintended by Mr. T. Harrison Myres, A.R.I.B.A., of the firm of Myres, Veevers, and Myres, architects and land agents, of Preston.

ROUEN CATHEDRAL.

THE north-western tower of Rouen Cathedral, called the Tower of St. Romain, of which we give an illustration, was built during the second half of the twelfth century; it and the two side chapels of the apse, and the two magnificent side doors of the west front, form the only existing relics of the cathedral of that date. These works are of special interest to us, as having been built while Normandy and England were under the same rule. The remainder of the church was rebuilt early in the thirteenth century, under the rule of Philip Augustus, and it is curious to remark on the spot the differences in detail between the two periods—differences not at all to the advantage of the later work. St. Romain's Tower is one of the noblest remaining to us, and though the original completing portion of the design, if ever it existed, has given place to the charming flamboyant composition so well known to us, the dignity and simplicity of the earlier work are beyond all praise. It is specially remarkable for the extreme delicacy of all its projections, and the refinement of its profiles. In some instances there is all the effect of a set-off without any actual projection of the wall surface below a string, beyond that above it; and the powerful and graceful outline resulting from this careful study render this tower a subject of the highest value for those who have to design objects whose outline is thrown against the sky. Again, in the treatment of the angles, we find great ingenuity, the two diagonally opposed to each other being generally alike but different from the other two, so that, whichever way you look at the tower, there is a charming variety. The stair turret shown on

the drawing is a very happy composition, and it is quite possible that the original design for the completion of the fabric may, in some degree, have followed that which we now see as the termination of the staircase. The opening for admitting the bells is remarkable. M. Viollet-le-Duc compares this steeple with the grand contemporary example at Chartres, and thinks both may be the work of architects of the Ile de France. It is, however, very interesting to look at home, and to find such steeples as the south-western one at Chichester, where the work in many ways so much resembles that of St. Romain's Tower. The early work in the remainder of the church, excepting that contemporary with St. Romain's Tower, is not particularly good, but there is a magnificent late work in the south-western tower. The west front of Rouen Cathedral by moonlight, or with the sunset light catching the tops of the towers, and with the picturesque market-place below, is a sight not to be forgotten. There is a delightful etching of it in Cotman's "Normandy," showing the picturesque Renaissance timber spire of the central tower, which, on its destruction by fire, was replaced by the hideous cast-iron birdcage now so offensive in all views of the cathedral.—R. J. J.

NEW VILLA, BURTON-ON-TRENT.

THIS bijou residence, which we illustrate today, is about to be erected at Burton-on-Trent. Our illustrations comprise two perspective views, the same that were exhibited at the Royal Academy this year—two elevations and plans of all the floors of the house, which, being thus fully shown, seems to require but little description. The materials are red brick for the walling, with tiles for the roofs and upper walls, while half-timberwork is sparingly used in parts. Advantage has been taken, in planning the house, of the fall which exists from the frontage to the rear of the site. The sitting-rooms command a south-easterly aspect, and the dining-room has a commanding balcony facing the south, and communicating with the garden. Mr. Robert W. Edis, F.S.A., of Fitzroy-square, is the architect.

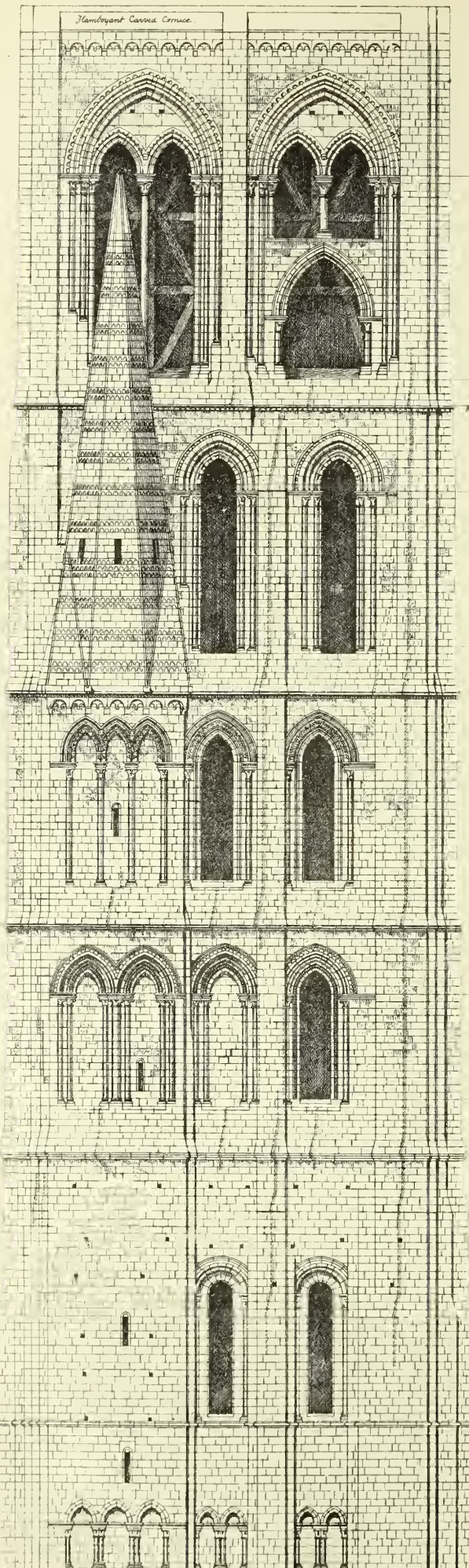
COMPETITIONS.

BUXTON.—The governors of Buxton Endowed School met on August 29 last, to decide the merits of the various sets of competitive drawings sent in for their proposed new school buildings and master's residence, when the designs of Messrs. Pollard and Showell, architects, of Manchester and Buxton, were adopted, and we understand that these gentlemen are entrusted to carry out the works, which will be commenced forthwith.

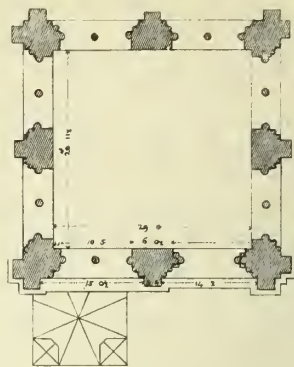
NORTHAMPTON CHURCH EXTENSION SOCIETY.—The design of Mr. G. Vials, of Doughty-street, has been selected in a limited competition for the Church of St. Michael and All Angels, Northampton; and a premium of £50 has been awarded to Mr. W. Smith, of the Adelphi, for the design placed second in merit. There were eleven sets of drawings by the following nine architects—viz., Messrs. Burder and Baker (the architects of St. Lawrence's Church, now being erected); R. H. Carpenter, T. Garratt, W. Smith, T. T. Smith, and G. Vials, of London; H. Holding, W. Scott, of Northampton; and E. S. Harris, of Stoney Stratford.

THE TURNERS' COMPANY.—The Turners' Company, according to custom, have offered their freedom, with other rewards, to the exhibitors of the best specimen of hand-turning in any of the subjects of competition, which this year include ivory, pottery, stone, and jet, and steel, brass, and gold for horological purposes. Pottery will comprise terra cotta, stoneware, earthenware, and porcelain, and stone and jet will include any natural substance of a mineral character, except those which require baking or burning. Lady Burdett-Coutts has offered a sum of £25 for money prizes to the competitors, and the court of the company has voted £50 for the same purpose. Among the judges are Sir Gilbert Scott, Sir Joseph Whitworth, Dr. Pole, Mr. Hutton Gregory, Mr. Doulton, and others. The articles will be on view some time in October at the Mansion House, and the Lord Mayor will distribute the prizes to the winners.

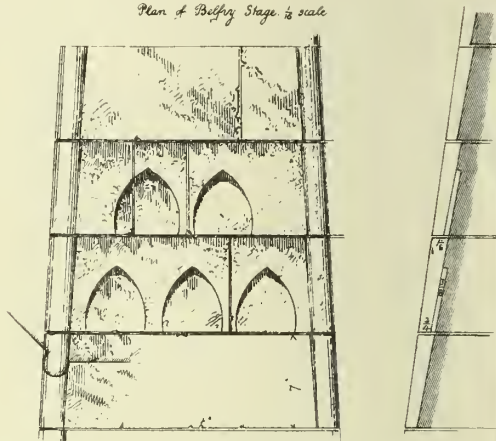
ROUEN CATHEDRAL
TOWER of S. ROMAIN.



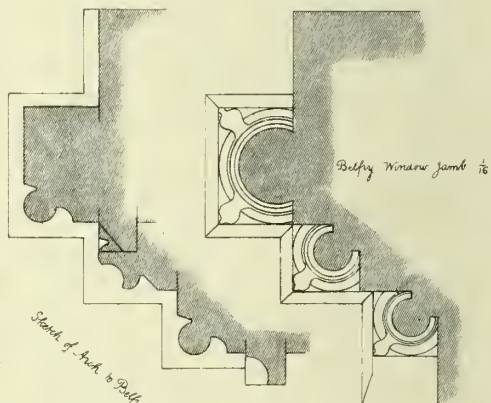
Sketch Elevation of East Side with measurements of scale.



Plan of Belfry Stage $\frac{1}{2}$ scale

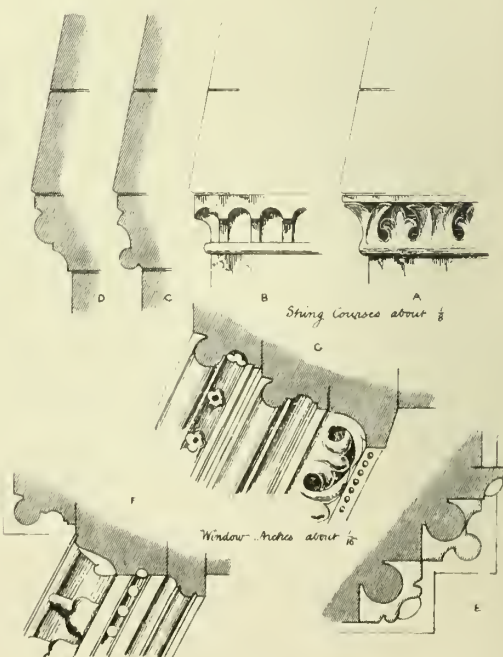


Detail of Stair Tower Roof $\frac{1}{8}$ full size



Belfry Window Jamb $\frac{1}{16}$

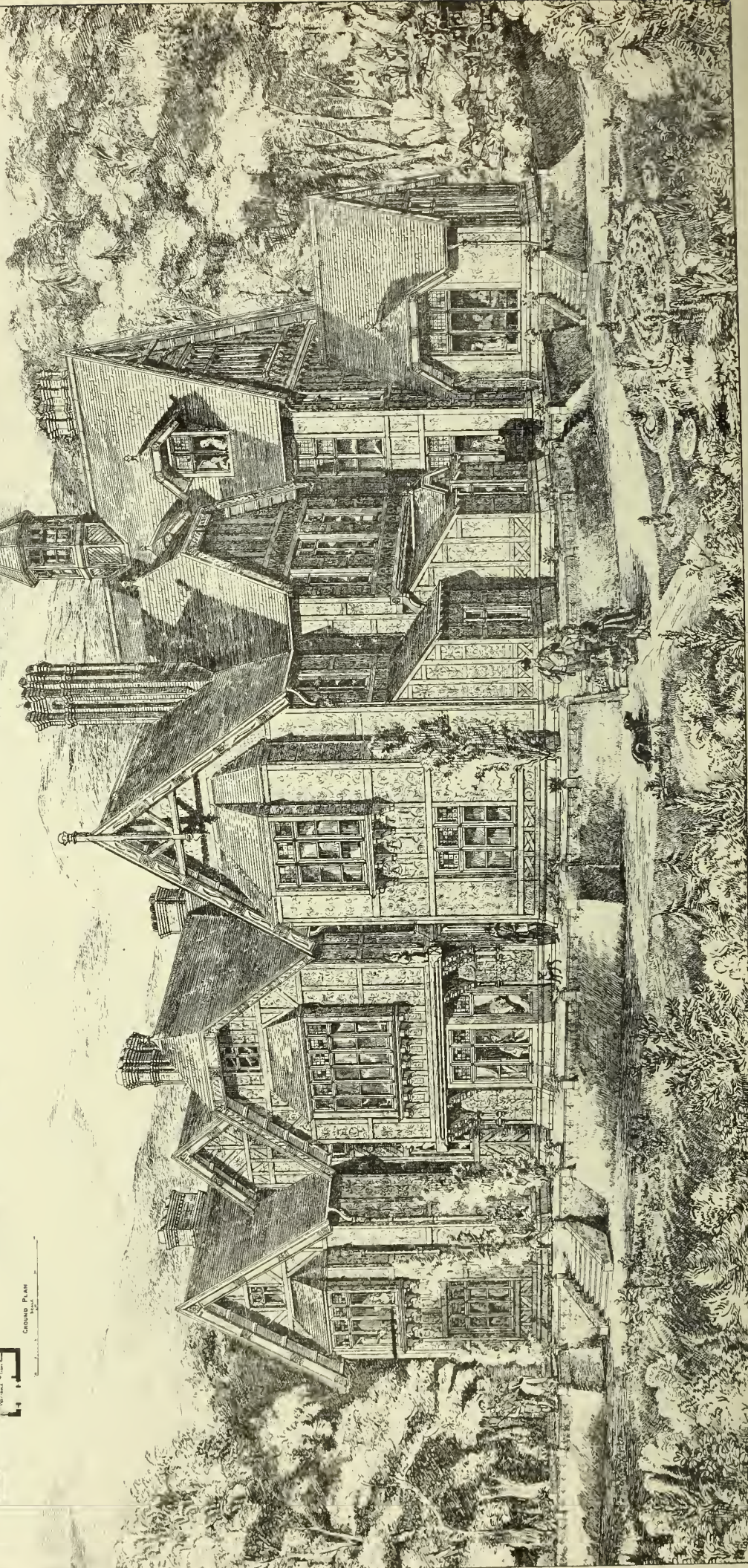
Sketch of Arch to Belfry Windows



String Course about $\frac{1}{8}$

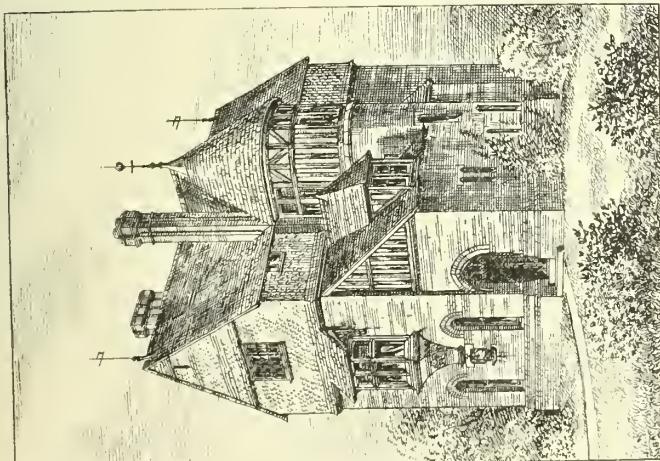
Window Arches about $\frac{1}{16}$

THE BUILDING NEWS, SEP 14. 1877.

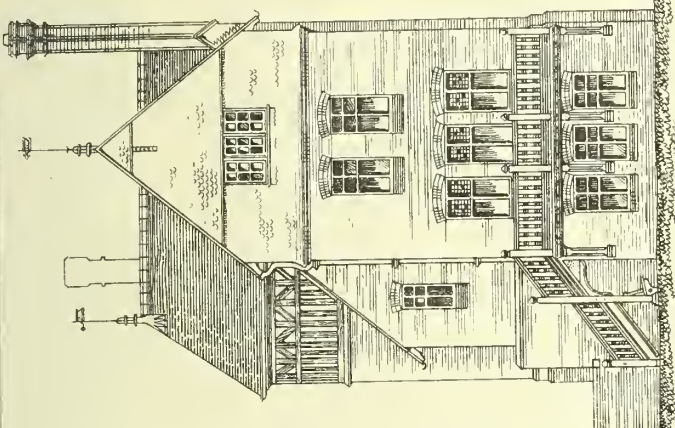


SHOOTING BOX BARNACRE FOR THE RIGHT HONBLE EARL OF BECTIVE MP
T. W. H. REE & SONS ARCHT.
ALBERTMAN, LONDON

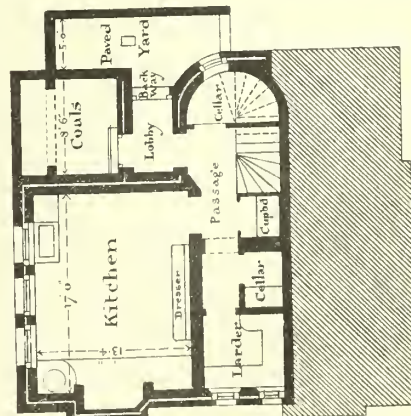
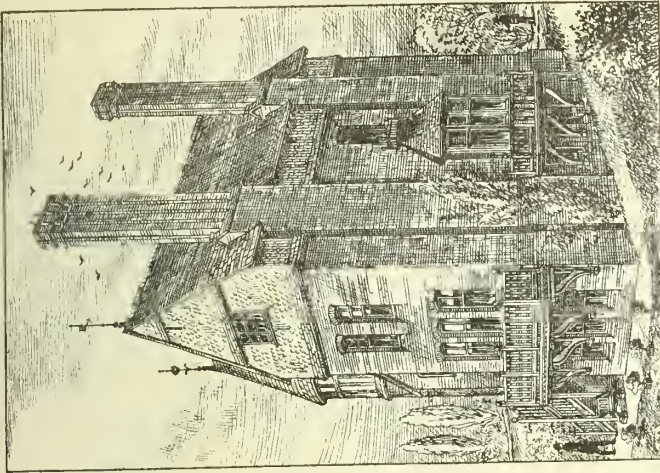
Proposed new VILLA BURTON on TRENT.



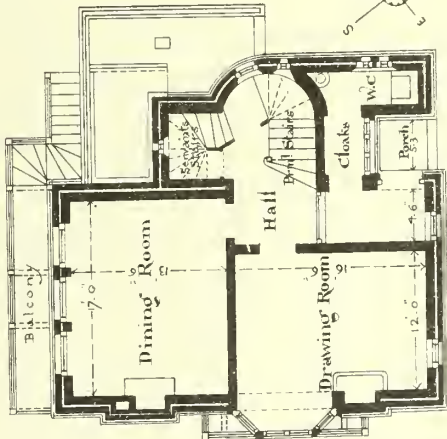
Entrance Front



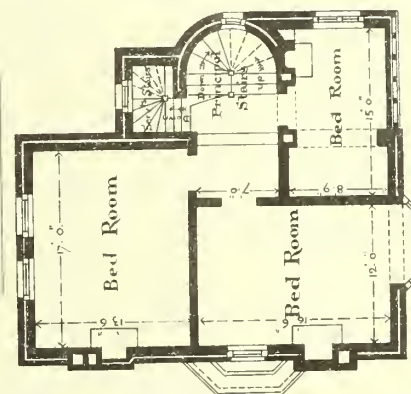
Garden Front



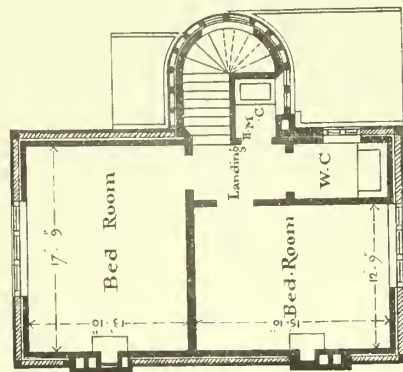
Basement



Ground plan



First floor

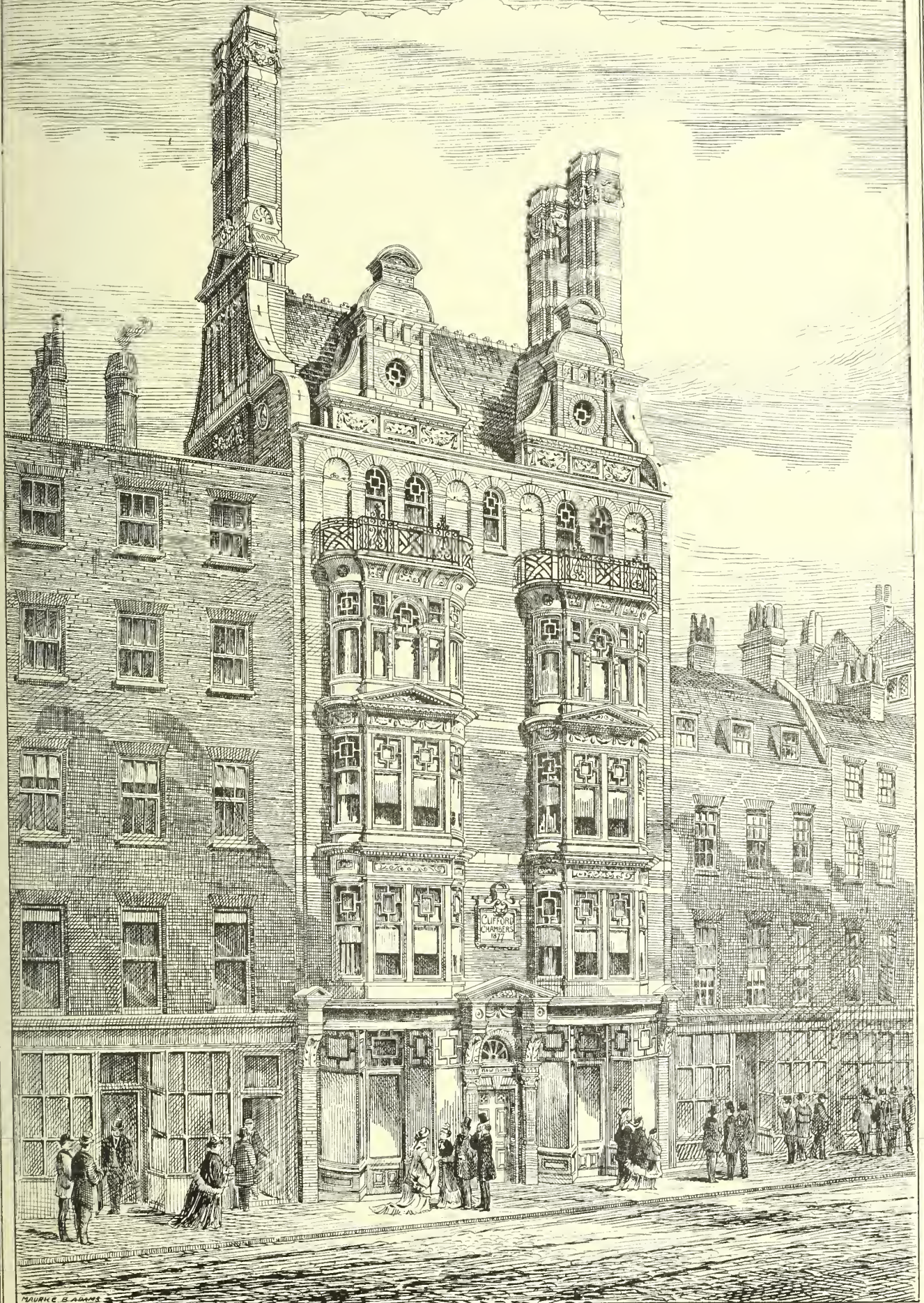


Attic plan

MAURICE B ADAMS DEL.

Robert W Edis F.S.A. Architect.

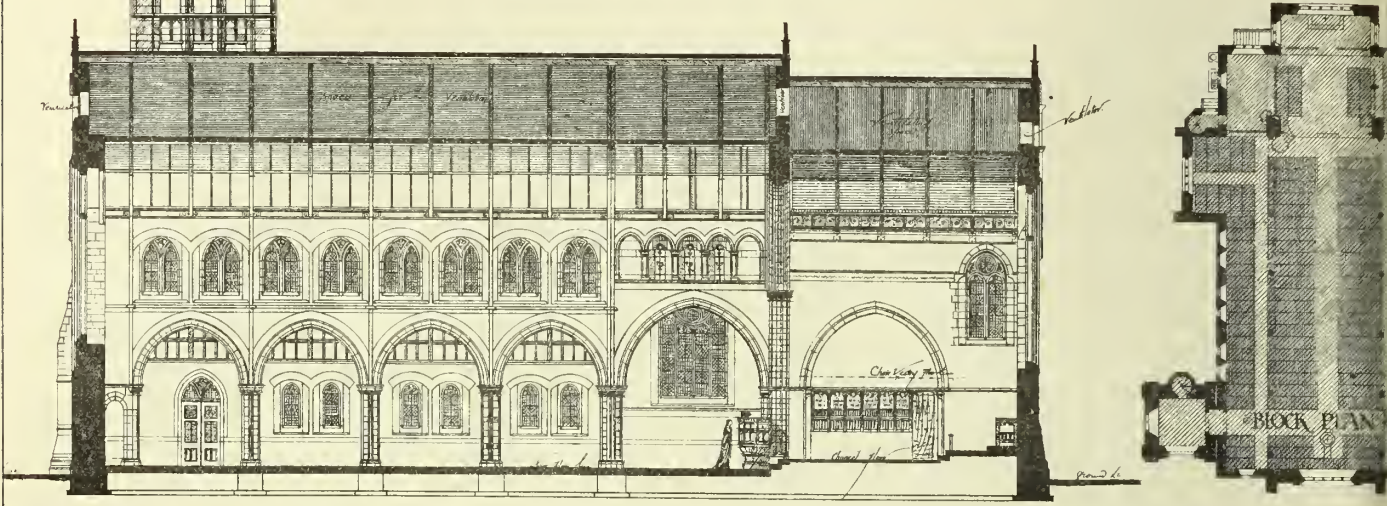
Photo lithographed & printed by Messrs. Abernethy & Co. 10, Abchurch Lane, London, E.C. 4.



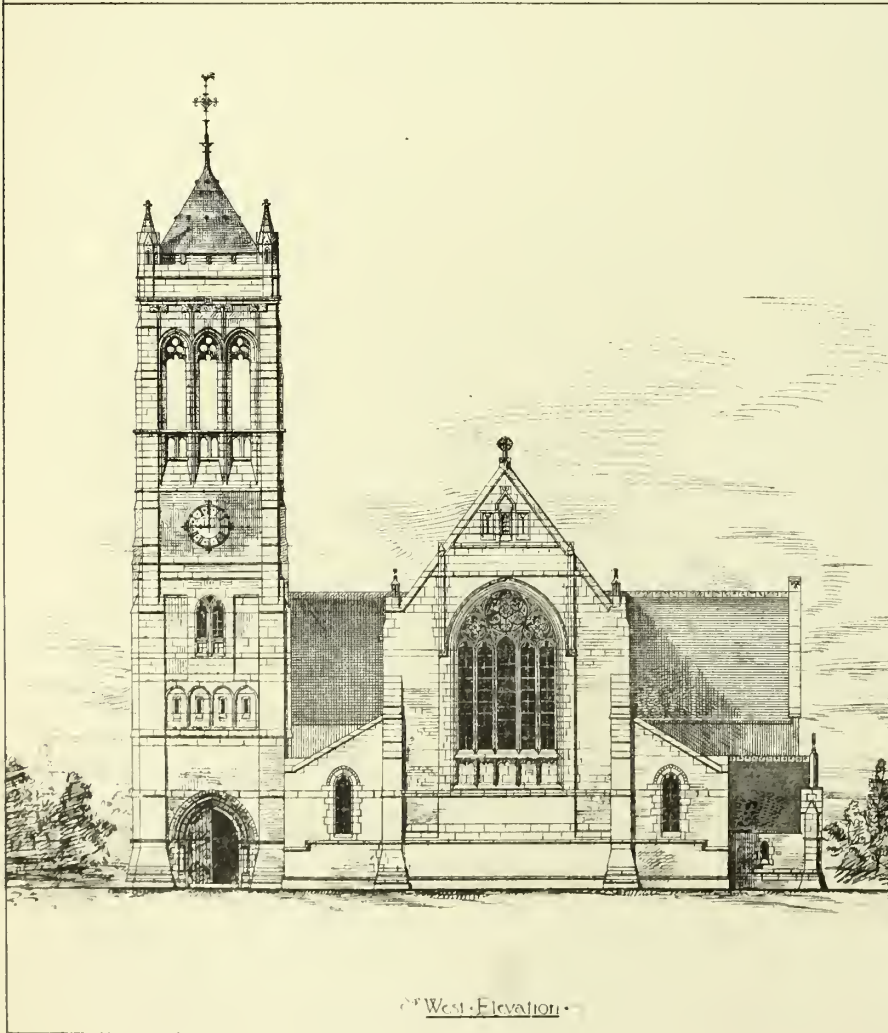
CLIFFORD CHAMBERS BOND STREET. T.H. WATSON & F.H. COLLINS ARCHITECTS

J. Akerman Photo lith

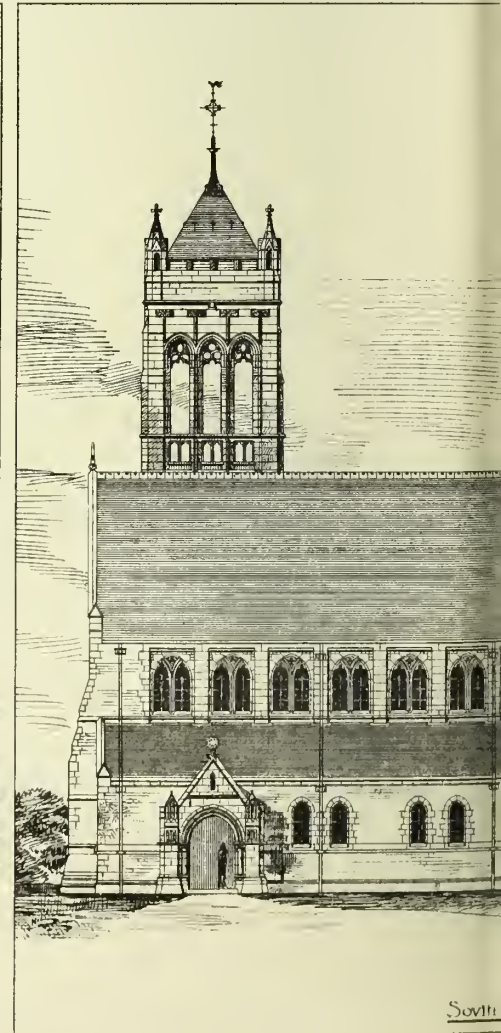
St. Margaret's Parish Church Dollingwood



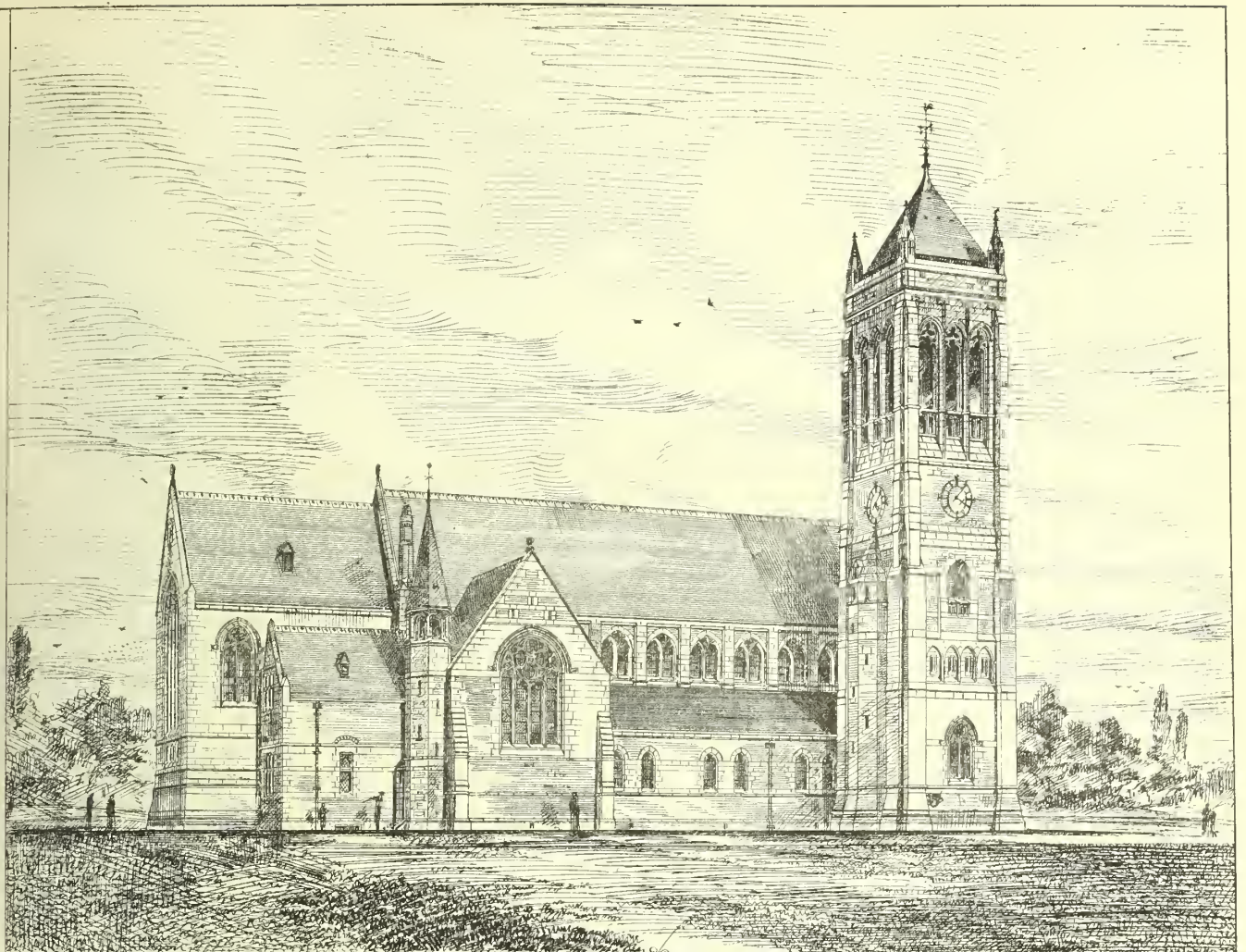
Longitudinal Section looking North



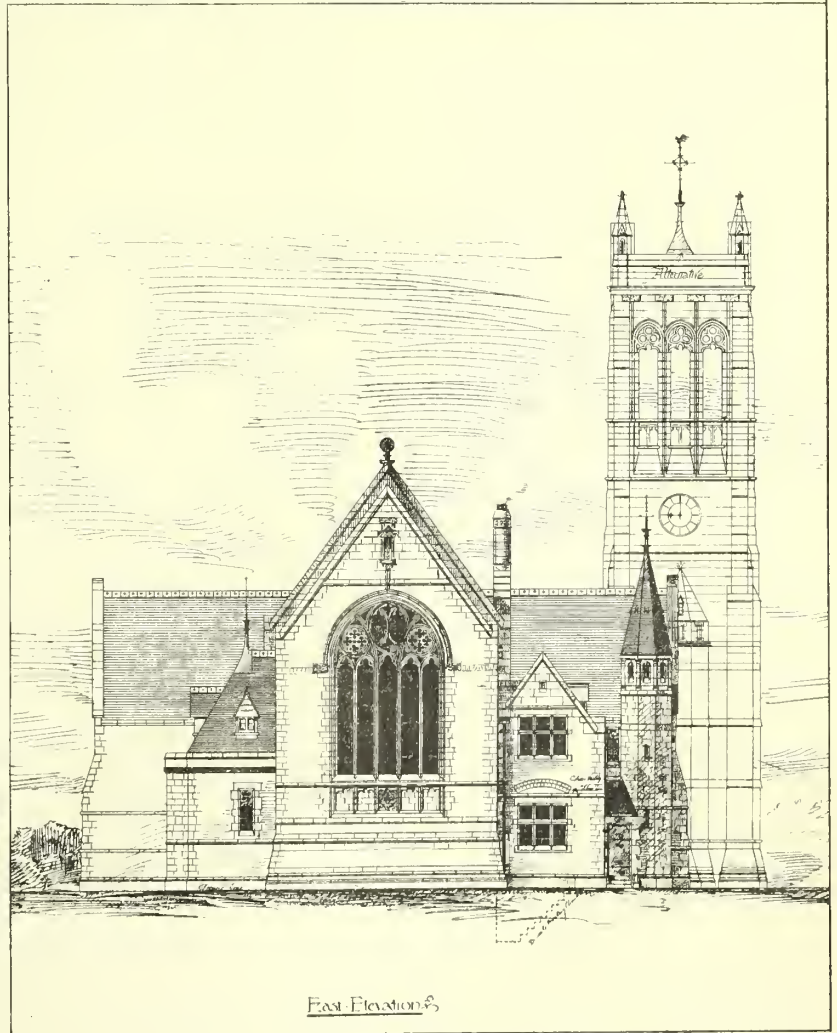
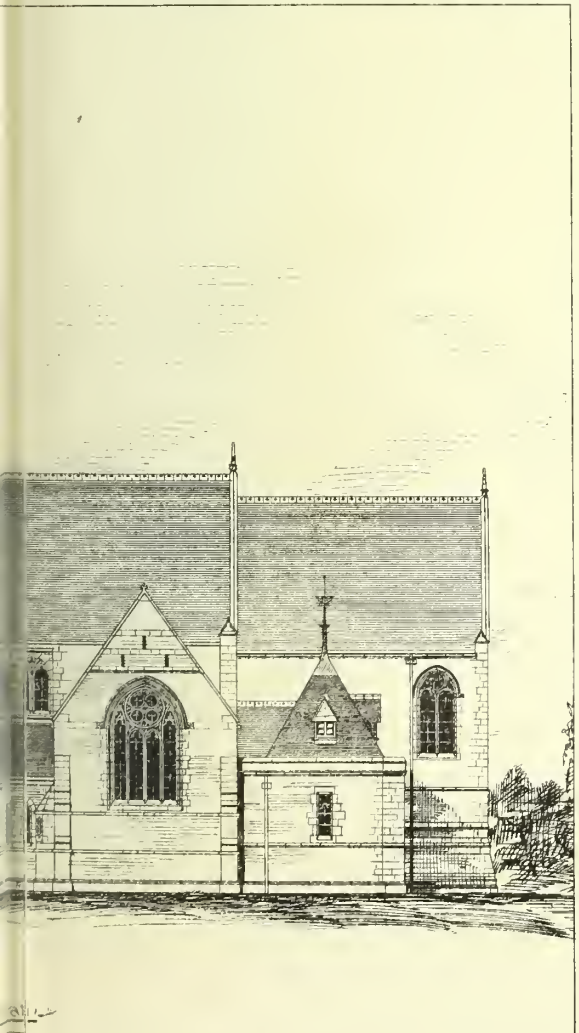
West Elevation



South



Perspective View from N.E. K. K. Treman Architect. P.



East Elevation

BASINGWERK ABBEY.*

THE site of this Abbey, on high ground overlooking the broad and extensive panorama of the estuary of the Dee, showed that it was not founded for the use of the Cistercian monks; and a confirmation of this suggestion presented itself in the traces yet to be seen close by of Basingwerk Castle, and the terminating point of Wat's Dyke. While, therefore, it might be regarded as determined that the Cistercians were not the first monks to settle at Basingwerk, there was no record of their arrival, and the dedication to St. Mary—universal in Cistercian abbeys—was shared by other bodies. Undoubted evidence proved, however, a religious settlement existed here prior to 1199, since, in that year, Hugh Lupus, Earl of Chester, being on his way to the well of St. Winifred, was attacked by the Welsh and sought refuge "in an abbey in the neighbourhood"—without doubt on this site. It might be safely concluded that the original foundation was by one of the early Princes of Wales, since the charter of Llewellyn ap Iowerth, and David, his son, mentioned donations given by their predecessors. These charters were of later date than Henry II. King Henry's (? III.) confirmation was but a grant of gifts to the monastery, and therefore no previous charters were referred to. The chapel at Basingwerk was given by the king, and described as being that in which the monks first dwelt, from which it might be inferred that new buildings were either just erected or in progress. However, the meagre documentary history had better be left till it could be better traced by probable future discoveries, although just two other points might be glanced at. The building, whose ruins the members saw before them, could not have existed (except some small part) in 1188, since Giraldus Cambrensis in that year stayed here for one night, and speaks of the monastery simply as a "small cell" ("cellula de Basingwerk"). Again, Henry II. founded somewhere in this locality a house for Knights Templars, for the Waverley Chronicle, under date 1157, speaks of King Henry having concluded works at Rhudlan Castle and Basingwerk Castle, and between the two a house for Knights Templars. Thus the title of Templars' Chapel, actually given the refectory here by Pennant, might be dismissed, for that house—of which no remains have yet been found—was miles away. The extract is also valuable evidence that Henry II., although he had masons at work repairing the adjacent castle (perhaps after the battle fought with the Welsh in 1156), did nothing to the existing abbey. Turning to the ruins themselves we find a perfect arrangement of a Cistercian house, remarkable not only for its completeness as far as traces remain, but for the purity of its design and the harmony among all its parts. The abbey church has a stype or sacristy adjoining its south transept; next in order, going south, the chapter-house, then probably the parlour, and lastly the day-room or calefactory. These form one side (the eastern) of the cloister space. The south side of the latter has in its south-eastern angle the kitchen, and next to it the refectory, which is built, as is so frequently the case, north and south. The buildings on the west side are gone. The dormitory extended over the whole of the eastern buildings. A large low range of buildings of brick and stone, with a superstructure of heavy oak timbers filled in with wattle and plaster, extends eastward from the kitchen, and formerly contained the cellars and store-houses. The church had its east end close to the bold cliff-like bank, which comes more or less to the whole northern side as well; and below the cliff, dividing it from the public road, is an extensive fish-pond, now divided in two by a high modern bank, which once carried a tramway. The church was cruciform, but at present all that is visible are the south gable of the south transept, with a triplet of lancets above the roof-pine of the abutting dormitory, the west wall of this transept, with the arch into the south aisle of the nave and one of the responds (the south-west) of the usual central tower with an attached column of the nave arcade in it; the cloister door, a small height

of the south aisle wall, and just enough of the west wall to enable us to make out the ground plan. The church was built of the brown sandstone of the district, not a very durable material, and the surfaces have crumbled away. The mouldings and other ornamental works have therefore suffered considerably, but can readily be made out. The aisle arch is of plainly chamfered orders springing from an abacus, and the same is observable above the engaged half round column of the nave. The face next the nave once had a third chamfered order, carrying the thickness of wall greater than the width of the pier. The capital is all but gone. The tower pier has a bold corbel to carry the additional thickness next the nave column, and space was thus obtained beneath it for the choir stalls. The bearing arches of the tower spring from very handsome corbels close under the springing, and not from shafts. The arches were of plainly chamfered orders only. The corbels and traces of the arches over are only visible to the south and west arches in the one solid pier, the only relic of the central tower. There is a trace of a clerestory window, and we may conclude that they were single lancets. There was no triforium. The cloister door, which is circular-headed, has been carefully moulded with clustered beads, hollows, and bowtells in several recessed orders, and the west (central) doorway into the nave has probably had a door somewhat similar, but only traces are visible for a recessed order or two to the south jamb. In the south wall of the transept is a portled doorway, to afford access to the night stairs from the monks' dormitory; the stairs were of wood, and have quite disappeared. There are two lines of roof of the north aisle of the nave visible, showing a reconstruction at a later date. The style of the church is Early English of a good type, and when perfect of excellent effect. The base of the south wall of the south transept is earlier, and may be a portion of the "small cell" which existed in the time of Giraldus Cambrensis. The main body of the chapter-house has disappeared, and the two conspicuous round-headed arches, often taken for the entrance, in reality only lead into an eastern projection of the house. This is also of Early English type, and has been vaulted with quadripartite vaulting, but with additional ribs to meet the piers of the three eastern lancets. It was, probably, covered originally with a lean-to roof, but in 15th century times a chamber was constructed over it, probably the monument-room. The chapter-house proper had a flat ceiling, and the dormitory a boarded floor, since the holes for the beams remain. The day-room must have been a spacious apartment, lighted by an eastern range of broadly-splayed lancets, which have no rebates for glass; they may, however, have been glazed with moveable frames secured to the iron stanchion bars. The dormitory over has also a range of eastern unglazed windows. The walls are too much broken by gaps to show any fireplace. A small doorway has opened from the south-east angle, probably for the passage of the sacristan, to watch the sanctuary light, as at Valle Crucis. The kitchen adjoined the day-room; of it enough remains to show that it was of late 15th century work. The refectory is a remarkable building, which has been of much beauty. Buck's view shows it with a roof, a perfect gable cross, and with four lancet windows. It is now roofless, and the gable is broken down to the ground level, leaving thus but the three external walls, and two jambs only of the gable windows. Internally the building is filled with a series of varying splayed niches, some of which have been pierced with windows now blocked; these are adorned with beautifully moulded shafts, banded and with caps and bases, and arched heads above. The whole of the eastern wall has a perfectly plain surface, in curious contrast to the opposite one; it is probably of later date. The cloister space has been occupied by an ambulatory around its four sides of wood, covered with a sloping roof. The long range of offices to the eastward of the kitchen are of interest on account of their almost unaltered condition, but they are in a terrible state of neglect, the eastern part being partially unroofed. The upper floor, approached by probably the original rough

stone steps, is used in part for a storage of tanned hides, while in others various savoury stages of a tanner's business were being pursued. The history, as told by the ruins, agrees in the main with recorded history. We have traces of an early building, and we have a later and perfect Cistercian plan. History is doubtful on the date of the latter, but Architecture tells us that this must have been carried out early in the thirteenth century, and by English rather than by Welsh hands. The usual traditions with respect to the removal of portions of the building to other places are as numerous here as elsewhere in Wales. A part of the roof is said to be at Cilcain Church; this is perhaps as true as that of the glass of Gresford Church, so far away, being also from Basingwerk. In conclusion Mr. Loftus Brock called attention to the neglected condition of the abbey ruins, and expressed a hope that that meeting would be the means of effecting some improvement. Since, said the lecturer, the foundations of the entire ground plan are most probably perfect beneath all the signs of neglect which surround us, it is greatly to be desired that a little care and attention should be bestowed, not only for the preservation of what is left, but also for the uncovering of what is buried. A small outlay and a little loving care only are needed to render these remains as interesting in proportion to their extent as those of Valle Crucis, and the accumulated earth might cheaply be formed into a barrier to preserve them from further havoc.

TIMBER OF NEW SOUTH WALES AND HONDURAS, AND ITS PROPERTIES.

BESIDES the wood produced by the forests of Europe and India, the most useful of which have already been mentioned, there is an abundance of varieties even in our own colonies to render us hopeful as to the sources of our timber supply holding out for as long as there is a demand for it. In New South Wales we find as follows:—Flooded gum, which is remarkable for durability as a ship timber, and has been known to be in use for that purpose thirty years without showing any symptoms of decay. Ships' knees are supplied in any quantity and in any size by the branches. Beef wood, or silky oak, is of extreme beauty, and has a pale red-brown mottled colour, with an undulating figure, perfectly uniform, hard texture, and easily worked. Cork tree supplies good wood for turning and carving, and is much of the nature of good poplar, so that it could be made use of for building purposes. Iron bark, of Illawarra, is a most durable wood of indestructible properties. Posts of this have stood exposed in the ground for thirty or forty years without being even corroded in any part on the surface. Turpentine tree is a heavy good wood, procurable of any size, the tree being of the largest dimensions. It is so full of resinous matter that it wholly resists both damp and white ant. It is the best wood for railway sleepers, and posts of it have stood for twenty years. Red mahogany is a capital wood, of fair colour and appearance, and is useful for most ordinary purposes. Stringy bark makes such excellent tree-nails that large quantities are annually exported to England. Water gum is a close grained tough wood, extensively used for all machinery purposes, and apparently well adapted for the same. White pine is a close-grained, but easily worked, cabinet wood, of considerable value. Cypress, or Moreton Bay pine, is a well-known and superb tree that requires no detailed notice. It yields spars 80 to 100ft. long, and one tree has been known to yield 10,000ft. of timber. Some of the wood is remarkable for the peculiar figure set up, which resembles drops of rain in general effect, and is not easily described. The sapwood appears to be peculiarly liable to rot. *Ficus macrophylla* is a most delicately coloured and beautiful wood of a uniform pale brown, with a beautiful wavy figure of a darker brown. It occurs of immense size; the trunks lengthen to 15ft. in diameter, with immense buttresses. *Flindersia Greavesii* is the monarch of the northern forests, and an invaluable wood for general purposes. Rosewood is of extraordinary beauty at the heart, clouding off into the rich yellow sapwood in the

* Abstract of a paper by E. P. LOFTUS BROCK, F.S.A., hon. secretary, British Archaeological Institute. (See p. 226 in last issue.)

most delicate wreaths. The heartwood is not broad, but nothing can be more beautiful. *Castanospermum Australis* is much praised as a useful furniture wood and for general purposes, of immense size, and when well cut yields a very good figure of pale brown colour. Besides these there are other trees, all useful for furniture and general purposes, some of them being of great beauty.

We will now turn to Honduras, and here we shall find many useful woods not generally known here, but which may some time be sought after, such as acacia, a very durable, hard, brown wood, used for house-posts, piles, &c. Alligator pear, a very durable brown wood, but not abundant. Wild hazel tree, used with success for building purposes. Balsam tree, measuring from 12 to 16in. in diameter, with a red, close, hard wood, suitable for building, and used for rollers in sugar mills. Bullet tree, large, with hazel brown wood, close and hard, used for building purposes, and very durable. Cabbage or partridge tree, close and hard, and of a brown colour. It is very durable, withstands the action of water, and is of much value for sleepers and bridge timber, also shipbuilding and cabinet work. Camphor wood, used for house posts, bridge timber, and sleepers. It is a large tree, which grows to about 24in. diameter, with a coarse, soft, stringy wood. When newly cut it has a pleasant odour, is very durable, and stands the wet like few other woods. Cedar grows to a large size, and in Honduras is used for house-building. Four to six feet in diameter is frequent. Cotton tree grows to a diameter of 8 to 12ft. The wood is whitish-yellow, light, not very durable, but easily worked. For inside work it would probably be found a good building wood. Billyweb is a tree growing from 12 to 16in. diameter, with a brown-coloured wood, very elastic, and one of the most valuable woods where durability, toughness, and in fact any of the qualities of the *lignum vitæ* are required. It is used for bridge timbers, house-posts, trenails, machine frames, &c. Dogwood, a hard, dense, brown, durable wood, much esteemed for shipbuilding, knees of this timber being very durable. Live oak does not acquire a large size here, growing seldom to more than 16in. diameter. Used for sleepers, house-posts, &c. Fustic is best known in this country as a dyewood, but is used in Honduras for building purposes and also in shipbuilding; and rosewood is too well known to need notice here. Redwood is used for house-building, and for any work in the ground. It is a middling-sized tree, growing to about 16in. diameter, with a dense hard red wood, and very durable. Black mangrove, dark, hard, and tough; is very durable, dense, and heavy, and is used for such purposes as piles, sleepers, and house-posts. Red mangrove is a red, hard, elastic, straight-grained wood. It is used for house-building and is very durable in the ground and water. White mangrove is a tree with a white wood, and though not very durable is used for dry works in house-building, and answers for such purposes very well. Mahogany, though needing no description, is used in Honduras for house-building, bridge timber, and shipbuilding. Sapodilla is a tall tree, with dense hard red wood, and is very durable on land or water. It is used for building purposes, rollers for sugar mills, and for eccentric turning. Pine, yellow or pitch pine, is very abundant. The wood contains a great quantity of turpentine, and is very durable in and above ground, as well as in the water. It is used for building purposes, piles, and shipbuilding. Oak resembles that of England, and grows on high ground, above the lines where pines grow. San Juan is a tall tree, growing to above 2ft. in diameter, with a light yellow wood, very durable for dry works, and used extensively for building purposes. Santa Maria is a tall tree resembling mahogany, of whose character it partakes. It is, however, of more density, of a dark brown colour, and very durable. It is considered a very valuable wood for shipbuilding, and is one of the best woods known in Honduras for wet works—as piles and foundations—as well as for machinery, frames, rollers, &c., as it contains no acid, is cross grained, not brittle, and very resisting. It is abundant at a short distance from the coast. Savicer is a large tree, with a heavy

red durable wood, of the dark mahogany character. This wood is highly esteemed in shipbuilding purposes, bridge timber, and sleepers. Sea-side grape is used for building, sleepers, knees, and also for eccentric turning. It always grows in the vicinity of the sea, with a dark red, fine grained, hard wood, which is very durable. Lancewood is principally used for cart shafts. It grows from 3 to 6in. in diameter, is of a pale yellow colour, and very elastic. Yellow wood is a middling-sized tree, up to 16in. diameter, with very little sap, the wood light yellow and close grained, somewhat resembling boxwood. It contains a yellow dye, but in a smaller proportion than fustic. It is used for building, and might be employed for engraving.

LIVERPOOL ENGINEERING SOCIETY.

THIS society held its usual fortnightly meeting on Wednesday, Sept. 12th, at the Royal Institution, Colquett-street; Mr. C. Graham Smith, A.I.C.E., President, in the chair. Mr. Squire, the honorary secretary, exhibited some interesting samples of mortar. A sample of mortar from Sandown Castle, Kent, built in the 16th century by Henry VIII., stood as high a tensile strain as 263lb. per square inch, notwithstanding that the section was rough and not calculated to give a high breaking strain. Mr. Alfred Holt, member, lately brought a piece of mortar from Nicopolis, a city built to commemorate the victory of Actium, B.C. 40, and a place of no little interest in the present war. This mortar, although rough and honey-combed, appears as hard as stone, and the president on this account cited it as another proof of the correctness of his theory that the ancient mortars owe their strength more to the high quality of the materials than to any special qualifications or particular care bestowed upon their mixing. A paper by Mr. R. F. Pitt, member, was then read, the subject being "Piecework v. Daywork." Although a strong advocate for "piecework," under most circumstances, he endeavoured to take an impartial view of the question. He considered that the labour question was entirely governed by the laws of supply and demand. He stated that piecework enables the men to earn higher wages than by daywork, and the employer gets a larger amount of work done. He is also in a position to make larger sales and turn his capital over more quickly than otherwise. On the whole he thought it decidedly advisable to adopt piecework, when dealing with navvies, masons, quarrymen, and other similar descriptions of labour.

ARCHÆOLOGICAL.

EXCAVATIONS INTO MOUNT CABURN.—During the past week, by permission of the Speaker of the House of Commons, Col. Lane Fox has been engaged with workmen in making excavations into Mount Caburn, Sussex, on behalf of the combined committees of the British Association and Anthropological Institute. A number of pits, square, oval, and round, were found in the interior of the camp, and some have been opened. They are of different sizes, and between 6 and 7ft. deep. They appear to have been human habitations, and would contain two persons crouched together, but there is not room for them to lie extended. The pits contained a large quantity of bones of animals used for food, chiefly of the ox, pig, and goat. These remains have been sent to Professor Rolleston for identification. At the bottom of the pits were found some pottery and several implements of late Celtic type, including a knife, battle-axe, iron spud, and a bone comb. A large basin-shaped shaft, 16ft. deep, had been cleared on the south side of Mount Caburn. It is difficult to ascertain for what object unless it might be for obtaining flints similar to those of Cissbury. A vein of flints runs near the bottom of the hollow, but there are no galleries as at Cissbury. On Saturday a section was cut through the rampart, and large quantities of pottery were found of a character anterior to that in the pits. During Monday's excavations nothing was unearched beyond remains of burnt stakes, showing that the fort was defended by a palisade.

Building Intelligence.

ADDINGTON, BUCKS.—A school, with house, has been built here for the Right Hon. J. G. Hubbard, M.P., of Thornborough bricks, with dressings of Corsham stone. The whole has been well carried out by the workmen on the estate, from the designs and under the superintendence of Mr. E. Swinfen Harris, jun., of London and Stony Stratford. The chimneys are all made of handwrought bricks, and there is much detail throughout.

APPLEDRAM.—The parish church of Appledram, near Chichester, was re-opened after restoration, on Thursday, September 6th. The work of restoration has been carried out by Mr. Lacy W. Ridge, the diocesan surveyor. The church consists of nave, chancel, and side aisle, all of the purest Early English type, and is remarkable for three triplets of lancet windows, the lights separated by Purbeck shafts—viz., one triplet at the east end and one on each side of the chancel. The mouldings to these are unusually rich and in perfect preservation. A squint affords a view of the altar to the occupants of the aisle; it is surmounted by an elegant ogee arch. The original marble font, for many years partly imbedded in one of the pillars, and supported on a mass of brickwork, has been removed to the original site, the central shaft supporting it having been discovered among the bricks, and supplemented by four Purbeck dwarf pillars with carved stone caps and bases. The pews have been replaced by convenient open pitch-pine benches, and those in the chancel by solid carved oak seats. The porch has been partly rebuilt, being much decayed, the Perpendicular character being reproduced. The total cost has been nearly 1,000l.

ADSTOCK, BUCKS.—A school has just been built here for the Adstock School Board. The materials are the local red brick, with tile roofs, capped with Cooper's ridges and finials; oak bell-turret, covered with shingles; half-timber porches for boys and girls. The work has been carried out by Messrs. Marshall and Boyse, of Buckingham; and the architect was Mr. E. Swinfen Harris, jun., of London and Stony Stratford.

BRISTOL.—Scaffolding is now being erected in order to take down the church of St. Werburgh, Bristol. Mr. J. Bevan, architect, of St. Leonard's Chambers, Nicholas-street, Bristol, has been entrusted with the task of superintending the removal of the church and re-erecting it in Mina-road, Baptist Mills, and under his supervision it is intended at first to take down the tower as far as the roof of the body of the edifice. In the re-erection of the church the old materials will be used as far as practicable, and the style be maintained intact, with one or two slight exceptions, Chief among these is an important addition to the ornamental pinnacle on the old tower, which is referred to the fourteenth century, whereas the body of the church was rebuilt in 1761. The architect has also taken the liberty of introducing a slight alteration in the upper parts of the windows by adding additional mullions—thus bringing them into accord with the period in which the church was built. The existing windows are copies of some poor fifteenth-century work. An extra bay will be added to the nave, which at present consists of four bays. An additional length of about 13ft. will thus be secured to the church. The new building will be 106ft. in length by 59ft. in width, and will accommodate about 600 worshippers. A chancel is to be added, with a vestry for meetings, and an organ chamber. Underneath the north aisle will be a muniment chamber and crypt. Messrs. Wilkins and Sons are contractors for removing the old church and re-erecting it at Baptist Mills.

CHURCH RESTORATION IN NORTH YORKSHIRE.—Quite an impetus is being given to church restoration in the North Riding just now. A new chancel, 25ft. in length, has been added to the fine old church of St. Mary's, Rokeley, as a memorial of the late Mrs. Marritt; it contains a stained-glass window representing the dedication of Solomon's Temple. At Pickering, the old church of St. Peter is in the builder's hands; the work is

estimated to cost from £7,000 to £8,000. The fine Norman tower (of about the period of 1130) is being restored, the north transept rebuilt, and that on the south side repaired, the chancel re-roofed, and for unsightly pews oaken stalls are being substituted. At Old Malton the church of St. Mary—a remnant of the priory founded by Eustace FitzJohn in 1150—is being restored under the direction of Mr. Fowler Jones, architect, of York. The magnificent Norman tower, which is in very ruinous condition, is being rendered safe, and when this operation is accomplished the repairing the exterior of the building will be gradually taken in hand. The estimated cost of the works contemplated here is over £6,000; it will be borne by Earl Fitzwilliam.

DUNLEWY.—On the 29th of August the new Roman Catholic church of the Sacred Heart, at Dunlewy, Co. Donegal, was dedicated. The church, built in Romanesque style, with a round tower for a belfry, is from the designs of Mr. T. Hevy, of Belfast, who studied many years with the late Mr. Pugin. The altar is carved in Caen stone, with pillars of dark green marble, and flanked by statues of Our Lady and St. Joseph, from the works of Mr. Harrison, of Dublin. The windows are narrow, filled with stained glass from the manufactories of Messrs. Early and Powell, in Dublin.

DUNFERMLINE.—A new public hall at Dunfermline is approaching completion. The building, which has been designed by Mr. John Starforth, architect, York-place, Edinburgh, is in the Early English style. The principal frontage measures 92 feet in length, and 40 feet in height. The interior embraces an area which nearly forms a square. The large hall is 80 feet in length, 60 feet in breadth, and 43 feet in height. It will afford accommodation for an audience of 1,320 people—770 on the ground floor, and 550 in the gallery. The orchestra and gallery occupy a space of 42 feet by 21 feet. The lesser hall is on the second floor of the southern front, and measures 56 feet in length, 28 feet in breadth, and 26 feet 6 inches in height. On the ground floor there is a suite of committee and retiring rooms, lavatories, &c.; and in the upper parts of the building there are capacious reading and billiard rooms. The building will cost upwards of £9,000.

EDINBURGH.—On Friday last, at a meeting of a sub-committee of the Lord Provost's committee, estimates were accepted for the carrying through of the work in connection with the proposed extension and alteration of the Corn Exchange, as formerly agreed upon by the Town Council. The lowest tenders amounted in all to £5,067, and consisted of the following: Masonry, £3,183, Messrs. Bishop and Sou; joiner work, £1,160, Mr. David Pullar; and plumber, plasterer, slater, and ironwork, £724. Under the Edinburgh Markets Act of 1875, power was obtained by the Corporation to acquire properties in proximity to the Exchange, with the view to carrying out the improvements contemplated. Mr. Morham, city superintendent, thereafter prepared plans showing how it was intended to utilise the ground in question on the demolition of the existing tenements, which are to the south and west of the market. The new buildings have been designed in the old Scotch style of architecture. The additions to the Exchange will include an implement hall, a bag store, and a large general store-room to the back, with ample access for carts along the west side of the building. A tenement to the west of the Exchange, which is in a dilapidated condition, is to make way for a large four-story building, the ground floor of which is to be used as settling-rooms, weighing-rooms, &c.

ETON COLLEGE.—During the long vacation in the new mathematical schools, which have been erected on the west side of the Slough-road, some of the class-rooms have been re-arranged to meet the requirements of the masters and boys. The structure is of red brick and white stone, built in the Gothic style by Mr. Wheeler, of Reading. There are 16 class-rooms, 10 of which will accommodate a master and 25 students each, the other six being each large enough for a master and 39 pupils. There is, therefore, sufficient school-room for 16 masters and 484 students. The façade of the building accords with the other architecture of the

college. The battlemented roof is here and there ornamented with lofty pinnacles, and in the centre of the front, carved in white stone, are the Eton arms and the date.

GORSLEY, GLOUCESTERSHIRE.—An apse has been built to the school church here of the local stone, with Bath stone dressings and open timber roof. There is also a new stone bell turret over the chancel arch. The apse was opened by the Bishop of Gloucester and Bristol on the 4th August last. The cost has been defrayed by subscriptions collected by the incumbent, the Rev. E. H. Sankey. The parsonage-house, forming a group with the little church, has been built some months, of the local stone, with brick dressings and tile roofs. The cost, inclusive of roads, fences, &c., was less than £800. Both the works have been carried out by Messrs. H. and R. James, builders, of Newent, from the designs and under the superintendence of Mr. E. Swinfen Harris, jun., of 32, Craven-street, Strand, London, and Stony Stratford.

NORTHAMPTON.—On Thursday week the new Wesleyan chapel in Regent-square, Northampton, was opened. The total cost has been about £4,500, and the chapel, which has been built by Mr. Watkin, in accordance with plans prepared by Mr. Newman, is Italian in style. Red pressed bricks have been used, the front being relieved with moulded Bath stone dressings. The building has a coved, panelled, decorated roof, and from it are suspended two brass chandeliers. Iron columns, slightly ornamented, support the gallery, and appear to be continued to the roof. Underneath the chapel is a commodious infants' school-room, furnished with a gallery. Around it are five class-rooms, with heating apparatus, &c., and above these are the two vestries which are at the rear of the chapel.—On Monday the memorial stones of a new Primitive Methodist school were laid at St. James's-end. The cost of the building will be about £345, the contractor being Mr. Branley, of St. James's-end, and the architect Mr. E. H. Lovett, of Duston, who gives his services voluntarily.

SIMONBURN.—The ancient church of St. Mungo, at Simonburn, which has been restored, was re-opened on Tuesday week. The architecture is Early English, of the type peculiar to the great church-building era of Northumberland, a long chancel of 48ft. being joined to a late Norman nave, and aisles of 6ft. in length. The idea has been carried out during the restoration of replacing, as far as possible, each part in accordance with the architecture of the period of its erection. The arches and walls have been re-dressed and pointed, throughout the church. An Early English porch, designed from the priest's door of the chancel, has been added. A timber roof of stained pitch pine has replaced the ceiling. Mr. R. J. Johnson, of Newcastle, was the architect, and the work has cost about 2,700l.

SNEINTON, NEAR NOTTINGHAM.—A large and handsome set of Board schools, accommodating 637 children, were opened on the 10th inst. A caretaker's house, with board-room attached, is provided. The accommodation is for 210 boys, 210 girls, and 217 infants. Each department has a large school-room and two class-rooms. The walls are of pressed red brick, with Bath stone dressings. The roofs are covered with blue and red tiles, with red ridge. The playgrounds have covered playsheds. The schools have a frontage of 232ft., and are broken up by projecting gables and traceried dormer windows. A lofty and handsome bell turret covered with lead forms a pleasing feature in the depth. The schools are very lofty, with open-timbered roofs, stained and varnished. A dado of red deal, stained and varnished, extends round all the schools and class-rooms. Windows are obtained on each side of schools and class-rooms. The schools and class-rooms are heated with hot water. The playgrounds are asphalted. The buildings were erected by Mr. Henry Vickers, of Wilford-road, Nottingham, at a cost of a little over £6,100. They are erected from the designs and under the superintendence of Robert Clarke and Son, architects, Nottingham.

ST. MARGARET'S, WESTMINSTER.—The old church of St. Margaret's is now undergoing restoration. It has been affirmed that King

Edward the Confessor caused this church to be erected close to the Abbey, which he was then building, dedicating it to St. Margaret, the virgin martyr of Antioch. About 200 years afterwards the church was destroyed by accident, and rebuilt by the parishioners and merchants of the Staple. Some other parts are said to have been rebuilt in the reign of Edward IV., and particularly the south aisle by Lady Mary Billing, and her husband, Sir Thomas Billing, Chief Justice of England in that reign. In 1735 the tower was rebuilt, and the church finally ceiled with money granted by Parliament. The stained-glass window in St. Margaret's Church has a long history. The magistrates of Dort, in Holland, being desirous of presenting King Henry VII. with something worthy to adorn his magnificent chapel then building at Westminster, directed this window to be made, which was five years in finishing. King Henry and his Queen sending their pictures to Dort, whence their portraits in the window are taken. King Henry died before the window was completed, and it fell into the hands of an Abbot of Waltham, who placed it in his abbey church, where it remained till the dissolution of that abbey by Henry VIII. (A.D. 1540). To preserve it from being destroyed it was removed by Robert Fuller, Abbot of Waltham, to a private chapel at New-hall, in Wiltshire, an ancient seat belonging to the Earls of Ormound. In Queen Elizabeth's reign New-hall was the seat of Thomas Ratcliff, Earl of Sussex, and afterwards his family sold the window to George Villars, Duke of Buckingham. His son sold it to General Monk, who, to preserve it, caused it to be buried underground during the Civil Wars. After the Restoration General Monk caused the window to be replaced in the chapel of New-hall. That chapel was suffered to become ruinous by his successors, but the window was still preserved. It lay for some time cased up in boxes, until Mr. Conyers purchased it for his chapel at Cophthall, near Epping, and paid an artist named Mr. Price a large sum of money for repairing it. There the window remained until his son, John Conyers, building a new house at some distance from the old seat, had no further use for it, and sold it for the sum of 400 guineas to the committee appointed in 1758 for the repairing and beautifying of St. Margaret's Church.

ROATH.—A new Baptist chapel (Zion) was opened in Longcross-street, Roath, on Wednesday. The building is Gothic in style, and includes, besides a chapel for 300 persons, school-room, vestry, and underground boiler-house and offices. Dark blue grey Newbridge stone and Bath dressings have been used in construction, and the internal wood fittings are chiefly of pitch pine, the pulpit having oak panels. The seats are varnished, but not stained. The pulpit is placed on a slightly raised platform, with baptistry beneath. The walls and windows of the chapel have been so planned as to admit of the addition of galleries, so they be needed. Mr. Peter Price, of Cardiff, was the architect, and Mr. Trotman the builder, the stonework having been done by Mr. Roberts. The cost has been £1,600.

WEST DULWICH.—The consecration of Emanuel Church, West Dulwich, took place on the 8th inst., by the new Bishop of Rochester. Nearly four years have elapsed since this church was projected, and now only so much has been erected as could be completed for the sum of £6,000, thus necessitating the omission for the present of two bays of the nave and the upper portion of the tower and spire. That which is done has, however, been well done, and consists of the shortened nave and aisles, the transepts, the chancel, the major part of the tower, and the clergy and choir vestries. The church is in the style of the thirteenth-century French Gothic, and is faced externally with Kentish rag and Bath stone dressings, and internally it is lined with white bricks and stone. The nave arcade, with its carved caps and clustered pier-shafts of Doulton stone, sustains a clerestory pierced with plate-traceried windows. The polygonally-ended chancel has five similar windows within an internal arcade. The reredos of Caen stone, inlaid with mosaics, is raised in front of the deep-coloured tile dado surrounding the east end. The whole of the chancel, 33ft. by 20ft.

wide, is paved with Maw's tiles. The pulpit is of Caen stone and alabaster; the eagle lectern is of brass; the choir stalls are of pitch pine. The organ, by Hill and Sons, is situated in the upper stage of the tower, below which is the chief entrance. The church is heated by warm water, and fitted with cushions throughout, and accommodates 550 adults, which will hereafter be raised to 900. The architect is Mr. E. C. Robins, of 14, John-street, Adelphi, and Messrs. Adamson and Sons the builders; Mr. Woodley the clerk of works; Messrs. W. B. Simpson and Co. executed the tiling and mosaics.

CHIPS.

Mr. Layard, the British Ambassador, has received a firman from the Sultan, authorising excavations at Nineveh.

The War Department has been asked to sanction the removal from the river front of the Tower of London of a very unsightly three-storied warehouse of wood and brick, which stands between two of the ancient portions of the building. There are hopes that the efforts which are being made for its removal will be successful.

The erection of two new Board Schools for Thornbury, by the Calverley-with-Farsley School Board, is now being carried out. The schools—mixed and infants—will together accommodate 500 children. The style is Gothic. The buildings are being erected under the superintendence of Mr. J. P. Kay, architect, Leeds, and are estimated to cost £4,405 10s.

A new redos is about to be provided for the parish church of Torrington. The work will be executed, under the supervision of Mr. R. Medley Fulford, architect, of Exeter, by Mr. Harry Hems. The redos will extend right across the chancel, and will rise at its highest point to the height of 12ft. Constructed in the main of Beer stone, its principal feature will be a large sculptured panel of Caen stone, representing the Last Supper, carved in high relief.

The foundation stone of a new church was laid on Wednesday at Parracombe, Devon. The old church will be so far renovated as to answer the purpose of a mortuary chapel. The cost of the new building will be about £3,000. The plans of the new church have been prepared by Mr. W. C. Oliver, of Barnstaple; the contract has been entered into by Messrs Bevan and Sons.

The Local Board of Health of Southend-on-Sea have decided to lay out at once a sum of £15,000 in alterations to the pier and the foundation of a new tramway pier on the west side of the existing structure.

Plans have been prepared by Mr. C. Pertwee, of Chelmsford, engineer to the Witham Rural Sanitary Authority, for works of water supply and drainage for Great and Little Coggeshall. These are expected to involve an outlay of about £8,000, if adopted.

The Duke of Devonshire has offered the Eastbourne Local Board of Health, free of charge, a piece of ground near the Union-house at Old Town, containing 5 or 6 acres, as a public recreation ground. The gift has been accepted with thanks.

Eckington parish church, Derbyshire, is being restored. The old pews are being replaced by benches, and the west gallery is to be removed.

A water supply has been provided and given to the village of Middleton-by-Youlgrave, near Bake-well, by the liberality of Mr. J. M. Bateman, the owner of the hall, from his own designs, at a cost of about £1,100. Mr. Bateman has forced water by means of a 27 horse-power engine, from the Bradford brook in the dale into tanks on high ground above the village.

Sixty-two persons applied to the Burton-on-Trent Rural Sanitary Authority last week for the appointment of inspector of nuisances, to which is attached a salary of £200 per annum. It was bestowed upon Mr. Barry, who at present holds a similar situation under the Sheffield Town Council.

Mr. E. F. Hall has been appointed inspector of nuisances to the Clay Cross Local Board of Health. The same body accepted, on Wednesday, three separate tenders for the execution of drainage works in the district. These amounted in the aggregate to £713, whereas a contractor from Clowne asked £1,850 for carrying out the entire scheme.

The Derby Town Council has requested the Sanitary Committee to consider and report as to the disposal and utilisation of sewage preparatory to taking action as to a scheme for the enlarged borough.

Chapels and a lodge are in course of erection for the Burial Board of Pentre (Rhondda), South Wales, from designs and plans by Mr. Lovegrove, of London. Messrs. Charles Jenkins and Co., of Treherbert, are the contractors.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published September 14 contains articles on Vaccination, Hospital Mortality, On the Incongruity of Milk Analysis, The Causes of Disease in Country Homes, House Drains in Relation to Health, The River—(a long way) after Tennyson, The Social Science Congress, Public Health Reports, Legal Intelligence, Water Supply and Sanitary Matters, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c. Price 2s. Annual Subscription post-free, eleven shillings. J. Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces. Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—M. G.—T. H. M.—M. J. D.—J. A. M.—C. of R.—J. M. G.—T. L. B.—F. W. A.—E. H.—D. C.—C. H.—C. of P.—G. B.—G. H. S.—G. S.—J. J. M.—L. and N.—T. H. S.—A. N. P.—M. V. and M. "BUILDING NEWS" DESIGNING CLUB.—W. Herring. (If you refer to the BUILDING NEWS, p. 219, you will find, in answer to "Perplexed Student," the same question answered. From 8ft. to 10ft. superficial is generally allowed for each child.)—J. Harris. (Your suggestion will be considered.)—H. (There are many architects members.)

ARCHITECTURAL SCIENCE CLASS.—In reply to "A. E." and several others we contemplate commencing another series of questions.

PUPIL. (To give a list of the best books for studying architecture would be to fill a column of our space rather unprofitably.)—C. J. E. (There are several books published to explain algebraic formulae, such as Tate's "Elements of Algebra;" but if you send the formula we dare say we can tell you how to work it out in plain figures.)—We have a drawing of an old oak chest signed "M. R." Will the author oblige with his name and address, so that the drawing may be returned to him?—Drawings received: H. C. Harris, F. W. Hagen, C. C. Hodges.

Correspondence.

MASONS v. BUILDERS.

To the Editor of the BUILDING NEWS.

SIR.—Referring to the masons' strike in the building trade, and looking at it from an outside point of view, it seems there is but one way to decide it fairly—viz.: Let the employers concede and the masons accept the principle of piece-work; then let the committees of the Employers' Association and the Masons' Union meet, and each committee choose, say, five men of their own body to settle the dispute once and for ever, by agreeing upon a scale of prices to work by piecework on the basis of 9d., 10d., or any other price per hour, arranging the scale of prices according to the work performed by a fairly competent and industrious workman.

I have spoken to many on both sides of the question, and they agree that the standard should be the average workman. I may also say I have not met with a single instance of opposition to a carefully-arranged list of prices, to which both parties could agree. Many have expressed a wish that prices could be so arranged and agreed. Surely, as before-named, the committees might easily settle this. As an argument, by way of illustration, take any

stone—say Portland, as a typical one; then go to Portland, look at a grass field, and watch its breaking up to make a stone quarry, the breaking up or uncover, getting, cutting, and scrapping, the loading on the ploughs,* the carriage by local railway, the loading from same into other railway trucks or ships, the carriage by ship or railway, the cartage to builder's or master mason's yard, nay, the sawing into scantling, all the several labours are performed by piecework. But, as soon as the Portland stone, thus quarried, carted, and sawn, comes to the mason's banker, the world of fact is left. After that no one can tell with anything like precision what the cost of labour will be on any stone before it is sent out to be placed as a goodly stone in the intended building.

This ought not so to be, and many good men and true (although Union men) would, if permitted by their fellows, be as ready to render as good account of their labour as any other trade, be it bricklayer, joiner, plasterer, plumber, slater, tinker, tailor, or candlestick-maker, and to sum it up at the end of the week, sometimes astonishing the employer or pay clerk by the amount.

Let the two committees settle the prices to be paid for each kind of labour, and it will then be seen if there is any truth in the hackneyed argument—viz., that the best workmen pay for the inferior or less skilled workmen, as a good opportunity will be afforded these good workmen to exhibit their philanthropic ideas by dividing the excess moneys they earn amongst those who are not actually or physically up to the average. For instance, A is a fair average workman, earning, say, 50s. per week; B is more than an average workman, earning easily at the same rates, say, 60s. per week; while C, although industrious, working closely, and losing no time, yet somehow the fact is he cannot, do what he will, earn at said rates more than 40s. per week, or 10s. below the fair average workman. Here the good workman's philanthropy should come into play; but instead of the good workman, who earns 60s. weekly, giving his extra 10s. to the less skilful or 40s. workman, thus making each of them equal, he (the good workman), or, rather, perhaps, his society, wants the employer to make them equal, and pay the acknowledged inferior workman 10s. more than he can fairly earn; or, in effect, asking the employer to make the inferior workman a present of 10s. weekly. No wonder, to use a common phrase, that the employer "does not see it." He would see it, and appreciate it too, if all his best workmen, after receiving their money at the pay table, immediately called together their fellow workmen, and said to them, "Look here, you have worked as hard and as many hours as we have; you require as much food as we do; come in here and we will divide with you, so that all shall be equal." One such instance would be worth a thousand theories.

The good workman says, or his Union says for him, "I make up for the shortcomings of the inferior workman." Does he? Again I say "the employer does not see it." The honest inference is, if all men are paid equally, they are all reduced to the level of the inferior workman. Moreover, it is a well-known fact that the more than average workman is frequently cautioned not to push his work, but rather to nurse it, so that the inferior workman may keep pace. The effect of this is to lower the standard. Nevertheless, if a fellow-workman branches out, and takes a job, either as a master or as a sub-contractor, he does not, will not, pay all his men equally, showing that, as soon as his pocket is touched, he practically believes all men are not equal, the Union principle notwithstanding. I therefore repeat, let the committees make a fair and honest arrangement for piecework between employer and employed, and we shall hear no more of strikes, with all the evils which follow in their train.

To this simple arrangement I am aware many on both sides are not disposed to agree. The one because he would have to employ additional clerks, which he can ill afford; the other, because he has an ill-defined idea that

* A long team of horses, attached to a stone truck in single file is locally called a "plough."

if he works piecework he loses his dignity and self-importance, and becomes a slave to be driven by whomsoever may be the overseer. Still, I think the only panacea for strikes is healthy piecework, and if men and masters (or, I suppose I ought to say, "employers and employes,") would only set to work and agree to try it, we should hear no more of strikes.

The employer is bound to give, as per bills of quantities furnished him, a price for the several kinds of masonry, plain work, sunk work, moulded work, &c.; and why should there be any difficulty in the workman doing the same?

I am quite free to admit that the Union, or men's advisers, should have a large say as to what the price for the different kinds of labour should be, but once the same is fixed it should not be disturbed lightly by either party.—I am, &c.,

STONE.

THE NORTH LONDON CONSUMPTION HOSPITAL.

SIR,—While thanking your critic for his very favourable remarks on my design for the above, in an article in your paper of the 7th inst., may I be allowed to point out a slight inaccuracy in its description of its features? He says: "The corridor of communication is placed in front, and forms an arcaded balcony of timber externally, resting upon a stone arcade of Gothic design—a very desirable and pleasing feature. This open arcade stops against the extreme wings and the two central day-room octagons," &c. Now he has here mixed up the "corridor of communication" and the verandah, which are distinct things. The former is in front towards the road, but the latter is towards the garden, and forms the "arcaded balcony on the stone arcade" your critic is kind enough to consider so pleasing. The corridor in front is the general means of communication between the wards, day-rooms, &c., while the verandah, or arcaded balcony, towards the garden, comes between the extreme wings and the central staircase, having the windows of the wards opening out upon it. Thus you will observe the functions of the two are very different.

Your critic strikes the key-note of the question in his concluding remarks when he points out the difference between this building and a general hospital. The pavilion principle with windows on each side, is not so applicable to the requirements of consumptive cases, where cross draughts and too much light in the wards are considered disadvantages. Hence the difference in construction between the wards in this instance and those for a general hospital.—I am, &c.,

THE AUTHOR OF THE DESIGN
SIGNED "HAMPSTEAD."

London, 12th September, 1877.

FORCE OF WIND.

SIR,—A correspondent who signs the initials "J.S." alludes to the investigations on the force of the wind made by Hutton, whose empirical formula is worked out in Unwin's lectures on "Bridges and Roofs." This formula of Hutton's was deduced by him from experiments on the motion of a small plane through the air, the plane being inclined at various angles to the direction of motion, and it is assumed that the pressure on the plane will be the same if the air itself is in motion and the plane at rest, as when the plane is in motion and the air is at rest. Whether this assumption is correct or not remains to be proved. The formula, however, as worked out by Mr. Unwin, contradicts itself, for on the supposition that the wind blows horizontally against a roof, it gives the normal pressure per foot on a roof of 60° pitch as the same as that on a perpendicular wall, against which, of course, the wind would have its maximum effect. (By working out the formula the angle will be found to be more nearly 57°, instead of 60°.) And what is still more extraordinary, when the pitch is 70° the normal pressure per foot is actually greater than that on a vertical wall—that is, greater than the maximum. These anomalies destroy all confidence in the formula, and it is surprising that so good a mathematician as Mr. Unwin should have adopted it without noticing the failure.—I am, &c.,

THE AUTHOR OF THE ARTICLE.

THE CHAPEL ROYAL, SAVOY.

SIR,—During the last week remarks have been made by most of the daily and weekly papers in reference to the alterations about to be carried out in the above building, and as some fears have been expressed lest the ancient character of the edifice should be injured, we have thought it right, as architects to her Majesty for the works, to inform you explicitly what their nature is.

The existing vestry, which dates back only some five and twenty years, and which besides being too confined for the necessities of the choir is defective in its sanitary arrangements, will be removed. In place of it, and on the same site, will be erected a new vestry more in accordance with the character of the chapel, and in no way interfering with the view of the east elevation. A new small door-way is to be cut through the east wall by the pulpit, not, as stated by one paper, to be an entrance solely for the Chancellor's use, but chiefly to form what is so much needed at the north end—a vomitorium for the congregation in case of fire. Before this door will be a porch which will also give access to the new vestry.

These are the only works now definitely arranged for, as the scheme for raising the organ into a loft at the south end, and forming doors in the south wall towards the Embankment, in place of the present modern east door, is postponed for further consideration.—We are, &c.,

PERRY AND REED,
9, John-st., Adelphi, Architects to her Majesty's
Sept. 11, 1877. Chapel Royal in the Savoy.

A CORRECTION.

SIR,—May I request that in your next issue you will make a little correction? The paper on "Corwen Church," read at the British Archaeological Congress, was not the production of the Rev. William Richardson (who kindly read it in my absence), but was written by yours faithfully,

EDMUND B. FERREY,
15, Spring-gardeau, S.W., Sept. 8th, 1877.

CHIPS

The parish church of Bolton-upon-Swale has been improved by the erection of a new organ chamber and the re-flooring of the chancel. Mr. W. E. Nessfield, of London, was the architect. A stained glass window has also been inserted from the studio of Messrs. Heaton, Butler, and Bogue. The subject is the three Maries.

The pile of buildings in course of erection by the Bradford Corporation, in connection with the covered market, is approaching completion. The architects are Messrs. Lockwood and Mawson. At the meeting of the Town Council, on Tuesday, it was recommended that tenders amounting in the aggregate to £3,554 15s. be accepted for the execution of the works required to be done to complete the interior of the market.

The Handsworth Local Board of Health have appointed Mr. E. Kenworthy, late borough surveyor of Barnsley, as their engineer and surveyor.

The Ashton-in-Makerfield Local Board of Health have been discussing the present condition of the streets, and who ought to contribute towards their improvement. In some parts of the district the roads have fallen in 15 or 16ft. through the subsidence of the mine roofs beneath, and it was suggested that the colliery owners ought to be called upon to pay for the repairs and makings good. Ultimately this proposal was defeated.

The apse of the parish church of Wiveliscombe has been decorated by Mr. W. Berryman and Messrs. T. and S. Richards.

A large block of business premises is being erected in the main street of Briton Ferry, from plans by Mr. H. F. Clarke, by Mr. Isaac George, builder.

Pyle Church, near Bridgend, was re-opened yesterday (Thursday) after restoration.

A curious accident is reported from Horwich, near Bolton. Some drainage operations were being carried out at the rear of a new chapel, and on the night of Wednesday week the end wall "caved" in upon the pulpit and communion table, destroying a stained glass window, as well as much of the internal fittings of the chapel.

New water supply works are being carried out at Lilanely. Mr. E. H. Douglas is the engineer.

At Bournemouth cemetery, on Thursday week, the foundation stones of two chapels were laid. Mr. C. C. Creeke is the architect, and Mr. S. Clarke the builder. The cost will be about £3,000. The contract for laying out the cemetery grounds has been taken by Mr. Charles Strickland.

Mr. J. C. Rees, contractor, of Neath and Swansea, gave an outing to his employes last week, Resolven being the place visited by the party, who numbered over 400.

The tender of Mr. Carruthers, of Reigate, amounting to £9,218, has been accepted for the erection of the new Church of All Saints, Eastbourne, and the building committee have made arrangements to proceed at once with a first contract of £6,935 for the fabric.

Intercommunication.

QUESTIONS.

[5119].—Saw Mills, &c.—Will some reader inform me if any good works are published which treat upon the general arrangement of machinery suitable for a saw-mill and builders' works?—X. F.

[5120].—Joiner Work.—Will any of your readers, with a practical knowledge of joiner work, kindly inform me if the following idea is practicable, and if not, point out its defects:—To take a panel, say, of yellow pine, or other light wood, and cover it with a dark veneering, such as mahogany or rosewood, with an ornamental figure cut out, as on a stencil plate. In a case where the ornament was of a simple form the veneer could be sunk flush with the face of the lighter wood. This would give the effect of inlaid work without the extra labour, trouble, and, consequently, expense which inlaying involves. Would the pressing out of the glue, or any other obstacle I have overlooked, render this idea practicable?—VENEERING.

[5121].—Purification of Sewage.—Will any of your engineering subscribers inform me if the Local Government Board have recently approved of any drainage scheme which proposes to deal with the sewage by precipitation only, and if so, what process was proposed, or do they only sanction precipitation when combined with irrigation or intermittent downward filtration?—S.I.C.E.

[5122].—Plaster Casts.—Will some one kindly describe the best method of taking casts from living models (say, a hand and forearm)? How is the model released from the mould? Is there anything better than plaster for the purpose? Are there any descriptions of the process published? Any information on the subject will greatly oblige.—W.

[5123].—Plate Glass.—Would any of your readers kindly inform me the best method of fixing plate glass into stone mullions? Should there be a metal or wooden groove inserted in the stone?—SMOCK.

[5124].—Strength of Arch.—I have two walls forming a passage with a barrelled arch over, formed with three courses of plain tiles in cement, filled in with Portland cement concrete up to the crown level; distance between walls, 7ft.; rise of arch, 4in. I wish to build a furnace on this arch. One side will be against the wall, perpendicular above, the wall below extending about 4ft. out from the wall, and 5ft. parallel to the wall. What is the weight I can safely put on this space?—C. E. E.

[5125].—Fitch Girder.—I want to make two large rooms into one, and for convenience I want to insert a fitch girder with a piece of timber on each side; distance between supports, 22ft.; distributed weight, over 15 tons. What sized fitch and timbers shall I require?—C. E. E.

REPLIES.

[5110].—Separating Fine Sand from Water.—The attempt to separate the sand by subsidence, as suggested by "Aqua," on p. 245, entirely fails; the least movement in the water carries the sand with the water. The following is in operation, but does not answer. [Our correspondent here sends a sketch showing the pipe from spring entering a kind of salmon-ladder, with partitions alternately placed so as to screen the sand before entering reservoir.] The attempt to further separate by means of charcoal and felt in the compartments of filter is soon rendered inoperative by the sand clogging up the filtering medium. Further aid in the matter is solicited by—X. Y. Z.

[5111].—Turkish Baths.—Floor of warm rooms may be laid with encaustic tiles or concrete bed, which I have laid on pugging between ordinary joists. The floor of hot rooms, as a rule, is too hot for bare feet, and has to be covered with a drugget, or other carpet. In these rooms it is sufficient to lay the same concrete bed as before, and finish off with coat of cement. For ceilings I used large ceiling lights on the flat, filled in with double sheets of glass, one of which is hand-pointed, the ceilings round the lights being three-coat plaster on laths, rather stronger than usual. Ventilators in ceilings let out surplus hot air into cock loft over, roof over which is one-half rough plate glass. For heating I prefer Constantine's stove, fed by fresh air from outside, and admitted into rooms through movable gratings, or air-brick let into dwarf-glazed brick walls, supporting stone seats round warm and hot rooms. In some cases it is found sufficient to allow the hot air to enter direct into the hot room by a grating, say, 3ft. by 2ft., immediately over the stove. In that case the warm rooms are heated by the hot air escaping through the doorways, and other openings, into the warm rooms; but the former method is preferable, as equalising the temperature better.—HOWARD EVANS.

[5116].—Measuring and Sketching.—In the BUILDING NEWS of May 30, June 10, and 13, 1862, was published a paper of mine on a visit to Normandy, which will supply the information asked for.—R. PHENE SPIERS.

[5117].—Mortar.—I believe that hydraulic lime should be slaked as soon as possible after being brought from the kiln, and the admixture, with the sand made as quickly as circumstances will admit.

To slake the lime, and then leave it to the action of the atmosphere, must, in my opinion, impair the cementing property of the mortar when mixed, simply because the lime is, during the interval, re-absorbing the carbonic acid from the atmosphere, and losing thereby its essential qualities. It is a workman's idea, but a correct one, that lime is killed by time. I should for the same reason prefer to use the mortar as soon as mixed. I may here say "Vicat" recommends slow-slaking limes to be reduced to a powder before they are worked into mortar—that an imperfect slaking be commenced, but other authorities—Treußart, for example—show that the absorption of carbonic acid gas thus induced destroys the concreting action of the lime, and he asserts that all hydraulic limes should be used fresh from the kiln.—G. H. G.

CHIPS.

A new south aisle is in course of erection at St. Mary-le-Wigford church, Lincoln. Mr. R. Young, of Lincoln, is the builder, and his contract is £610, exclusive of gas and heating apparatus. The church was only recently thoroughly restored at a cost of £1,500. Messrs. Clarke and Son, of Nottingham, are architects for both the restoration and south aisle, now in course of erection.

A reredos of Bath stone has been recently completed for the St. John's Church, Carlisle. It has three central gables crocketed and finialed with the passion flower, vine, and wheat carved in medallions. The sides are arcaded with detached columns, carved caps, and bases. The work was executed by Mr. Nelson, Carlisle, from the designs of Messrs. Clarke and Son, architects, Nottingham, who also designed the church, which is a large and handsome structure, in the Early English style.

Messrs. Robert Clarke and Son, architects, of Nottingham, were appointed architects to the Carlton School Board at a meeting held on the 19th of July.

The foundation stone of a new Wesleyan chapel was laid at Thornley, near Darlington, on Saturday. The building is a Gothic one of freestone, with faced dressings, measuring 36ft. by 25ft. It is to have an internal gallery, and will cost £240. Mr. John Hutchinson is the mason, and Messrs. Rowe and Jones are the joiners.

Mr. and Mrs. P. C. D. Boswell, of Auchinleck, N.B., were presented last week with their portraits. The paintings had been executed in oil by a native of the parish, Mr. W. H. Johnstone, of Manchester.

Mr. Orden, engineering inspector to the London and North-Western Railway Company, died on Sunday week in consequence of a fracture of the skull, caused by a fall from the girder of a new bridge at Roade, the erection of which he was superintending.

The Priory Pro-Cathedral of Belmont, near Hereford, is about to be enlarged according to the original design of the late Edward Welby Pugin. The dwarf lantern tower will be replaced by a lofty spire, and a mortuary chapel is to be erected as the family sepulchre of Mr. F. Wegg-Prosser, by whom the lavish expenditure already incurred has been laid out.

The Bridgend Board of Health on Friday decided to call in "some eminent engineer" to advise them as to the best means of preventing future floods.

The Brussels Museum has acquired an important painting by Gallait—"The Taking of Antioch." It has been bought by the Government for 20,000f.

Among the uses of a cemetery that of a grape-pressing establishment is one of the latest. At a meeting of the Luton Cemetery Company on Friday, it was reported that as the viney in the grounds had considerably increased the finances, Mr. J. R. Brown had been requested to prepare plans and invite tenders for a second building of the kind. The architect's tender was £295, and the tenders ranged from £297 to £400. The lowest tender was accepted.

The fifth annual exhibition of pictures by living artists, in connection with the Brighton Public Museum, Library, and Picture Gallery, was opened last week. The collection is a larger one than in former years, including between 800 and 900 pictures, in which oil paintings and water colours are about equally represented.

The foundation stone of the new Church of the Holy Rood was laid at Crofton, Hants, on the 30th ult. The church will be Early English in style, will be built of flint, with Bath dressings, and will cost when completed about £6,000.

The church of St. Thomas-à-Becket, Lewes, has just been lighted with gas, with the exception of the chancel, for the reseating and refitting of which plans are being prepared by Mr. Philip E. Currey.

The Town Council of Brighton are about to expend £12,000 on street improvements in the neighbourhood of the Marine-parade, to be effected by the purchase of the East Lodge Estate.

At Sheffield, on Tuesday, a quarryman, named Henry Bevor, was fined 40s. and 21s. 6d. costs, or in default ordered to be imprisoned for two months, for a violent and unprovoked assault on William Fortescue, foreman mason. Fortescue came with a number of masons from the East Riding to build a new church at Deepcar on contract terms, and much unpleasantness arose with the resident workmen, who accused them of being "blacklegs."

LEGAL INTELLIGENCE.

THE EMPLOYERS AND WORKMEN'S ACT.—Alfred Taylor, builder, of 265, Cambridge-road, Bethnal-green, appeared on Saturday at the Woolwich Police-court in answer to 22 summonses for arrears of wages taken out against him by bricklayers, carpenters, and labourers lately in his employ on the works of a new factory in course of erection at Charlton.—Mr. Douhle, the foreman of the works, was called, and said that his employer, the defendant, had a contract from the principal, Mr. Chambers. The workmen were all paid their wages up to Saturday, the 11th of August, and they worked the following week as usual. On Tuesday, the 14th, Mr. Chambers gave Mr. Taylor written notice to give up possession of the works; but Mr. Taylor said he should take no heed of it, and told witness to keep the men at work, as he had sufficient to pay them. On the Thursday afternoon he sent a telegram, which said, "Tell the men they must look to Chambers for the money; he has taken everything."—In cross-examination he said he was not aware of the arrangements between Mr. Chambers and Mr. Taylor, but the latter always engaged the men. Witness was now in the service of Mr. Chambers.—Mr. Safford contended that Mr. Taylor was simply the agent of Mr. Chambers, and therefore not liable, and that, at all events, if he had any liability, it ceased on the Tuesday, when Mr. Chambers took formal possession.—Mr. Slade, after a lengthened inquiry, gave judgment in favour of the plaintiffs, with costs.

NEGLECTING TO DEPOSIT PLANS.—John Child Meredith, Bordesley Green, Birmingham, was summoned last week for that he, being a person intending to make and lay out a certain new street, did not give notice to the Town Council, and did not submit to the surveyor of the borough a plan and section of the street. It was stated that the defendant had laid out a street known as Walter-street, situated between Long Acre and Thimble Mill-lane, and that no plan had been submitted so that the authorities might be made acquainted with the extent and level of the thoroughfare, as required by bye-law 71. The defendant was therefore liable to a penalty of £5. Mr. Norrington, the surveyor of buildings to the borough, had approved the plans of several buildings erected in the street, being unaware at the time that the street itself was not duly authorised.—Defendant urged that he had nothing to do with the submitting of a plan, he not being the freeholder of the land. The street was surveyed and allotted 20 years ago. He thought the authorities were persecuting him, and that "it was all a high-handed piece of humbuggery."—The magistrates reprimanded the defendant for his injudicious remarks, and Mr. Osborne said defendant was bound to prepare a plan and submit it to the Corporation.—Defendant urged that he had done the borough hundreds of pounds' worth of good, and he ought not to be afflicted in that manner.—The case was ultimately adjourned for a month, defendant, who was very excited, agreeing to submit a plan in the meantime.

STATUES, MEMORIALS, &c.

KILMARNOCK.—The subscribers to the proposed Burns memorial at Kilmarnock, have agreed to erect an ornamental building in the proposed public park, with one or two rooms for a museum of Burns relics, &c., and a marble statue of the poet in the niche inside. The estimated cost of the building—for which a design by Mr. R. S. Ingram, architect, has been accepted—is £1,500, and the cost of the statue is estimated at £300. Open competition by model for the statue is agreed to, and two premiums are offered—one for £50 and one for £25—to be awarded for the models next in order of merit to that selected.

On the occasion of the opening of the new hall at Blair Castle, N.B., the other day, the Duke of Atholl was presented with a portrait of himself, painted by Mr. Barclay, of Edinburgh.

Mr. W. H. Taylor, builder, of Ilminster, entertained his workpeople at supper on Saturday evening, in celebration of the opening of new workshops.

The Hull Dock Company have determined to construct a graving dock on the east foreshore of the river Hummer, of sufficient dimensions to accommodate the largest class of ships, and provided with every modern appliance for speedy accomplishment of repairs, docking, &c.

Under date of 8th August, Messrs. J. C. Thompson and Co. write from Buenos Ayres:—"Chubb's safe, No. 1,670, No. 20 size, belonging to E. M. Powell and Co., was attempted to be opened a few days since. The burglars succeeded in boring a centre hole to work the bit upon, and almost cut through the outer plate. Not being able to complete this, they seem to have attempted to force the piece out, about 6in. in diameter, but in this they also failed. The safe is a very old one, and the plate about half the thickness of those at present supplied."

Our Office Table.

THE Sheffield Corporation has this week taken a commendable step in the direction of reducing, to a very small extent, it is true, the unsightliness of that smoke-begrimed centre of industry. An agreement has just been concluded between the Vicar of Sheffield and the Corporation whereby two strips of land off the old parish churchyard, containing 657 and 312 square yards respectively, will be thrown into Church-street and Campo-lane, for the widening of those thoroughfares; and, in recompense, the Corporation will construct a dwarf wall and ornamental iron railing round the whole churchyard, and erect entrances, and lay out and maintain the area as an ornamental garden, with free access to the public during hours to be prescribed by the corporate authority. The churchyards recently laid out in London, together with Leicester and Parliament squares, are specified as models of the kind of laying-out and improvement to be adopted.

WE see in the list of tenders in our present impression the highest tender for sewers for the vestry of St. Leonard, Shoreditch, was £7,621. This was submitted by Mr. Coker; and the lowest, which was submitted by Mr. Josh. Rendall, £3,166, was accepted. There must be loose calculation somewhere. Judging from the bulk of the other tenders sent in, we should say that both Mr. Coker and Mr. Rendall were somewhat mistaken.

WATER SUPPLY AND SANITARY MATTERS.

RUTHERGLEN.—The town council of this burgh are dissatisfied with the water supply which they now receive from the Glasgow Water Commissioners, deeming it inadequate. Their remonstrances have hitherto been met with promises of a better supply as soon as the commissioners have completed certain works in progress. On Monday evening the Rutherglen Council received reports from Dr. Wallace, the burgh analyst, upon samples submitted to him from the Earn, Thriepland, Calder and White Cart waters respectively, in which he pronounced very decidedly in favour of the first-named, which, after filtration, would, he considered, be quite suitable for domestic use. A committee reported on the feasibility of getting water from the Earn river, and it was also stated that the supply is sufficient to furnish 10,000,000 gallons, daily, equal to an ample supply for fifteen or sixteen times the present population of Rutherglen. A motion was thereupon proposed, appointing Professor James Thomson, of Glasgow University, to report on the probable cost of bringing a supply of the Earn water to Rutherglen, but the majority of the board decided, before taking this step, that the clerk to the Glasgow Water Commissioners be again communicated with and asked whether the commissioners are able to promise an adequate supply, how they propose doing so, and when it will be put into operation.

WINCHESTER.—The town council is about to carry out an extensive sewerage scheme from the plans of Mr. James G. Lemon, C.E. The provisional order has been duly confirmed by Parliament; permission to borrow from the Public Works Loan Commissioners the sum of £32,500 has been obtained, and tenders for cast-iron pumping-mains, socket-pipes, &c. The works will be commenced within the next fortnight.

A new purifying chamber is being added to Messrs. Vivian and Son's acid works at Taibach, near Cardiff. On Wednesday some workmen tried to hoist a roll of lead weighing 21cwt. to the roof, when the scaffolding broke under the strain, and four of the men were seriously injured.

The foundation stone of a new United Presbyterian church at Wick was laid on Tuesday. The church, which is being erected from designs by Mr. W. Macintosh, architect, Inverness, will accommodate 700 sitters. It is to cost £4,000.

On Saturday the corner stone of a new chapel and school, belonging to the United Methodist Free Church, were laid at Lumbutts, near Todmorden. The style will be Gothic, from designs by J. Horsfall, architect, Todmorden. The cost will be about £1,200.

Some premises, consisting of 18, The Crescent, Birmingham, have been adapted for the Birmingham Secular Club and Institute, under the superintendence of Messrs. Foulkes and Ryland, architects, of that town.

THE BUILDING NEWS.

LONDON, FRIDAY, SEPT. 21, 1877.

TWO GREAT BUILDINGS—A CONTRAST.

TWO great buildings, in representative styles, have been opened to the public during the last few days. Manchester, the great cotton metropolis, has just completed a Town Hall worthy alike of its industry, and of its municipal importance, in a style of architecture that may be fairly characterised as the most modern adaptation of Gothic we yet possess; while Liverpool, the great seaport of Lancashire, has recently opened a building, to be devoted to the fine arts, in a style true to her traditions. Both these buildings have been fully illustrated and described in our pages—the former in our last volume, and the latter in our issue of the 7th inst.; and we therefore need not describe them here, though we may somewhat profitably take the two buildings as the text of some reflections on the duality of our architectural taste. In two of the greatest towns of Lancashire—we may say of the provinces—we are thus brought face to face with extreme schools of architecture, though each the work of representative men in their profession. The Gothic Town Hall, opened last week, is the greatest work, probably, of its well-known architect, as it may certainly be considered one of the most typical structures of the present age. It stands to the present generation much in the same relation as the Liverpool Town Hall did at the time of its erection. In Mr. Waterhouse's building, as in that of Mr. Lonsdale Elmes', we are impressed by the adaptation of the two opposite modes of building to essentially modern requirements; each is the work of a master in planning and design, and each the development of the commercial spirit of the age as manifested in one of our largest manufacturing districts. In the work of Mr. Waterhouse we see a traditional style worked out with an independence unknown in any previous attempt. It is thoroughly Gothic, but it has a stamp of modernism upon it that we cannot mistake for the obsolete mediævalism of another school. Though somewhat hard, and rather mechanical in its lines and details, its Gothic or rather its style is *thorough*; there is no flimsy superficiality of feature, as we see in a dozen other town halls in the Gothic style. Whatever character we may attribute to Mr. Waterhouse's Gothic, it has certainly the genuineness of a *worked-out expression*, and we fail to detect the *disjuncta membra* of an indiscriminate eclecticism. But the greatest of the merits for which posterity will admire the Manchester Town Hall, and upon which it must be judged, is, that the design is the development of a plan. It unquestionably ranks as one of the most masterly examples of modern planning. The irregular triangle of ground the architect had to deal with has been most skilfully disposed of in the mode of internal communication adopted; the positions of the entrances are those dictated by a consideration of the business quarters and localities of particular departments of a vast municipal organisation; the centre and angle staircases have been planned with consummate skill for the due communication between separate portions of the building, connected by a continuous groined corridor; the oriels and courtyards have been disposed with the greatest foresight to give light, and contribute at the same time to the interior piquancy of the architecture: while in many instances the architect has created quite a *coup d'œil*. In short, the plan may be regarded as the structural crystallisation

of the complex municipality of one of our largest cities. A method appears conspicuous in the arrangement of the various departments of corporation business. The police, water, gas, legal and surveying departments, &c., have been made separate functions, yet subordinated to the whole. As the author of "Faust" has said, "every living being is not a unity but a plurality." So, in such a complex structure as a town hall, we have a plurality of offices combined in one organic whole. The same great author, when he said in his celebrated treatise on biological laws that "subordination of parts indicates high grade of organisation," while the more imperfect the organism the more its individual parts resemble each other, declared a doctrine that has not only been accepted by every zoologist, but which admirably suggests itself to the inventor of a great and complex building. The division of labour in the animal organism hinted by Goethe has always seemed to us to be the principle the architect should keep in view in designing a complex structure. The more perfect the structure the more its parts should be subordinated. In the lowest type of animals we find on division each part will live and manifest the same functions which the whole does, but as we advance in the scale of organism the parts have dissimilar functions. Now, in every great building designed to meet various conditions, we meet the same law. Its type is necessarily different from that of such a building as a heathen temple; its parts are necessarily dissimilar and subordinated. It is rather flattering to the architect of the Manchester Town Hall to say that his great work conforms to this law. There is rhythm and balance in the external features of the main fronts, but the parts are duly subordinated. Thus, in the main façade towards Albert-square, which is 328ft. long, we have the central tower balancing the whole, but performing an important office in the structure—it is the main public entrance. Examining the wings, we observe that there are differences, though in a general glance they appear symmetrical. The projecting ends are dissimilar, both in the general features and detail, while the other fronts show diversity in fenestration. Again, vertically, we note a subordination of parts which express the internal functions. The lofty first-floor windows are wider spaced in the front than the tiers of ground floor and second floor. The longer frontages indicate in like manner the difference of use. We, in fact, could hardly conceive a building in a Classical style that would so admirably suit the site as the one erected. A triangular Classic structure would have been out of place, if not out of character, and we can only point to Sir W. Tite's Royal Exchange as a building that has shown the possibility in, at least, an unoffending degree. The architect of the Manchester Town Hall has worked on the true method of the Gothic and Renaissance architects. Symmetry and balance have not been recklessly disregarded by a collocation of a jumble of forms, but there is that diversity which the complexity of internal arrangement demanded. As an instance, at least, of the principle followed by the ancients and Gothicists—namely, that of making the dissimilar portions of a building crystallise, so to speak, into external forms, exhibiting the attributes of unity and variety—we have few modern instances that can equal it.

Turning to the Liverpool Art Gallery, the plan of which we have illustrated, it is evident another principle actuated the architect. Mr. Sherlock had certain picture galleries to arrange on a site not so restricted as to form. They could have been arranged various ways—in a row, in a quadrangular, or hollow rectangular form; and we find the architect has accordingly

availed himself of an axial distribution of his apartments. He makes a central hall and stairs the grand entrance and feature, flanking which, and slightly receding from it, are extended the picture galleries as similar units. There was no apparent reason to make one gallery larger than the other. There was no special entrance required to each. Accordingly one centre portico entrance becomes the proper and most economical arrangement, and the galleries are made subordinate and contributory to it externally. We look upon the Walker Art Gallery as much of a success architecturally as the Manchester Town Hall. Each, we consider, illustrates a grand principle of architectural design. The Liverpool Art Gallery was as essentially a simple as the Town Hall was a complex structure. Each demanded a different method of arrangement. The parts of the former are few, perform like functions, and are similar; and it would have been as useless a waste of money to have given it a Gothic form, as it would have been absurd to place the varied departments of the Manchester Corporation into a homologous case. Externally, we find the architect has adopted, for this reason, primarily, a Greek style; the wings are treated as plain pierced walls, relieved by a deep frieze panel—the only consistent treatment that could have been adopted, and resembling much the Glyptothek at Munich; they harmonise well with the centre portico, while the rusticated basement and horizontal mouldings connect the parts. There is a classic simplicity evident—no straining after effect, and the result may fairly compare with St. George's Hall itself. The outline is severe, the parts few, and the detail pure. Mr. Fergusson compares Mr. Elmes' great work indeed to a mediæval cathedral. This structure is composed of one great hall and two end courts arranged on a central axis, and flanked on both sides by porticoes of one order. We have nothing equal to it as a modern adaptation of the Classical style. The grand hall is marked externally, and pronounced by the great portico of sixteen columns. There is a gloomy heaviness about the building, but we know of no other modern classical Greek structure that is so appropriate to its use. But the secret of the grandeur of this great hall is the fact that its architect foresaw the principle, and applied the method we have just considered, and the result is a composition universally admired for its very femness of parts, its purity of detail, and grandeur of effect. It is satisfactory to find that the architect of the new Art Gallery has not lost sight of the principle, but has successfully applied it in a structure in the immediate neighbourhood of the great hall. The importance, architecturally, of the two buildings is a sufficient apology for our thus calling attention to them as illustrating in a remarkable manner the two opposite rules of architectural composition. English architecture has at least been fortunate in being represented by two buildings by masters of opposing schools of design, who have had the skill in both cases to apply the methods most adapted to their peculiar purposes. It is more remarkable to notice that the fashionable styles of the day have been set aside in these two typical structures.

SHAM FRONTS AND COMBUSTIBLE INTERIORS.

IN spite of the Metropolitan Building Act, and the precautionary legislation introduced to insure the safety of buildings against fire, it is somewhat remarkable that we should be threatened with a class of structure that may be fairly called "combustible shells." These buildings generally take the form of warehouses, though not

unfrequently they go under the somewhat ambiguous term of "business premises," or offices. In all but their names they are nothing more nor less than huge cases of brick walls, containing from five to six floors of timber joists, and divided into compartments of various areas by flimsy match-boarded partitions that readily admit of being shifted or varied to meet the exigencies of precarious lettings. The often purposeless character of these metropolitan buildings renders it almost necessary to construct them in the manner described, as they can thus be let in portions or floors, let out as warehouses or show-rooms, or turned into sets of chambers or private offices, to the best advantage. These huge structures or cases of brick frequently usurp the position of several houses in narrow streets, obstruct the light and air of opposite and neighbouring houses, and, worse than all, inflict upon them the risk of fire inseparable from their proximity to such structures. Referring to the Building Act, certain rules are to be observed as regards the separation of buildings and the limitation of their areas; but it certainly seems that the very complexity of the conditions of building in London, and the rival and conflicting rules of the Metropolitan Board, have nullified some of these most necessary regulations for safety. Let us briefly refer to the rules as given in the Act. We have it laid down that every building shall be "separated by external or party walls from any adjoining building;" secondly, that "separate sets of chambers or rooms tenanted by different persons shall, if contained in a building exceeding 3,600 square feet in area, be deemed to be separate buildings, and be divided accordingly, so far as they adjoin vertically, by party-walls, and so far as they adjoin horizontally by party arches or fireproof floors." Again, Rule 4 says:—"Every warehouse or other building, used either wholly or in part for the purpose of trade or manufacture, containing more than 216,000 cubic feet, shall be divided by party walls in such manner that the contents of each division thereof shall not exceed the above-mentioned number of cubic feet." Now, we can point to several instances where these conditions have either been frustrated or openly ignored. We contend that the second rule quoted above is contravened in every essential point in buildings of the kind we have named, and there cannot be a doubt that the Building Act is seriously defective in this matter. What is there to prevent the owner of any large warehouse from letting his floors as "separate sets of chambers," divided by inflammable match boardings? and is it not equally dangerous for a building containing a less superficial area than the 3,600ft.—say 1ft. less, to evade the letter of the Act—to be divided into separate compartments by thin boarded partitions? Why should an arbitrary area determine whether a warehouse shall be divided by party-walls or not? But there is a double danger in these large brick enclosures of inflammable interiors. If a fire were to break out, the whole interior in a few minutes would be in a blaze; in fact we should have a roaring furnace of combustible materials. Not only the vertical partitions are of wood, but the floors are constructed of the same material, without the slightest provision against fire. We have as we write a building in Tavistock-street before us. It presents an extensive red brick frontage five stories in height, towering considerably above the adjoining houses, and perforated by large three-light windows. This, with the side party-walls and the exterior back wall, encloses an area of about 3,000ft., and to all appearances from the outside one would imagine that a very substantial, if we cannot call it architectural, structure

has been erected. But if the observer had taken the trouble to watch the progress of this building, he would have seen as the walls gradually rose huge timber joist floors inserted at intervals covering the entire area. Story after story the outer walls are raised, and the floors constructed, but there is no sign of any cross walls, except a perforated centre wall; the eye can see through the whole like a great empty cage, and the ordinary observer would come to the conclusion that the purpose of the building was that of a warehouse, though he would certainly never imagine that such a large wooden interior could be designed within the jurisdiction of the Metropolitan Act. In a few weeks this timber scaffolding—if we may so call it—is covered up by thin boarding; no concrete, cement, or plaster is used to fill in the spaces or to form the ceilings; and in a short time we are surprised to find that an inner house of wooden partitions is created, regardless of the front wall, with its large gaping and unmeaning windows, and without the slightest reference to them. The observer, who before in all faith, believed his eyes, and saw great warehouse floors, may now be surprised and unable to realise the intentions of the building which imposes a front of such sham magnificence on the public. Such is an ordinary instance of the constructive hypocrisy found to exist under the Building Act. Here the tenants of a residential street have a large wooden structure thrust close to their doors, concealed from view by four brick walls, two of which are perforated with openings and erected of a prescribed thickness. Inside of them are two (?) wooden structures, five stories in height, with timber floors, and partitions covered with thin boarding, but their areas happen to be within the arbitrary limit of the Act, and they are pronounced safe. To such an absurdity does our present Building Act lead us. In the "Model Bye Laws," issued by the Local Government Board, it is prescribed that every cross wall shall be of "good bricks or suitable stone, or other blocks of hard and incombustible substance," but we fail to find any general rule bearing upon the question of inside partitions, in respect of the division of the building, or the purpose it is intended for. It seems unreasonable that warehouses of whatever area should have partitions of wood; such a risk ought to be impossible, and especially in a crowded residential neighbourhood. One of the new "model bye-laws" provides that every person who erects a new building shall cause the "open space inside any partition wall of such building, or between the joists in any wall of such building, to be stopped with brick-work, concrete, pugging, or other incombustible material at every floor and ceiling." Now in the building we have referred to, the spaces between the joists are left open, while every ceiling is match-boarded with thin stuff that could not resist a gas-light for a minute, but would instantly ignite, like so much tinder, and extend the destruction through every floor. Plaster ceilings are more resistant, and every timber floor, of a warehouse especially, should be filled in with pugging or concrete, as solid floors and partitions are much less inflammable than hollow ones, though builders are a long time in becoming acquainted with the fact. If we were to select the most combustible of all floors or partitions it would certainly be one constructed with wooden joists, covered on both sides with boards, such as we see them in some of these warehouses, or sham dwelling-houses incased in brick walls. It is time, indeed, some corrective was applied to this deceptive kind of building, if only in the interests of tenants and leaseholders. Why should a whole street—aye, neighbourhood—be endangered by the existence in its midst of a structure that,

professedly ranking as a warehouse, is infinitely more dangerous than any of the other houses, and can contravene the aim of the Act by the violation of those very rules that have been framed to give security against fire? We consider this question to be one which an amended Building Act must deal with. It is an anomaly that seriously impairs the security of buildings in the metropolis. We have considered only a typical case; there are hundreds of such buildings being erected in London at the present time. Ornamental fronts of brick and stone are run up, and the interiors are filled up afterwards, and one sees rarely anything but joists and quarters. If we could imagine the fronts of some of our main thoroughfares removed, or the front walls taken away, it is to be feared there would be little to choose between London and New York; we could scarcely hold the candle to either as regards solidity and incombustibility.

The various and conflicting interpretations of metropolitan magistrates, upon questions of party-walls, chimneys, and other details of the Building Act, have been prolific in creating a doubtful construction of many clauses, and there can be but one opinion, that an entire reconstruction of the rules are required. Who would have ever thought that the London building regulations, as they exist, say nothing about the necessity of a healthy and unpolluted site; nothing about concrete, or a "damp-proof" course; do not touch the sanitary requirements that are now universally admitted as necessities—such, for example, as that no drains are to pass underneath any building, and that they should be disconnected from the sewers. Such omissions are sufficiently condemnatory of themselves; and it is satisfactory to find the model bye-laws of the Local Government Board have done something towards supplying the deficiencies. By the way, we find that the bye-laws make a two-fold distinction in the definition of "party-wall" for the purpose of getting over the difficulties that have been experienced by the profession, and builders generally, in London. Under the new definitions a "party-wall" is considered either as a separating wall between two adjoining buildings, or a wall "forming part of a building, and standing in any part of the length of such wall to a greater extent than the projection of the footings on one side, on grounds of different owners." This definition, to our minds, is scarcely so clear as it should be, though the aim is to make the party-wall a structure entirely independent of any tampering on the part of either owner, and quite distinct from an "external wall." We think we can discern, moreover, future disagreements as to what constitutes a party or an external wall, as long as adjoining owners exist.

A FEW WORDS ON ROOF TRUSSES.

ARCHITECTS are constantly employing roof trusses, but few ever take the trouble to test the fitness and strength of forms that are now traditional, and whose mechanical capabilities are beyond doubt. Though Tredgold has written ably on these structures, he has not gone beyond the ordinary king and queen-post roofs of his day, omitting all reference to the numerous kinds of roofs that are without tie-beams, such as the old Gothic forms of collar and hammer-beam constructions, so continually used in our own time. Other writers, as Rankine, and Bow in his "Economics of Construction," have alluded to them, and shown the principle of finding the strains in the different members; but they have given very few examples adapted for architects' purposes. In Mr. Hatfield's work on "Transverse Strains," recently reviewed by us, a considerable chapter is devoted to the

subject, and examples illustrating various principles are given. Mr. Hatfield gives some useful advice to designers of roofs; and one or two recommendations strike us as sufficiently important to refer to them. One of these is the location of the trusses upon the solid portions of the walls. As a rule, architects know that the best position is centrally over the piers or wall spaces, between the windows, when this position can be insured without much trouble or inconvenience. The windows in this case generally determine the number of the trusses and their distances apart. From 10ft. to 15ft. seems to be the recognised rule for distance in buildings of ordinary kind, and greater distances require heavier timbers to carry the increased roofing in purlins and rafters. In planning buildings the architect has, therefore, to keep an eye to the piers for his trusses; but in many cases we have found the subject of roofing has been totally absent from his mind, and that he has only paid attention to his windows and doorways. No doubt those immediate wants of the building require primary thought, and in some cases the necessities of the plan may even be allowed to become the paramount consideration. In designs for churches and schools we have constantly observed the difficulty the author has experienced in spacing his solids and voids, particularly when a porch or organ-chamber has disturbed the symmetry of the arrangement. In these cases it is almost unavoidable that one or more of the trusses should be placed over windows—a condition never satisfactory in either a structural or architectural sense. In the Gothic style the pointed shape of the inner arches lessens this incongruity to a minimum, as the very shape of the arch offers itself for any weight that may be put upon its apex; it suggests resistance, as it really is the only arched form that is stable under a weight. But over square-headed windows the case is different. Here a truss should always be avoided if possible, even if it be desirable to shift the windows or the truss that comes in the way. Nothing looks weaker than to see a heavy timber truss standing directly upon the head of and over the window opening. A little skill is sufficient to solve the difficulty in most cases. Another essential point is the selection of a truss to meet the requirements of the roof. The variety of forms is large, and the architect generally adopts either a direct tie-roof or one without, as a single-framed, collar-braced, or hammer-beam truss. For small buildings a single-framed roof—that is, one in which each pair of rafters forms a truss—is largely employed. The only tie consists either in a collar or cross braces; the ceiling being open or boarded in the shape of a barrel vault. At the springing uprights or studs are framed into the rafters, and thereby give a foothold to the roof on the wall, where they have a double plate framed; the inner plate taking a considerable portion of the strain if the walls are thick in proportion to the span. Now, in this form of roof, as each pair of opposite rafters forms a truss, a separate truss is not needed; in fact the roof forms a continuous shell or cylinder. This form of roof, therefore, seems admirably fitted for halls or apartments where equal spaced piers cannot be had, or for a continuous wall below. When we have a wall pierced by several large windows, as a Perpendicular hall would be, the idea of supporting the roof at regular intervals naturally occurs to us as the best. We have the narrow buttressed pier between lofty windows, suggesting that the roof trusses should be separate, or that the support of roof should be collected at intervals. By this means the "bay" is made a feature in the architecture, and economy of roofing is ensured.

The acme of scientific economy, as well as architectural beauty, is observed, unquestionably, in the intersection of a barrel vault by cross vaults, as in the groined roof of the middle ages.

But, in determining upon the kind of truss, the architect must consider the number of points of support he has to give to his purlins, and arrange his struts or pieces accordingly. This is seldom done; and we have seen church roofs designed on no principle whatever beyond that of conforming to a certain type. It is absurd to see an ordinary braced truss, or one without any intermediate support to the rafters carrying a central or two purlins on each side; it is certainly unarchitectural. These points of rafter support should generally be from 7ft. to 12ft. apart, according to the extent and pitch of the roof. To work out this condition properly, the amount of load the truss will have to carry must be calculated. The total weight of the timbers, planking, and slating must be added to any accidental force, such as that of wind or the weight of snow. Mr. Hatfield gives the following as the ordinary load on roof per foot inclined:—

Slate	about 7lb.	per foot.
Roof-plank	" 2·7	"
Roof-beams or jack-rafters	" 2·3	"
Total	12lb.	"

This load will be increased upon the horizontal foot, in proportion to the steepness of roof. In ordinary cases—for flat roofs—the author makes it 15lb. for roofing; 5lb. for roof-truss; 20lb. for snow; and 10lb. for wind; or a total of 50lb. on roof per foot, measured horizontally. Steeper roofs would have less vertical snow weight, but the force of wind would be increased proportionately, and this question has recently been discussed in our pages (p. 215). The wind in the United States is reckoned at 30lb. per foot on a vertical surface, and in very elevated places at 50lb. Having found the load per foot of roofing, and the points of support on the truss—say three spaces with two points of support on each half of the truss—the apportionment of the load must be made. This is arrived at by taking the superficial area between the points of support, measured horizontally, and the width of one bay. Let us take an example worked out, 60ft. span of truss. Thus, if the points of support in truss measure 10ft. horizontally, and the width of bay is 12ft., the weight at 50lb. per foot = 6,000lb. These preliminary loads having been found, the strains on the rafters may be determined by graphical means, as follows:—Draw a vertical line, and lay off, in five equal parts (to a scale of, say, 10 parts to the inch, each part representing 100lb.) the above load. Each half of this line represents the half weight on rafters, or half weight of truss which will equal the load upon one point of support. Next, from this vertical scale of loads, draw the horizontal and inclined lines parallel to the members of truss, thus forming a closed polygon which will give the amount of force in each. It is necessary, to save confusion, that, in a diagram of forces, no line representing one force shall be repeated; and that a point of convergence in a truss should be lettered to correspond with the line of the diagram. Thus, a line drawn parallel to any member of such convergence may be designated by the letters A and B placed at each end, and the same letters should indicate the corresponding member in the axial diagram of truss, by being placed on each side of it. If we consider a common cross-braced roof, loaded at the ridge, and, at the top of each brace, dividing each rafter into two parts, we draw a vertical line, and divide it into three parts representing equal loads, then the half of

these is sustained by one of the supports, and the other half by the other. A letter is placed on each side of a member which is designated by the two letters it separates, and then letters are used to indicate the corresponding line in the force diagram. By these means the force diagram is formed, and the forces or strains can be measured by the same scale of parts. For example, reverting to our first illustration with the load of 6,000lb., we take the strains on either rafter by measuring the line in diagram corresponding to its lower part, or that resting on the wall; an ordinary pitch of roof shows this to be 47,800lb. The next, or middle section of rafter between the purlins gives 42,000lb., and the upper third of rafter, near ridge, indicates a strain of 5,800lb. Having found the strains in the braces, verticals, horizontal members, &c., similarly, the next thing is to apportion the dimensions to the several parts, according to the ordinary rules for compression and tension. Referring to the strain diagrams given by Mr. Hatfield it is to be noted that the form of truss, with two inclined braces at a lower angle joining a vertical, and, in fact, forming two triangles joined in the centre, is far more economical than a truss with cross-braces and collar as ordinarily constructed. It is also shown that it is necessary to consider whether the small additional height gained to an interior by raising the middle point of the tie-rod, will adequately compensate for the increased strains thereby induced, and the enhanced cost of material necessary to resist the strains, or whether it is not more advisable to raise the walls of a building rather than the ties. The examples illustrated are more adapted for roofs of ordinary structures than for buildings of architectural pretensions; but if the same process of illustrating the strains in our roofs were used, architects would soon discover the most economical types to deal with. There are few grander forms of trusses than the old hammer-beam truss of the Westminster Hall type, but it is uneconomical in these days of scanty timber. What the architect is now called upon to design is a roof-truss of reduced material, in which the true principles of the truss are manifested rather than the idea of a constructed arch. The single-framed ceiled roof is admirably adapted for our modern churches and halls; but it is extraordinary that the use of iron has not been put to a more architectural use than that of making it perform the visible office of tie-rods in churches. If used thus, surely it can be employed more economically and artistically, not by making it look pretty by plastering all kinds of ornament upon it, as suggested by one Nestor, but by consistently making it perform the duties it is so eminently calculated to afford.

GALLO-ROMAN REMAINS AT CARNÆ.*

MR. MILN'S book is a worthy epitome of a very valuable series of explorations carried out at his own cost during 1874, 1875, and 1876, in a region which has a special interest for archaeologists. The title of the book is, however, rather too general—the excavations undertaken having been confined, with but slight exceptions, to the district of the Bosseno and the Mont St. Michel. The details and evidence collected by the author of Gallo-Roman civilisation, and the admirably arranged and illustrated record of them he has prepared, lead us to hope that Mr. Miln may continue his investigations into the age and character of the menhirs and dolmens which abound in the Breton country.

* Excavations at Carnæ, Brittany. By JAMES MILN, Edinburgh; David Douglas.

Mr. Miln's attention was drawn to the Bosseno mounds by a French archæologist who had been compelled to abandon the exploration of them. Mr. Miln determined to take up the work, and, with that object in view, attempted to purchase the site, but in this, to his regret, his efforts were frustrated; and thus, many difficulties, which otherwise would have been removed, remained to hinder his work. The mounds explored—eight in number—lie immediately to the south of the long undulating line of menhirs which passes north of Carnæ, towards the river Crach, and occupy an area of 6,578 yards. The mounds, of course, have their popular legendary history, which has, as the author remarks, a certain analogy with facts brought to light by the excavations. The tradition of the country is that the Bosseno were inhabited by the red monks (Templars), who, having exasperated the surrounding inhabitants by their crimes, were set upon by their neighbours and killed, and their habitations burned, in one night. The mounds have an evil reputation to this day, many of the peasants declaring that they are illuminated by night, and that animated conversations in Latin may be heard in their vicinity. The first mound opened in 1874 was a low circular barrow, about three feet high, and having a circumference at the base of about 130ft. A building of quadrilateral form was exposed, each of its sides measuring nearly 34ft., except that on the south, which was less than the others—an irregularity not uncommon in Gallo-Roman buildings. The walls, which were two feet in breadth, were carefully constructed of small cubic stones, laid in lime mortar. In plan the dwelling consisted of four chambers—three smaller ones, each about 9ft. square, on the western side being flanked by one large one, measuring 28ft. by 18ft., and occupying all the eastern side. The remains of two smaller constructions were detected on the inner northern side of the large chamber, which "might have been furnaces." The refuse covering the floors of the four rooms consisted of cinders, charcoal, and ashes, mingled with pieces of iron, scoræ, and even granite vitrified, and conveyed the impression that the building had been destroyed by fire, while the quantity of broken pottery found seemed to render it probable that it had been previously pillaged. The pottery found seem to have been made by hand, by the aid of the potter's wheel, and formed of earth consisting of the *débris* of primitive rocks, and badly worked. The firing must have been bad and unequal, and in this respect a strong resemblance was noticed to the funeral vases found in the dolmens. Mr. Miln includes the kistvaens, but we are not aware that the small stone chests known as kistvaens have been found to abound in fictile remains. Mr. Miln is careful to add that he does not feel himself justified in assigning the pottery found at the Bosseno to the remote epoch of the dolmens, and he appends a narrative of his own experience in the Hebrides, which sufficiently shows the caution necessary when such remains are made the subjects of a chronological classification.

Under the second mound excavated was found a house of eleven rooms, carefully constructed, and having its walls plastered and decorated. The building was of rectangular form, measuring 64ft. by 47ft., and contained three large chambers flanked by a corridor on one side with some smaller rooms on the other. The outer walls were 24in. thick, solidly built of small square blocks, with tile layers at intervals. A hypocaust was discovered under what appeared to be the principal room, covered with layers of cement, six inches thick, forming the flooring of the chamber above. The fragments of painted stucco found, together with the pottery and other remains,

are undoubtedly Roman or Gallo-Roman. Under the third mound was found a *balneum* or private bath, having a communication with the building discovered under the second mound, and under the fourth mound the remains of what Mr. Miln believes to have been a private temple or *lararium* (a sort of shrine or small apartment where the *lares* or guardian spirits of the household were worshipped). The *lararium* consisted of a square wall measuring 32½ft. on each side, and about 2ft. high, enclosing another square wall 14ft. on each side, about 2ft. high, and 3lin. thick, and without any entrance opening. On the floor of this inner enclosure, about 2ft. from the north wall, was found a stone slab which appeared to have been the base of a pedestal on which had been placed the statue of the Divinity to whom the temple had been dedicated. The access to the inner enclosure was probably by wooden steps, which have long since disappeared. The masonry of the walls of the *lararium* was much less finished than those of the other buildings, and had a much older appearance. The numerous fragments found of statuettes of the Goddess of Maternity and Venus Anadyomene were, Mr. Miln thinks, the remains of votive offerings to the shrine of Venus Genetrix, the divinity to whom the temple was raised. Under the fifth mound was found a building considered by Mr. Miln to be a *villa agraria*, its construction inferior to that of the *villa urbana* found under the second mound, and with little evidence of decoration or luxury. Some of the rooms seem to have been inhabited by labourers, and others to have been used as stables or store-houses. A bronze statuette of an ox, found in one of the rooms, seems to have an interest of its own in connection with a great *fête* still held yearly at Carnæ on the anniversary of St. Carneby or St. Cornelius, who is the patron saint of the parish, and is supposed to have been Pope in the third century. This saint is regarded as the protector of the beasts, and when the statuette referred to was discovered the workmen all crowded round it in a state of excitement, exclaiming, "Here is a discovery; we have found the ox of St. Carneby!" Mr. Miln asks whether we are to attribute this statuette to Egyptian or Celtic mythology, or to the Mithraic worship. We know that the worship of Mithras was introduced at Rome about the time of the Emperors, and thence spread throughout the Empire; and the presence of the ox in Celtic mythology is familiar to antiquaries. Whether the statuette has any connection with the fact or not, the festival indicates that the Gaul of the Bosseno, in adopting the religion of his Roman conquerors, and subsequently of Christianity, had not altogether abandoned his own deities and customs.

The buildings found under the other mounds could not be traced or determined with certainty. One may have been a smith's shop, and another a military post or station for the defence of the inhabitants of the Bosseno, which was exposed to attack not only from the land, but from the sea as well. The coins found among the *débris* in the various buildings excavated range over a period of two centuries, between the reigns of Marcus Aurelius and the death of Magentius (A.D. 353). The immense quantity of oyster-shells and other *débris* of edible fish exhibit a decided taste on the part of the inhabitants for this kind of food, and show that the Breton coast was then as now celebrated for its oysters.

Altogether Mr. Miln seems justified in the conclusions to which his researches have led him. We know that the deplorable condition of Gaul during the latter part of the fourth century is recorded by all historians. Overrun by barbarians against whom the Romans afforded no means of protection, the people strove in vain to en-

dure their misfortunes, until in the fifth century came the general rising which took place in Armorica against the Roman Government; and this period, in Mr. Miln's opinion, is the epoch to which may be assigned the violent destruction of the Bosseno. It is true that Christianity had at this time made some progress in Armorica, but no vestiges of its existence in the Bosseno were discovered; it may therefore be surmised that for some misdeeds its pagan inhabitants had been driven away, and their houses burned by their Christian neighbours, and so far that the current legend is the echo of a forgotten event.

We should not omit to say a word in conclusion in praise of the manner in which the illustrations of Mr. Miln's book are executed. They are the work of French artists, and their faithfulness and delicacy of execution are qualities too little familiar to us in this country to be overlooked.

ENGLISH CLASSIC.

THE revival of seventeenth century architecture has led to a return, in London at least, to the use of red brick as a building material. The change is grateful after the wearisome monotony of the common yellow "stocks" which one meets everywhere. Several new buildings have recently been erected in which this material has been judiciously combined with stone in the dressings, and we are glad to see the revival of a Classic style, of which Hampton Court may be taken as a type, which suits this combination. At the corner of South-ampton-street and Covent-garden a large hotel is erected, in which the two materials have been pleasingly blended. The rusticated basement is wholly of Portland stone, and this has been carried to a bold height, including a mezzanine. Above this the red brickwork commences in piers between vertical lines of boldly architraved stone windows, of a treatment more thoroughly seventeenth century Classic than Queen Anne of the baroque school. The detail is thoroughly English, vigorous, and far more Classical in feeling than we have lately been accustomed to see. The vertical lines of fenestration are broken by curvilinear-shaped balconettes and cornices between the windows, and the old-fashioned triglyph and block cornices are introduced, as we see them in the earlier classical works of the seventeenth century.

Another successful attempt is seen in King-street, Covent-garden, in a large, lofty, and wide-fronted building near Evans' Hotel. The architect has been successful in overcoming the inert and commonplace shop-front, by arching over his glass front, and placing it centrally between the side doorways, which are boldly treated, and have fan-lights and pediments over them. The effect is that of giving an apparent basement to the structure, and to make the openings appear as perforations in the rusticated substructure, thus avoiding the unpleasant appearance of the usual yawning plate-glass front below, upon which the building appears to rest. The centre front has an elliptical arch, which abuts against the side rusticated piers in which the doorways are formed. Above, the structure consists of three vertical bays of stone fenestration, with red brick piers between. The architraves are boldly treated; and made to project from a stone set-off, which has the effect of recessing the brick piers. Between the windows we see the cornices made to project, and form a kind of curvilinear balconette, with deep triglyphs below the architrave moulding. There is no flippant carving or ornament, and the whole effect is obtained by the bold mouldings and architectural lines. These vertical bays of

windows are carried up above a block cornice, breaking the balustrade which stops against them, and terminate as bold consoled dormers, crowned by curved pediments. The points we remark as improvements upon the customary and flimsy Renaissance of the day are, that the windows are carried up as continuous and projecting bays, the brick-work being recessed; that the balustrade, instead of running through, with dormers set back, is stopped against the latter, which are carried up flush, and form a prominent and pleasing sky-line; and that there is little carving introduced, the architectural members being bold, and the mouldings simple cyma-reversas or ovolos. As a rule, the revived Classic of twenty years ago with which we were deluged displayed nothing of a national character. It was a flimsy and capricious Renaissance devoid of its true spirit, and destined to submit to the more thorough spirit of Gothic. Hence it was that Gothic soon supplanted it. This Renaissance was extremely plastic, and lent itself to composition. Many of our City offices and hotels display the style; we may note the Cannon-street and Charing-cross railway hotels as works considered equal to the time. Brick and compositum or brick and stone were used, but the faults of the style were superficial treatment, terminals, balustrades, carved work, and a superfluity of decorative adjuncts that gave a stamp of pretentiousness unworthy of the real spirit of the style. These works had nothing in common with the great works of the seventeenth and eighteenth centuries, such as Hampton Court and Holkham Hall, such structures as those of the Tuileries and Louvre, or those portions of them which exhibit the earliest and purest phase of Renaissance. Another structure in a similar spirit is being erected in Tottenham-court-road for Messrs. Moeder; the piers are entirely of red brick, and the openings are more varied, but all have characteristic stone heads, and pediments triangular and curved. We point to this taste as significant of a revival of the features of a purer Classic than that we have lately been accustomed to see. The baroque and rococo mixtures have been tried, but they are found less satisfying than the truer developments of an architecture fitted for the materials at our hand.

THE ROMAN WALL.

ON Tuesday, a number of the members of the Iron and Steel Institute, which is at present holding its annual meeting at Newcastle, paid a visit to the remains of the Roman wall. Arriving at Chollerford, the visitors were met by Dr. Bruce, who first directed their attention to the abutment of the bridge, with the ruins and castellum adjacent. This forms the termination of the wall of Hadrian, on the eastern side of the North Tyne, and at this point the abutment of the bridge joins it. It is evident that the river has, during the years that have rolled by since the Roman occupation swerved to the west and left the eastern abutment high and dry, whilst in its turn the western abutment has been covered with water, as the stones which formed it may still be seen at low water when the river is clear. The learned Doctor pointed out the various positions which research has brought to light, and explained their connection with the history of Roman occupation. In the bed of the river two or three piers have been traced, and these are identified as those which supported the bridge. This structure is undoubtedly horizontal, as no stones showing the foundation of an arch have been found, whereas blocks have been recovered which contain slots, in which the beams of wood evidently rested. The abutment which remains on the eastern side, and which was inspected, has evidently been repaired or altered at different periods. The end of the wall, which terminates in a square building or castellum, is surrounded in front by

a bow-shaped mass of masonry, bevelled off on each side, to resist the action of the stream or the rush of backwater. In the centre of this masonry is the form of a small pier, which is not in a line with the sunken piers in the river. It is, therefore, conjectured that this internal pier was originally part of Agricola's rude bridge, built in the year 80, when that commander endeavoured to secure his advance by a line of fortress across the country. When Hadrian built his wall, in 120, he would probably take advantage of this pier of Agricola's line of works to build the abutment for throwing across his own bridge, and surrounded it with improved masonry to resist the action of the water. At a later stage it appears to have been repaired, probably by Severus, in 208, who, finding the wall and bridges in a dilapidated state, repaired them and put new facings on the abutments. The tooling of the stones is peculiar, and resembles that of other bridges built by the same person, the same kind of work, for instance, being found in a bridge over the Tyne at Corbridge. The party were then conveyed across the river in a boat, in the direction of the Chesters, to examine the remains of the old Roman station there, attention being directed on the way to the old road which ran down from the city to the bridge across the river. A short distance up the line of the wall may be seen the eastern gates of the old station of Cilurnum, or Walwick Chesters. The south-western gate of the camp was first inspected. This is a single gateway, and is peculiar in that respect, as they are generally found to be double. It was not supposed by antiquaries that a gateway would be found on the north side of the wall on the eastern front, but such a gateway was discovered by a chance circumstance. A rampart existed on the north side of the wall, and in searching to find how this was joined to the wall, the excavators came across a double gateway in a very perfect state of preservation, with a guard chamber on each side. The presence of a double gateway in this position was at first difficult to explain. It is conjectured, however, that this was one of Agricola's stations, built in the year 80, whilst the wall was not erected until the year 120. It is known that Hadrian took advantage of several of the positions built by Agricola, and it is supposed that this was one of them. There is evidence that the gateway and guard chambers were filled up with rubbish, and it is probable that the position was turned into a rampart upon which to erect catapults and other engines of destruction. The interior of the station was next inspected. Here Dr. Bruce pointed out the old streets. With the exception of the main intersecting streets, the thoroughfares of these old stations were generally very narrow, and one, little more than 3ft. wide, may still be seen in a very perfect state of preservation. The whole town which has been excavated is, in fact, very perfect, and a most interesting half-hour was passed in examining the remains. The foundations of the houses, with the arrangements for heating them, and the drainage system, are both very clearly defined. The Prætorium was pointed out, and attention was called to the door-step, which distinctly bears the marks of wear. It is not difficult to observe that this was the place of public assemblage, as the old Romans have left their footmarks on the flagging as they passed in and out from time to time during their stay in the place. The flagging of this building is considerably broken, but that is accounted for by the presumption that when the Northern barbarians gained possession of the place they did their best to destroy everything by hurling down walls and razing the place to the ground. Perhaps the most interesting features of this ancient Prætorium are the arrangements made for heating the place. The furnaces still remain, and the stones surrounding them show traces of having been acted upon by heat, and when exposed to the air they break up. The floor under which the heat was carried, was supported upon pillars. Many of these pillars, with the flooring upon them, still remain intact. The pillars are chiefly made of tiles. The floor which they carry is very curiously constructed. At the bottom is a layer of flags covered with concrete. Upon this again were placed more flags, and

upon them a layer of concrete, worked in ornamental patterns. In the south, where the Romans had a more peaceful population to deal with, they placed tessellated tiles upon this last layer of concrete, but in the north the Scots gave them little leisure for that sort of thing. The Forum, or market-place, was next pointed out, and its different positions traced. This square was open to the sky, and was surrounded by a colonnade and wall; and, judging from the capital of one of the pillars which has been discovered, the place must have been very ornate. At one entrance to the market are still to be seen the wheel marks of their vehicles, whilst the stone work of the porchway has been chipped and broken by frequent collisions with erratic waggons. At one corner of the Forum stood a covered archway, presumably for the protection of perishable goods. From the roof of this, when the water dripped, it fell into a little gutter beneath, whence it was carried away. This gutter is as perfect to-day as it was when the last Roman vacated the place, and the water-worn stones can be distinctly seen. Several other features of the excavated station were examined, including the subterranean chamber on the south side. The discoveries consequent upon the excavation of this chamber were very singular, and the story as told by Dr. Bruce very interesting. Residents in the neighbourhood formerly had a tradition that a horse regiment was stationed in the town, that the stables were under ground, and that the horses were buried there yet. It was curious to observe, the lecturer said, that this was in reality a cavalry station, a portion of the Asturian cavalry being quartered there. When the excavators came to the chamber they thought that the tradition was going to prove true, and that they actually heard the neighing of horses. The chamber was blocked up with a strong oaken door studded with iron nails. A number of coins of the time of Severus were found, and the conclusion at once came to was that this was the *Ærarium* or treasury, where the pay for the army was kept. This opinion was subsequently confirmed. It had been found that the courts of justice were generally situated near to the *Ærarium*, and further excavations brought to light two chambers contiguous to the Forum, which were considered to be undoubtedly the justice chambers of the place. From the old city the party proceeded to the residence of Mr. Clayton, of the Chesters, where they were permitted to inspect the extensive stock of Roman remains gathered together there. The collection of Roman antiquities is of extraordinary magnitude, and includes specimens of altars, engraved stones, pottery, glass, and metal work. Several of the remains were explained by Dr. Bruce, especially these recently discovered in the old Roman station of Carrawburgh.

BUILDING NEWS DESIGNING CLUB.

LIST OF SUBJECTS.—XV.

A. A conservatory attached to a Gothic house at one end. Size, 20ft. by 12ft. Provision to be shown for warming and ventilation. Plan, two elevations, and details. Scale, $\frac{1}{2}$ in. to the foot.

B. An organ case in oak, for a small church or hall. Plan, elevation, and details. 1 in. scale, and a quarter full size.

C. A mullion window in stone, with external shutters. Size of window, 8ft. by 4ft. Plan, elevation section, and details. 1 in. scale, and a quarter full size.

RECEIVED.—“Josephus Orange Blossom” (drawings are returned), John T. Groves (a list of subjects appeared in our issue of a fortnight ago, and to-day another list will be seen).

DRAWINGS RECEIVED.—W. K. B., James Whitton.

COMPETITIONS.

RECREATION GROUND LODGE.—The design selected by the Lewisham Board of Works for the lodge of their new recreation ground for Sydenham and Forest-hill is by Mr. Robert Walker, of King's Arms-yard. There are in all 34 designs sent in, and the whole have been arranged around the Board-room, for inspection by the architects and public generally during the ensuing week.

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MONAGHAN—OLD HOUSE AT STRASBOURG—THE GREAT
BARN AT HARMONDSWORTH.

OUR LITHOGRAPHIC ILLUSTRATIONS.

THE NEW EAST AND WEST INDIA DOCK-HOUSE.

This building, situated on the site of some old houses in Billiter-street, recently demolished, is rapidly approaching completion, and when finished will prove an architectural ornament of which the City may well feel proud. Increasing demand for accommodation, as well as necessity for the demolition of the old Dock-house, to make way for a new street, have obliged the company to erect a substitute, and with the assistance of their architect they will now be in a position to transfer their business to an establishment likely to prove satisfactory in every respect. The foundation stone of this building was laid in December last by Mr. Percival Bosanquet, the then chairman of the company, in presence of a large number of the directors and friends, and the whole of the work will be completed in time to allow of a transfer of the company's business from the old to the new house before Christmas next. On account of the peculiarities of the place required to suit the various groups of offices, it was necessary to adopt a style of architecture which would allow of free treatment without sacrificing any space for recessing portions of the structure, from which much of the effect of a Gothic building is obtained. Under the circumstances the architect adopted a modification of Venetian Gothic as best, allowing of the necessary freedom of detail on a flat surface. The fronts are faced with Box Groundstone, relieved with red Mansfield in the voussours of arches, and over main entrance. The whole of the columns are of polished red Aberdeen or blue Peterhead granite. The plinth is of grey Cornish granite with fine tooth-axed face. The bosses are principally of polished red and blue granite, but some of the groups at angle are in various-coloured marbles. With regard to its internal features something may be said. The top floor consists of suites of apartments for house-keeper and officials. The second mezzanine floor will be devoted to luncheon-rooms, lavatories, &c., for the use of the directors. The first floor will be occupied by the secretary and the *personnel* of his office. Upon the same floor is the court-room for holding the meetings of directors and half-yearly meetings of proprietors. The whole of the internal decoration is in character with the exterior—the dado windows, doors, &c., all being in wainscot, relieved by carving. The ceiling is panelled, its richly-carved supports representing different fruits, &c., emblematical of the various commercial products which fill the company's warehouses. A massive mantelpiece of marble, surmounted by a large mirror, gives a palatial appearance to the apartment, which is lighted by large double windows, and from the ceiling by a single gas "sunlight." This, as well as the floors below, is reached by a spacious stone staircase, on which a large glass dome sheds ample light. On the ground floor is the general office, 43ft. long by 33ft. wide, its ceiling supported by ornamental iron columns. The shipping, divi-

dend, and pay offices are also situated on this floor. In the basement lavatories, luncheon-rooms, &c., for the *employés*, and a school-room for the messenger boys, are provided, and a portion of the space is occupied by strong rooms and heating apparatus. Without going into further detail, it may be said that this handsome edifice contains, or will contain, every convenience that appertains to our largest commercial establishments of the present day. All the principal rooms are provided with open fireplaces, but in addition, the building is warmed throughout by Messrs. Price and Co.'s plan of hot-air flues. Great care has also been taken to provide for efficient ventilation. The architect of the building is Mr. A. Manning, the Dock Company's engineer. The builders are Messrs. Merritt and Ashby, to whom great credit is due for the care and speed with which they have carried out the work. The stone and wood carving has been executed, from the architect's designs, by Mr. Bradford, of Kennington-road. Mr. Holloway has been the clerk of works.

OLD HOUSE ON THE QUAI SAINT JEAN,
STRASBOURG.

EXAMPLES of old work are being destroyed more ruthlessly, perhaps, at Strasbourg than elsewhere, so that any record of them is interesting. Our lithograph is from a pen-and-ink drawing which was exhibited in the Royal Academy this year. This drawing was made from a water colour, sketched at Strasbourg in 1875, by Mr. Philip J. Marvin, during the time he held the travelling studentship of the Royal Academy.

ST. MAC CARTAN'S CATHEDRAL, MONAGHAN.

We give an interior view of the Cathedral of St. MacCartan, first bishop and patron of the ancient diocese of Clogher. The cathedral is situated immediately outside the town of Monaghan, on rising ground, at the junction of the Dublin and Armagh roads. Its plan comprises nave and aisle, choir terminating in a polygonal apse and transepts, with four chapels projecting to the east. North-east of the choir and lateral chapels is a pile of buildings containing sacristies, chapter-room, cloisters, library, and other capitular requirements. A spacious baptistry, terminating in an apse, projects from the second bay of the north aisle, and a tower and spire stand at the junction of the south aisle and transept. The dimensions interiorly are 180ft. in length, 72ft. wide across the nave and aisles, 113ft. across the transepts. The total height of the tower and spire will be, when the latter feature is finished, 200ft. The building has been several years in progress under the zealous care of the present Lord Bishop, and is now approaching completion. Mr. J. J. McCarthy, R.H.A., is the architect.

HOUSE AT HEATHFIELD, SUSSEX.

This small house at Heathfield, which has just been completed from the designs of Mr. Keith D. Young, of 11, Red Lion-square, is as simple in its arrangements as it well could be, being intended chiefly as a summer residence. It is built of local red bricks, the upper part being timber framing, covered with local plain tiles. All the interior fittings are of the simplest description. The work was carried out by Mr. Holman, of Lewes.

MOUNT VERNON, THE HOME OF WASHINGTON.

Among our lithographic plates this week we publish some measured drawings of Mount Vernon, the home of Washington. The building is no longer employed as a residence, but is simply used as a show place. The house was much altered by Washington, and he added the wings to the right and left of the main building, and the interim fittings are by his arrangement, the several parts having been bought from time to time, chiefly in England, and brought by the illustrious owner for the embellishment of his home. The ground plan, which we give, illustrates the planning of the principal rooms, and the details are drawn to scale with marginal references, which accompany them, and thus render further description unnecessary. The measurements were taken by Messrs. V. C. Taylor and W. H. Wood, and the drawing was made by the latter gentleman.

OLD BARN, HARMONDSWORTH.

THE view which we publish to-day of this interesting old barn, of 13th century date, is from a drawing by Mr. G. R. Webster, of Slough.

ARCHÆOLOGICAL SOCIETIES.

NORTH STAFFORDSHIRE ARCHÆOLOGICAL SOCIETY.—On Tuesday week the members of the North Staffordshire, and Burton-on-Trent Archaeological Societies united in an excursion to Repton, under the leadership of Mr. W. Molyneux, F.G.S. The two parties met at Willington, and after taking some slight refreshment pushed on to Repton. On the way they saw from a little distance an earthwork, which, on rather slight grounds, is believed to have been a Roman entrenchment. Repton (the Repandune of the Saxons) is a place of great antiquity: it was the residence of several Mercian kings, and was the site of one of the earliest ecclesiastical foundations in the country for it was here that St. Werburgh established a nunnery about the year 656. This, together with the town, was destroyed by the Danes in the course of their great invasion in 874. The church then existing was overthrown by the invaders, and it probably lay in ruins until, after a lapse of some two hundred years, a new church was built in the Norman style. A priory of Black Canons of the Order of St. Augustine was founded at Repton by Maud, widow of Ranulph, second Earl of Chester. And, lastly, in 1556 Sir John Port established a free grammar school at Repton. The party were received at the Priory gate by Dr. Huckin, the head-master, who gave every facility for the study of the antiquities of the place. In the basement story of his own house are two massive columns. These no doubt formed part of the Priory church of which besides only two or three fragments remain. A portion of the walls of the chancel are Anglo-Saxon work, and beneath is the crypt, which is a place of exceeding interest. It is about 17ft. square, and the ceiling is supported on stone arches resting on wreathed columns, apparently monoliths. Mr. Molyneux spoke for some time in the crypt, (taking advantage of the shelter which it afforded) and Mr. C. Lynam, at his invitation, also made a few remarks. Mr. Lynam said the crypt was beyond all doubt Anglo-Saxon work, and there was nothing in the county of Stafford which approached it in regard to age. Mr. Lynam pointed out several particulars in which the masonry resembled that of the Romans—in fact, two pilasters which are nearest to the east window of the crypt have quite a quite Classic air, and are as truly of Classic descent, however rude, as the alabaster slab in the church above (*tempus Elizabeth*) is a debased example of the Gothic art which flourished in all its beauty three hundred years before. Repton church is considerably above the average of country parish churches in point of size, but the chancel is very small, and naked and colourless. A portion of the nave arcade was Early English, with Norman arches and columns in the two bays nearest to the chancel, but a former clergyman had the whole of the ancient stonework chiselled smooth and neat, and for the sake of obtaining uniformity pared down the Norman columns and converted the round arches into pointed! The school built by Sir John Port was also visited, and over the principal fireplace were found some scores of mediæval encaustic tiles cemented into the wall. Mr. Molyneux explained that some years ago the remains of a manufactory of encaustic tiles were found within the Priory grounds, and a portion of one of the ovens (which was inspected) is still in existence. After exhausting the antiquities of the place, the visitors proceeded to the Bull's Head inn, where tea was spread.

A new wing for 50 male patients has just been added to Wilts County Asylum, near Devizes.

The new Victoria Baths, at Glasgow, were opened on Saturday last. The cost of the building has been £10,000. Mr. J. L. Watson is the architect.

The foundation-stone of a new Wesleyan chapel has been laid at Guernsey. The building, which is to cost £5,000, is being carried out from the designs and under the superintendence of Messrs. Wilson, Willcox, and Wilson, architects, Bath. Mr. D. C. Jones, of Gloucester, is the builder.

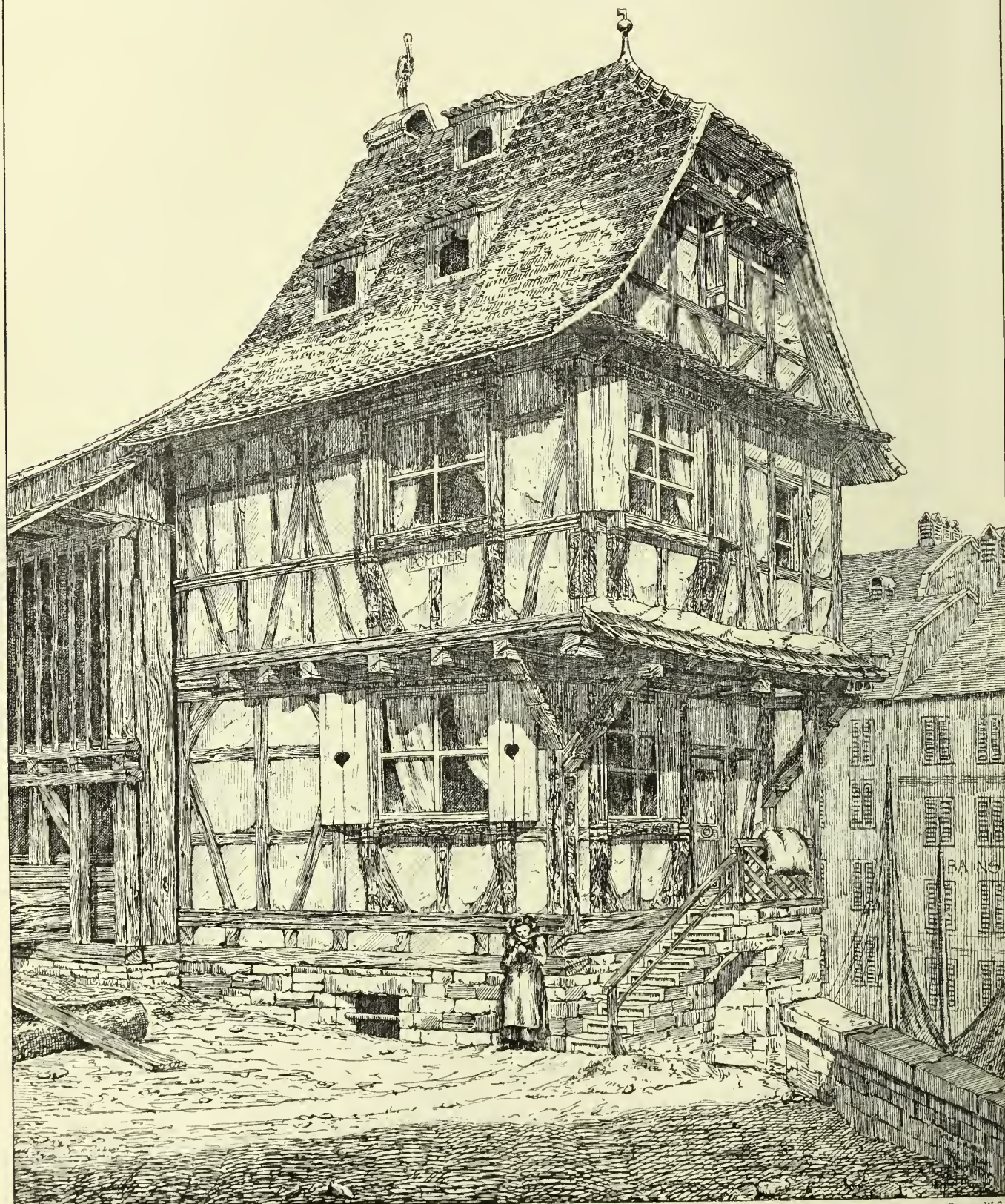
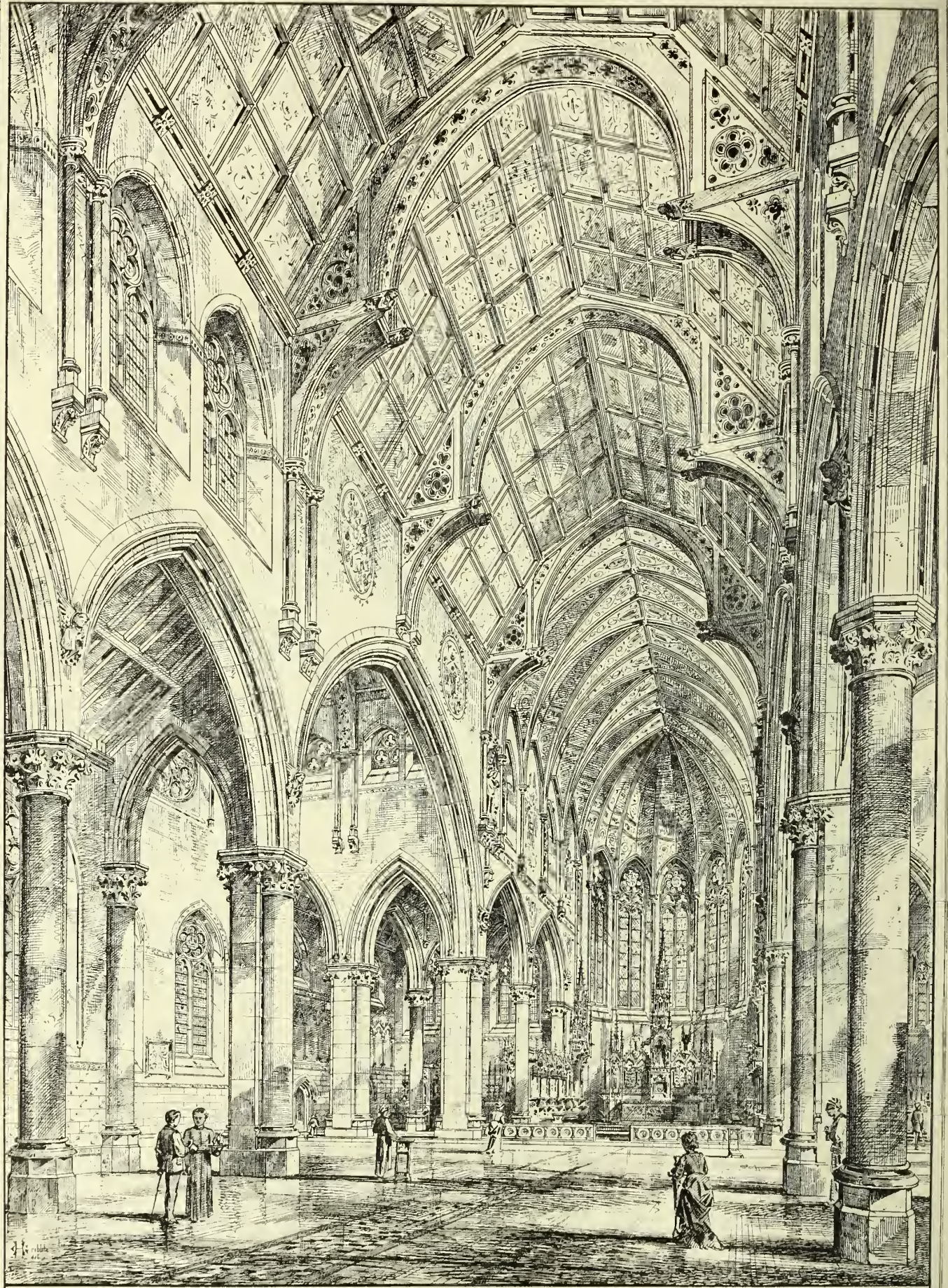


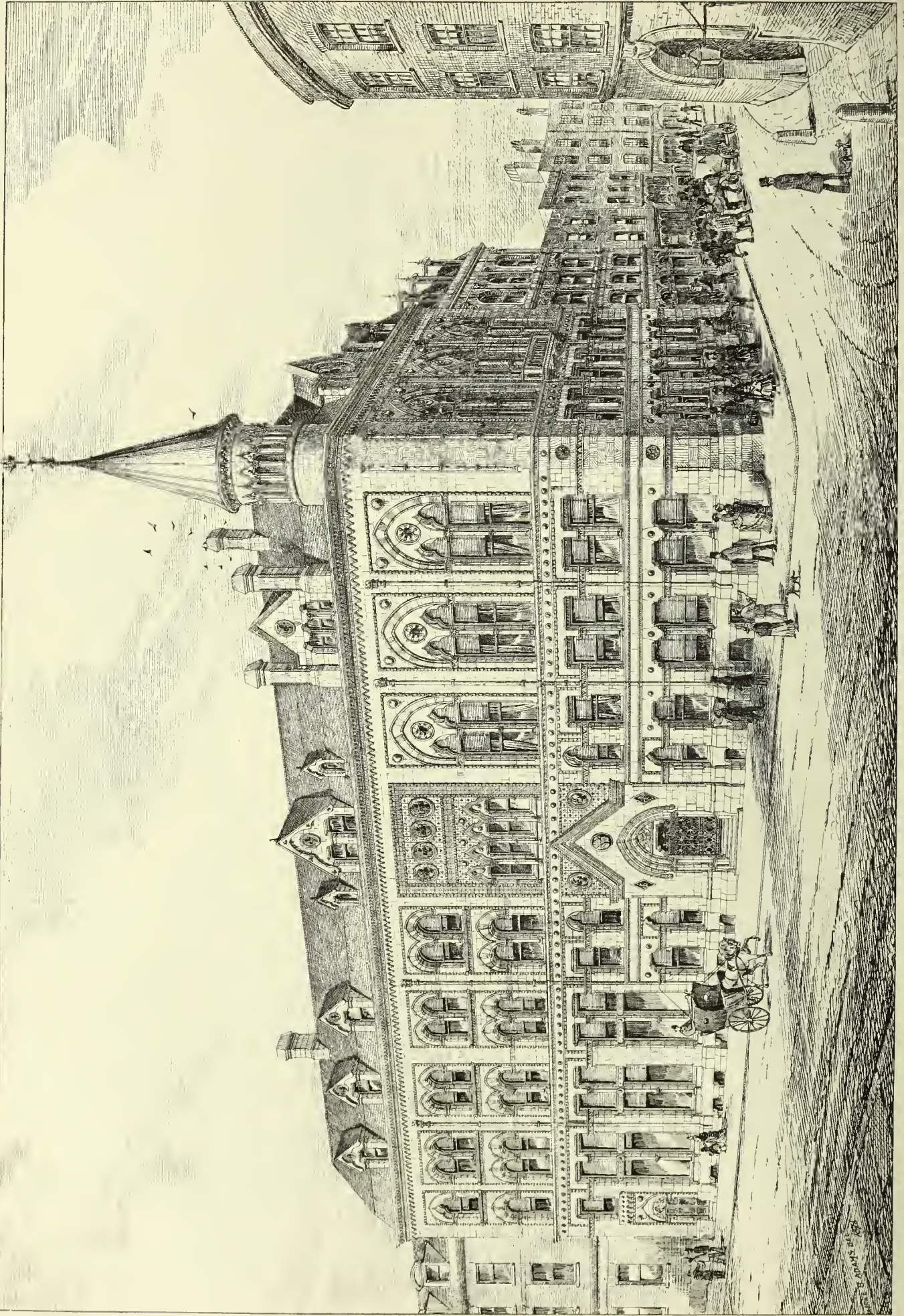
Photo Lithographed & Printed by James Akers, 6, Queen Square, W.C.

OLD HOUSE, QUAI ST JEAN, STRASBOURG DRAWN BY P. J. MARVIN



CATHEDRAL OF ST. GEORGE'S, EDINBURGH. J. J. G. ARCHY ARCHT.

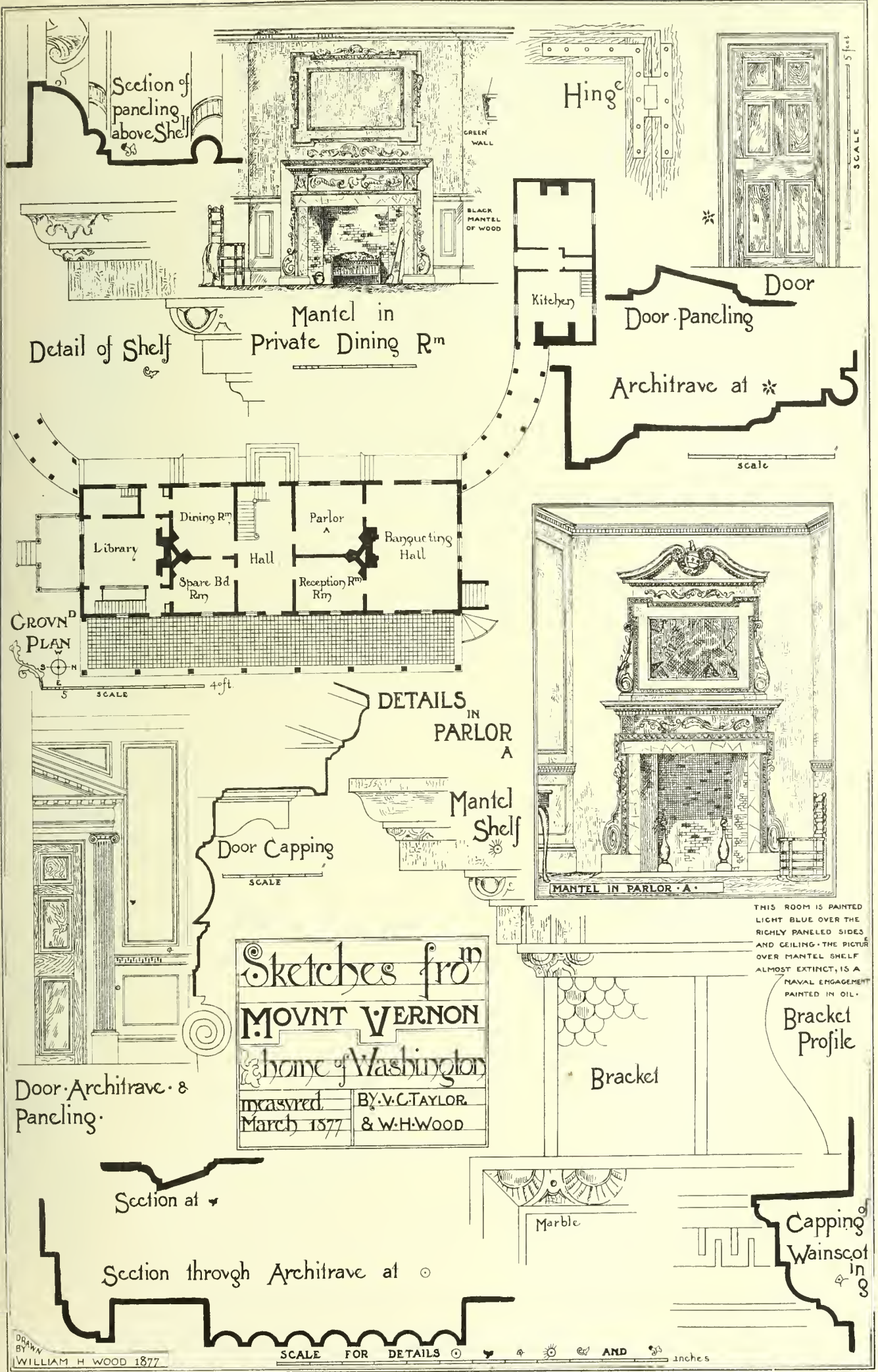
THE BUILDING JEWES, SEP 21. 1877.



J. S. ADAMS del. 1877

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W. C.

NEW DOCK HOUSE BILLITER STREET E.C. FOR THE E & W INDIA DOCK COMPANY



Section of paneling above Shelf

Hinge

SCALE 5 feet

GREEN WALL

BLACK MANTEL OF WOOD

Mantel in Private Dining Rm

Detail of Shelf

Door

Door Paneling

Architrave at *

scale

DETAILS IN PARLOR A

Mantel Shelf

Door Capping

SCALE

MANTEL IN PARLOR A

THIS ROOM IS PAINTED LIGHT BLUE OVER THE RICHLY paneled SIDES AND CEILING. THE PICTURE OVER MANTEL SHELF ALMOST EXTINGT, IS A NAVAL ENGAGEMENT PAINTED IN OIL.

Bracket Profile

Bracket

Door Architrave & Paneling

Section at *

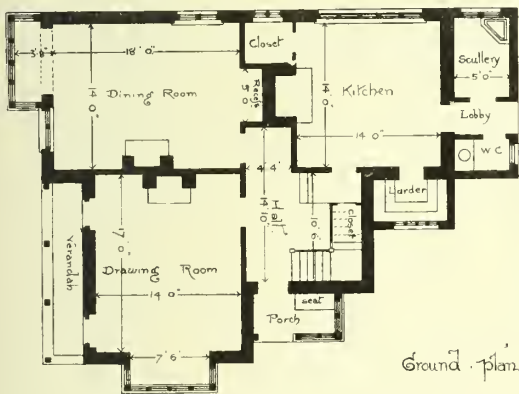
Section through Architrave at ○

Marble

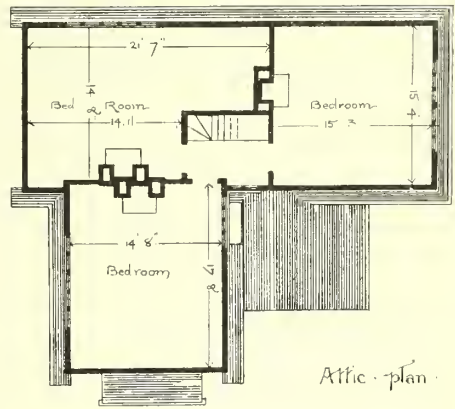
Capping of Wainscot in 8

DRAWN BY WILLIAM H WOOD 1877

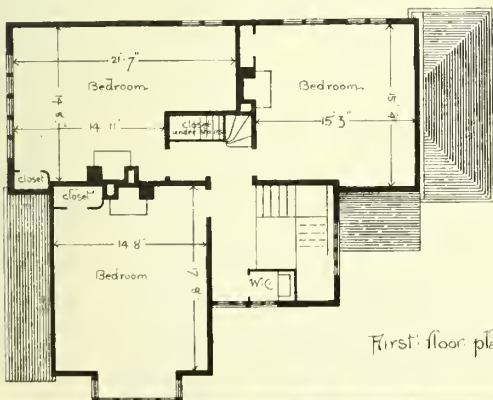
SCALE FOR DETAILS inches



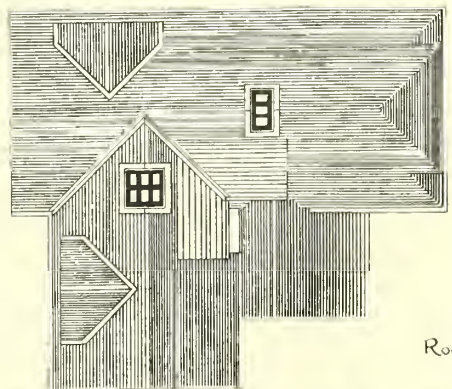
Ground plan.



Attic plan.



First floor plan.



Roof plan.

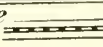
HOUSE AT HEATHFIELD SUSSEX for W. Ash Esq^r  Keith D. Young ARCHITECT

Photo Lithographed & Printed by James Abernethy, 6 Queen Square W.C.



Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

Drawn by G.R. Webster.

THE GREAT BARN, HARMONDSWORTH, MIDDLESEX.

TURKISH AND RUSSIAN COTTAGE-BUILDING AND FURNISHING.

NOW that not only "rumours" of wars are matters, as they always unfortunately are, of daily excitement, but actual war is going on, on a specially exciting scale and degree of activity, it is at least some, though perhaps but small, comfort to find any circumstance in and about it which can be thought to be advantageous to humanity anywhere. The Turk and the Russian are, as it would seem after all, to be, on the whole, pretty well matched; and to be, as far as their social state is concerned, to be on terms of all but equality. The Turkish soldier, and the Russian soldier, when they return to their humble homes—to the cottage homes of Turkey and Russia—must, as will be seen, go back to all but the same places. The war now going on may be, beyond the present hour, of more or less interest; and it seems not a little strange that a something more as to the future, a little out of the common place, has not been said about it by those who see a little beyond the mere bloodshed, and slaughter, and destruction of material. We do not venture even to hint at it, but there may be an interest in the getting a little insight into the "cottage homes" of those who after all suffer, and must needs suffer, most severely and acutely. What the Turks and the Russians are now doing we are told of hour by hour, and where they are we know; but where do they come from, and how do they live when at home, and what are their homes like? We have always felt, perhaps, a more than usual interest in the special dwelling places of the common people—to use a general phrase—and do not think that sufficient attention has been as yet devoted to them. Yet, what can be more to the purpose than such a subject is, when looking for the foundations and origin of architecture, even as a fine art, as well as a constructive art? Cottages and the dwellings of the common people, all the wide world over, must, we are quite sure, have preceded temples, and aqueducts, and causeways, and the mighty tombs even of mythical heroes. There must have been "cottage homes" of the Egyptians before there were pyramids. All the world over this must needs have been, and the very origin of that building or architecture must needs have been powerfully influenced by, if not actually a growth out of, the humble dwelling of the prehistoric man. We are not now going quite so far back into time as here indicated, but intend only to point to those humble dwellings of the Turk and Russian as they now are, and have been, as far as we can see, for ages past. It is all but a new subject, for cottages and rough-built primitive huts for rude men and peasants are not thought commonly to have much to do with architecture or fine art. But, indeed, they are so. It is not quite so easy a task as many might be led to suppose, to find from the accounts of travellers, what the cottage of the Turk or the Russian is really like; for travellers, as a rule, keep to the cities, and look mainly at the more important buildings in them. But what we want here to come at is the common cottage, or hut building of the common people. The houses of the Turkish villages, say the travellers, seem to be *very much alike* all the country over; and there can be but little doubt that they are really so; and not only alike now-a-days, but have been so for many, many generations past. On the *outside* they look for all the world like mere square boxes. They measure, on the average—inside measurement—from 12ft. to 14ft., and are built of rough stones of all shapes and sizes, cemented together with "mud." The roofs are flat, and covered with earth, rough beams of wood being laid from wall to wall, and roughly

planked over to support this earth covering. A small *roller*, it may be mentioned, is generally to be found on this rude roof covering, for the purpose of keeping the earth flat, and as hard as possible, so as to more effectually keep out the wet. It may be noted, as a curious artistic and architectural item, that as this roller does not very readily touch effectively the extreme edges or corners of the earth covering that it is here a little loose, and favours the growth of weeds and grass, which grow at times most luxuriantly, and thus are seen from the street; and it has been suggested that this tuft-like leaf and grass ornament suggested, many ages ago, the leaf ornament so often seen on the antique Greek buildings, on the angles of the roofs and elsewhere.

Thus far we have the empty hut. There is no window, so that light is admitted solely through the ever-open doorway. The door has no lock or other fastening, but a bit of wood is suspended over the top of it inside, and falls down when the door is shut; while on the outside hangs a peg by means of which this fastening may be pushed up.

The walls and floor inside this cottage or hut are mud-coated, the mud being mixed with short straw to bind it. There is a rude and rough enough chimney, up which the wood fuel at times is piled high. This interior is, as might be expected, black with smoke, so that, as the travellers tell us who have looked in these abodes, it is dark enough. Such is the cottage of the Turkish soldier when at home. Those who are now fighting so fiercely came all of them from such, and to such they, or some of them, must needs return. But there is a something of human interest even here. The lamps, to begin with, Sir Charles Fellows says, though of tin or common earthenware, are after the beautiful forms of the antique Greek and Roman lamps, and lamps there must needs be.

No furniture, as that term is here understood, is to be found in these cottage homes of the Turk. When a visitor arrives the owner of the house sweeps out the room, and spreads a mat. A few nails in the rough wall serve to suspend all superfluous articles of clothing. The hammock and mattress for sleeping rest, of course, on the carpet or mat, where any handy article serves for a table. There are no chairs, and yet, say those who, like the travellers of old days, go to see what they cannot see at home, when this humble abode, thus unfurnished but with a bright wood fire, and with all things round about, is an "extremely enjoyable" abode.

It is this, then, such as it is, that the Turkish soldier leaves when he goes to war, and to this he must needs return; and it is no wonder that so little is needed of preparation to induce him to leave it, even for war. All his wealth he carries about with him, and is personal. And his Russian foe, it may here be noted, differs but little from him except in this—that his cottage home is of wood or timber, the walls of rough stuff as it is cut down. There is nought that is new here, for the houses of the antique and polished Greek were all but the same 3,000 years back.

It must not be supposed that the *houses*—we will not now call them "cottages"—of the common Turk, as found—we will not say in his towns, in out-of-the-way places sometimes not to be found by name in the best maps, but in the capital city itself, in the far-famed and world-known Constantinople—differ much from those. In the narrow and uneven street-ways there are the same abodes, differing but little from what is actually, as above seen, in the villages and out-of-the-way places, and standing by themselves. Why, the streets of this famous city, say the dainty travellers, are better certainly than other eastern cities; but

surely none in Europe anywhere else can convey an idea sufficiently bad, even for the best of them! The houses of the better sort of people, even the largest houses, are not unfrequently burnt down within the space of ten minutes, being constructed entirely of wood. But the ordinary houses, or dwellings of the common Turk, are like to those above. But few travellers care to go through the long, narrow, broken, poor streets of any city; and the accounts we get are of those parts only where "improvement" is working some change, and introducing foreign notions and imported details. It is only in the mosques of a Turkish town that "architecture," as we now understand the term, is to be found, and which gives character to these towns. Mosque architecture, by the way, is all but a new subject, and of it but little is known. Mosques are colossal structures as compared with the small dwellings by which they are surrounded. There is in them but little external architecture with the exception of the minarets.

And now of the Russian soldier as he is when at home, and of his dwelling-place, or cottage, or house, as it is in his villages, for indeed they differ but little, if at all, in general type or character. All that we have above said applies here, as far at least as rudeness and roughness are concerned. The details differ, and the construction is of timber for the most part, and the roofs of the huts, or cottages, or houses are gabled; but the interiors are as empty as those of the Turk, and as dark, and as smoke-begrimed, if not more so, if that be indeed possible. The Russian villages, the Marquis de Custine tells us, consist mainly of a double row of small wooden houses, more or less ornamented with "carvings," the gable ends facing the street, with commonly a large open court, with a "shed" at one side of it. Clay construction is not forgotten; but from one end of the Russian Empire to the other the greater number of rustic dwellings are of rough timber, carelessly hewn, and caulked with moss and resin. Monotony, says he, is the divinity of Russia. It must not be thought that there is much of anything new here, for if we go back in time—3,000 years back—we shall find evidences of the like style and system of cottage-building, differing in detail, it is true, but in the main the very same. The bas-reliefs to be found in our collections will soon evidence this to any who will look attentively for facts.

C. B. A.

THE VICE-PRESIDENT OF THE COUNCIL OF EDUCATION ON SCIENCE AND ART.

AT the annual meeting of the Burslem School of Art, held on Monday evening, Lord Sandon presided, and spoke some sensible words to those who are always insisting on the necessity of increased State aid to art and science. He remarked that when the question of Government aid was brought forward, people ought as citizens to be on their guard, and look with apprehension upon what was a growing tendency in the country to ask State aid to lift individuals and localities out of difficulties. They had to guard themselves against that decay of national character which was perfectly certain to follow if they trusted too much to the interference and tutelage of the central Government. Formerly the mere fact of goods being of British manufacture was considered to be proof of the solidity of the work. They had not that artistic value which the productions of some other countries possessed, but the world relied on the goodness of the articles; and he hoped they would regain that character. It was necessary to have artistic cultivation, so that they could compete with more southern countries; and here came the use and the national importance of schools of art and science, and here was one of the reasons why Government was justified in supporting schools of art generally. It was necessary, as they had

shorter hours, to have the assistance of every kind of scientific apparatus in the treatment of every branch of manufactures. They wanted in trade much more of artistic cultivation, and all the knowledge of science that Government could assist them to acquire; and with those two potent auxiliaries he believed they would be able to regain their position in the markets of the world. That was the justification, in his own mind, for Government interference with localities, by what had been done at South Kensington years ago. The Government gave that great centre of South Kensington a hard push, pushed it forward with might and main, and he was glad no Government had since neglected it. To his mind that great centre had done work such as the nation might be proud of, and no community in England had profited more by the aid of the South Kensington Museum than the Staffordshire Potteries. There was proof of the success of wise Government interference. They could not say too much in honour of the permanent officers of the South Kensington Museum, who had really done more for the advancement of science and art than the Government. He hoped they would forgive him for going rather more carefully into this point than was customary on such occasions; but he thought it was well to look sometimes at these points from a national, and not merely a commercial or local, point of view.

The report of the committee, read by Mr. F. M. Julian, the honorary secretary, stated that the progress of the school continued satisfactory. The number of students attending the art classes under Mr. Theaker during the year had been 188, an increase upon the previous year. Great activity has been displayed in the modelling class. Most of the students had satisfied the examiners, and the full grant had been allowed by the department. Three students had obtained prizes, and one a bronze medal. In the science section, under Mr. Byatt, there had been considerable improvement during the year. The students numbered 159, of whom 61 had passed, and 25 had gained first classes and Queen's prizes. The number attending the building construction class had not been so good as was expected, considering the extra prizes which had been offered by the Builders' Association and Mr. Webb, and the committee hoped to see an increase in the attendance.

TIDAL HARBOUR CONSTRUCTION.

AN interesting paper on the above subject appears in a number of the "Journal of the American Society of Civil Engineers," read by Mr. Clinton B. Sears, of the Engineer Corps, U.S.A. The author enters into the principles of harbour construction as laid down by well-known authorities, and applies them to the construction of an actual tidal estuary at Wilmington, California. In all operations for improving a harbour, the importance of an accurate and thorough examination of the tidal conditions is insisted on as the first step. The area, section, range of tide, velocities of currents, and topographical survey of the site, with a complete record of soundings reduced to a datum plane, as that of mean low water, are the first requisites in designing harbours. Borings, for the purpose of showing the substrata and geological peculiarities are also highly necessary to the engineer, and too much labour cannot be bestowed upon these preliminaries. The tidal influx and discharge, and the tidal volumes, are especially required in forming an idea of the basin and sections of water-way, and a prolonged study of the special local tides should be made. The author follows Mr. D. Stevenson, Prof. Ferrell, and some other authorities upon the fundamental requirements of a tidal harbour. "The most perfect type of a tidal harbour," we are told, is one in which the water-way sections decrease gradually from the sea inland, and then expand into a basin of large comparative area, thus forming a reservoir for the temporary storage of the high tides." Three tide gauges are recommended—one near the open sea, protected from wave action, one near the middle, and one at the upper end of harbour. If the estuary is long and narrow, or tortuous, a great many more are required, their zeros being referred

to one level, and the self-registering gauges are the most economical. It is laid down that any construction exposed to the waves should have its axis parallel, or nearly so, a slight obliquity reducing the percussive effect of the waves. Should the object be to close certain entrances, leaving one, it should be that one most nearly in the direction of the prevailing fair weather winds, so that sailing vessels may go as far as possible without the aid of tugs. The entrance should be trumpet-shaped, with the widest high water section seaward; the low water sectional areas should contract as little as possible, and any construction to close an entrance should follow the contour of shore as nearly as other conditions permit. Spring tides must be taken as the scouring power in moving material, as their rise and fall includes the greatest range, and their velocities are necessarily also greater than neap tides. The ebb tide is always the best scouring tide, its power being 6 to 8 times greater than the flood tide. Thus the spring flood commences from a high neap and runs to extreme high, while the ebb starts from this latter high level and falls to extreme low water, or the former has a range of about 5ft., while the ebb has a range of about 8.5. The maximum ebb tide velocity is at the beginning of the third quarter, and at the end of the fourth the velocity of current rapidly decreases. In planning a tidal harbour, care should be taken not to retard or hold back the last of the flood tide, thus preventing the water reaching the higher reaches of the tidal basin; but the works should be planned to facilitate a free inflow, and also formed to give a direction to the ebb tide in one channel, so as to utilise its power. The author observes, "A work whose top level is bare at half tide will, as a rule, meet this best."

The construction of training walls or jetties is one of the main considerations in harbour improvement. Those near the entrance should be lowest, and those in the upper end the highest, thereby insuring an easy inflow, and full upper reservoir, as well as a direction to the ebb within a concentrated channel. It may be necessary, in long single lengths of wall, to give a low elevation, and vice versa. Training walls, the author says, may do more harm than good if not wisely planned, and of this we have abundant evidence. Their chief object should be to concentrate the currents so as to produce scour in shoaling parts, and the tidal currents should be concentrated on one axial line without excluding tidal water from the estuary. It is of primary importance to preserving the capacities of the upper parts of a tidal basin, and it is generally agreed that contraction, though it may benefit navigation at one point, injuriously affects the lower parts of the estuary. Thus, if an estuary has a bar at its mouth, it will be injured if the basin is encroached upon, and the same applies to a river with shoals along it. In building training walls, the work should be simultaneously put down to avoid the scouring out of the material. Raking, dredging, or blasting may be had recourse to, to help the scouring. The former should be done during spring tides, when the current is fastest, the rake being kept in the middle of the current, so as to make a narrow deep furrow. The dredged material should be deposited so as not to reduce the sectional area of the channel or entrance.

The characteristics of Wilmington harbour are next described. It appears the ocean has been gradually pushed back to its present limit, and that an island of drift called Rattlesnake Island, about two miles long, forms Wilmington estuary, and a broad flat shoal area, having only about 1.5ft. of water at mean low water, existed. The high-tidal area of basin is about 1,300 acres. The tendency of the waves and currents has been to form a natural channel between the shore and the shoal, and this pointed out an artificial mode of securing a deep channel across the drift bar. By this means the water escaping seaward has been confined within the narrow channel, thus causing it to pass across the bar with increased velocity. The axial line of this work first set out conformed to the outline of the shore, and guided the current. The level of this work is 8ft. above mean low water, so that the ocean

swell at high water can pass over the work, and bring with it a quantity of sand, which lodges against the wall on the inside, and increases its stability. The construction shown by the author consists of close sheet piling in two thicknesses of 6in. and 4in. breaking joints, the greater thickness being on the sea side. On each side waling pieces were bolted through, about 12in. by 12in. and 8in. by 8in. strutted inside. A single thickness of piling was found to be deficient in tightness, the water worked backwards and forwards with the change of tide, and deep holes were scoured out that threatened undermining. In the deeper water, where the work was more exposed to the waves, a still more solid kind of construction was adopted. This consisted of a double row of sheet piling, 12in. thick, about 10ft. apart, cross-braced between, and filled in solidly with boulders and broken stone, and covered at the top with deck planks. Its top level was 1ft. 6in. higher than the single work, and the piles were 28ft. long instead of 24ft. The timber used was Oregon fir, sawed. Some difficulty was experienced by the scour and undermining, and at intervals of 60ft. on both sides box cribs, 24ft. by 6ft. by 4ft., were sunk at right angles to the work, filled with loose sand, and on the top with sand bags. Bundles of brush, loaded with sand bags, were put down alongside the work, while at the free end on each side crib wings, 30ft. long, rising to high water, were planted to break the local currents. The sand gradually accumulated against the work, and it has now a bank of sand against it. The operations are next described minutely by the author, into which we cannot enter here, but the results are soon told. The work was begun in 1871, and there was then over the bar barely 1.5ft. at mean low water, and no defined channel. In December, 1875, as the result of the work there was a straight clearly-cut 6.5ft. channel, mean low water. A gain of 5ft. of water on the bar was thus made. According to a rule the tonnage capacities of harbours vary directly as the cubes of their bar depths; hence 5ft. increase has improved the capacity of Wilmington harbour 81 times its original value. This has been done by tidal currents only, acting on a hard drift bar. It was found that small eddies of from 2ft. to 8ft. diameter, and of great velocity, aided the scour by their augur-like action on the bottom. These small eddies produced a whirling motion, raising the sand, and they were found to increase the depth sometimes as much as 6in. to 8in. an hour, and finally run together and produce a smooth channel. The success of this work is ascribed to George H. Mendell (Major, Corps Engineers), under whom the work was executed.

A steamboat-pier is about to be thrown out into Strachar Bay at Creggan, in the West Highlands, for landing tourists. Plans have been prepared by Mr. Melville, of Dunoon.

At Carshalton, Surrey, on Thursday night, a resolution was carried by an overwhelming majority, at a meeting of ratepayers, instructing the inspectors to light the streets with paraffin oil instead of gas.

The parochial chapel of St. Peter, Pitton, Wilts, is about to be rebuilt under the instructions of Mr. Ewan Christian. The chancel was formerly separated from the nave by three small arches, but the unusual arrangement was obliterated thirty-five years since, when an incongruous addition of brick wall was added as a north transept, and the present chancel arch of lath and plaster thrown up. It is now proposed to remove these, and while preserving the original form and size of nave and chancel, to add an aisle to the north, and a vestry behind it. The walls and tower will be raised in height. The outlay will be about £1,500.

In pulling down the old parish church of Longstock, Wilts, the labourers have come upon a coffin formed of pieces of chalk, roughly hewn and cemented together.

New works of water supply are to be publicly inaugurated, on completion, at Lossiemouth, near Elgin, to-morrow (Saturday).

Mr. J. H. Shaw, of Wakefield, has been unanimously elected to the assistant-surveyorship of Walsall.

A new mission chapel, in connection with the United Methodist Free Churches, has just been opened in Chatham-road, Birkdale. The building has been designed by and executed under the superintendence of Messrs. Maxwell and Tuke, architects, Southport.

Building Intelligence.

BURNHAM, ESSEX.—The fine old parish church of St. Mary, upon which large sums have been expended in restoration during the past few years, has just been further improved. The floor of the altar has been raised and extended, and laid with Maw's encaustic tiles, with large slabs of white marble for the kneeling portion. A pair of handsomely carved late Gothic screens have been raised. In the nave the masonic columns and their arcades have been scraped and repaired, and a large portion of the walls have been coloured. These works have been carried out under the supervision of Mr. Charles Read, of Burnham. A new pulpit, designed and built by Mr. J. Forsyth, of Baker-street, W., has been erected as a memorial to a late churchwarden. It is hexagonal in form, of Caen stone, with panels of bronze-coloured marble from Earl Bradford's quarries. Three statuettes—our Saviour as the Good Shepherd, with St. Peter and St. Paul on either side—stand under canopies in front of the principal panels. The carvings of the centre canopy rise above the cornice, and develop into a large cluster of foliage, forming the support to the back board. A prayer desk and lectern, of oak with brass crestings, also form part of the memorial church furniture. The reopening services took place on Sunday week.

BURSLER.—The foundation stone of a new Methodist Sunday School was laid on Monday week at Burslem. The proposed edifice, which is designed for the accommodation of four hundred children, will be 12 yards in width by 19½ in length. The façade will be of red pressed brick, relieved by white brick pilasters dividing it into three bays, and surmounted by an ornamental pedimented cornice. The centre bay will contain a large two-light-window, and those on either side windows of single lights. The total cost of the building is estimated at £1,460. The designs have been prepared by Mr. James Watkin, of Burslem, and are being carried out by Mr. J. Bowden, of Burslem and Endon.

CANFORD parish church, Dorset, was reopened on the 2nd inst., after restoration effected under the direction of Mr. David Brandon. The west end of nave has been rebuilt, with the addition of porches to the north and south aisle doors; the old west door has not been reproduced. The chancel is fitted with elaborate carved oak stalls, executed by a Belgian firm for Mr. Buckley, of Wigmore-street, W. New pulpit and organ have yet to be supplied, as well as the nave benches, before the alterations can be pronounced complete.

CLACTON-ON-SEA.—A new Wesleyan chapel was opened at this rising Essex watering-place on Tuesday week. The site, at the junction of three roads and near the sea front, was given. The building seats 450 persons, and cost five guineas per sitting. The style adopted is Early English, the materials used being Kentish rag, with Bath stone dressings. The work has been carried out by Mr. Regis, of Great Clacton, from the designs of Mr. Bell, of London. The gasfittings are by Messrs. Reynolds and Co., of Clacton-on-Sea.

COLERNE.—The parish church of Colerne, Wilts, has recently been reopened after complete restoration, the cost of which (£5,000) has been almost entirely given by the High Sheriff of Wilts, R. Walmesley, Esq., J.P., and W. H. Poynder, Esq., J.P. The work has been carefully carried out under the superintendence of Messrs. Wilson, Wilcox, and Wilson, architects, Bath, by Mr. Bladwell, builder.

CORK.—A new opera-house was opened at Cork on Monday evening. The building has been erected from the design of Mr. C. J. Phipps by Mr. Terence O'Flynn, builder, of Cork, Mr. M. Clarke acting as clerk of works. The decoration has been executed by Mr. Edward Bell. The ceiling, pillars of proscenium, and box fronts have a ground tone of very light cream colour. The flat part of ceiling and the cove are painted in Romanesque ornament in gold and colours, while the raised ornamentation of the gallery and stage-box fronts is picked out in gold upon a ground colour of Wedgwood blue. The stage boxes are

flanked by two fluted columns, having Corinthian capitals gilded and picked out in colour. The walls are covered with a sage-green paper, having gold ornamentation on it, and the curtains to the private boxes and the drapery hangings are of crimson rep, with gold borders. Considerable care seems to have been taken to facilitate ingress and exit, and the sitting arrangements are as complete as possible. The following are the principal dimensions:—Curtain line to back wall of pit, 69ft.; curtain line to front of dress circle, 39ft.; width of the proscenium opening, 30ft.; depth curtain line to back wall of stage, 40ft.

EASTBROOK.—On Saturday afternoon the memorial stone of new day and Sunday schools, in connection with Eastbrook Wesleyan chapel, near Bradford, was laid. The design has been prepared in plain Gothic by Mr. L. Leadley. The building, two stories in height, has a frontage of 147ft. to Chapel-street, and consists of a chapel, 33ft. 6in. by 36ft. 6in., with a height of 15ft.; a Sunday school, 55ft. 6in. by 36ft. 6in., 17ft. in height; a day school and infant school, each 64ft. by 36ft. 6in.; a number of class-rooms in each of the departments, and playgrounds under the buildings. Accommodation will be found for about 500 children in the mixed and infant day schools, and more than this number in the Sunday school. The cost of the building is estimated at £5,000.

EAST MARKHAM.—A set of Board schools has just been completed at East Markham, near Tuxford. They accommodate 186 children, with a master's house detached. They are built of red bricks, with Ancaster stone dressings, and slate roofs. The roofs are open timbered; lavatories and cap-rooms are provided. The school has a frontage of 96ft., and is broken up with buttresses and dormer windows. The porches have lean-to roofs. A large bell turret forms an important feature in the design. They were designed and carried out by Messrs. Clarke and Son, architects, Nottingham. Mr. Theophilus Wilson was the contractor, and the cost is £1,622, exclusive of the site.

ELY CATHEDRAL.—The restoration of the central octagon tower of the Cathedral is progressing favourably. The southern façade is almost completed, and during the present week the scaffolding is being removed from this side, thus exhibiting the effect of the additions. The work is being carried out from the designs of Sir Gilbert Scott, R.A., by Mr. Thomas Wood, of Ely, under the supervision of the Cathedral surveyor and clerk of works, Mr. R. Reynolds Rowe, of Cambridge.

GLASGOW.—St. Mungo's Catholic Church, situate in Parson-street, Glasgow, was reopened on Sunday, after restoration under the superintendence of Mr. Goldie, architect. The church still wants the upper part of the tower and spire to complete the original design, but internally it has now been made one of the most highly decorated places of worship in the city. The whole of the sculpture for capitals and bosses has been beautifully executed upon the rude blocks which for many years have disfigured the church, and following this the decorator has been called in to ornament roof, walls, and arcades with symbolic devices and rich colour. A balustrade of polished marble and alabaster now crosses the chancel arch as a rood loft, having upon it a sculptured group, representing Christ crucified, with the Virgin and St. John at the foot of the Cross. The new altar and reredos are of carved oak, brightened and defined in outline by delicately applied gilding. In the centre is a lofty fêche, containing, under a canopy, a statue of the patron saint (Mungo); below is the throne for the exposition of the Blessed Sacrament, and beneath that the tabernacle; flanking are statues, beneath canopies, of SS. Peter and Paul, and SS. Andrew and Margaret. The altar itself has medallion busts, in low relief, of Christ, the Virgin Mary, and St. John, and detached from the reredos, but forming part of the whole, are statues of SS. Roch, Patrick, Joseph, and Thenev. All the statues are adorned with decorative painting and gilding, and were executed at Lille, France.

KELSALE.—The parish church of Kelsale, Suffolk, will be re-opened, after restoration, on the 19th of October. The old chancel and

vestry adjoining have been pulled down and rebuilt, the chancel itself having been extended several feet, and the south aisle extended eastward for a considerable distance. Two vestries are also provided on the north side of the chancel. The nave, porch, tower, and other portions of the building to the westward have not yet been touched, but some portions are in great need of restoration. Mr. R. Norman Shaw, of 29, Bloomsbury-square, London, is the architect, and Mr. H. Luff, of Ipswich, the builder. The total estimated cost of the restoration is 3,063*l.*

LINCOLN CATHEDRAL.—Some anxiety was caused recently by the discovery that the south-west tower of Lincoln Cathedral was somewhat out of the perpendicular, and that extensive fractures appeared in the walls. A careful investigation proved that although the foundations of the tower were secure, a considerable portion of the building, some 70 or 80 feet from the ground, was in a dangerous state. The towers of the cathedral were not all originally designed to be carried to their present height, and the points at which the additions were made in the 15th century are easily discernible. The south wall of the tower under notice is pierced with passages, and the turret, it has been ascertained, was actually built upon a rubble arch instead of a solid stone wall. This, in course of time, gave way, and a settlement resulted, causing a bulging of the outer walls and fractures in the masonry. The Dean and Chapter took prompt measures, and the safety of the tower is now assured. The extensive works in accomplishing the repairs are now approaching completion.

LOOE.—A new Guildhall at Looe was opened on Thursday week. The building stands on a site about 120 feet in length and 75 feet in width. It is in the Early Gothic style, and is entirely detached. The principal feature in front is the lofty tower, rising some 64 feet in height, and surmounted by a slated spire. The whole height to the point of the rod above the vane is about 90 feet. The walls are of local stone, and the dressings of the several doors, windows, chimney cappings, copings, and other portions are of hard Portland stone. All the roofs are covered with Delabole slate, and finished with red tile cresting. The buildings contain on the ground floor a drill hall 45 feet by 20 feet, armoury, harbour commissioner's office, police cells, and entrance lobbies. On the first floor are the large hall (the same size as the drill-hall), council-chamber, and other rooms. Nearly the whole of the windows are filled with stained glass. The contract for the erection of the building was taken by Mr. Samuel Honey, of West Looe; the stained glass windows were designed by Messrs. Fouracre and Watson, of Stonehouse; the Mayor's chair, of carved oak, and the shield over the entrance doorway, are the work of Mr. Harry Hems, of Exeter, and the building has been erected from the designs and under the superintendence of Mr. J. F. Gould, of the firm of Gould and Sons, architects, of Barnstaple.

NOLTON CHURCH, PEMBROKESHIRE.—This church, dedicated to St. Medog, and situated in a romantic glen on the shore of St. Bride's Bay, was reopened on the 13th inst. after restoration. With the exception of some small portions of the east wall of the chancel and the south wall of the porch, which it was found absolutely necessary to remove and rebuild, the old walls have been left standing. A new vestry has been built on the north side of the nave, the old north door being utilised as an entrance to it. Trefoil-headed single-light windows in the nave, and a similar two-light window in the chancel gable, with quatrefoil in the head, take the place of some comparatively modern ones. New slated roofs, of increased pitch, and of open timber-work, plastered between the rafters, have been provided over the chancel and nave. The ancient arched ribbed ceiling over the porch has been repaired and cleaned. The outside walls generally have been pointed, and the inside plastered. A new encaustic floor has been laid in the chancel. The chancel tiles, which are partly glazed in the sacrarium, came from Messrs. Webb's works at Worcester, and the remainder from Mr. T. Peake's, of Trusall, in Staffordshire. The present accommodation is

for 111 persons, 85 of whom are seated in the nave. Originally the number of seats was for only 74. The works have been carried out from the plans and under the direction of the architect, Mr. E. H. Lingen Barker, of London, Hereford, and Tenby, and by Messrs. Jones and Jenkins, of Haverfordwest.

PARRACOMBE.—The foundation stone of a new church was laid last week at Parracombe, near Lynton. The cost of the building will be about £3,000. The plans have been prepared by Mr. W. C. Oliver, of Barnstaple, and the contract has been entered into by Messrs. Beavan and Sons. The church will comprise a nave and north aisle, each 42 feet 6 inches long, the former being 18 feet wide and the latter 12 feet; a tower at the west end, a chancel 24 feet by 15 feet, and a large vestry. The height of the tower to the top of the pinnacles will be about 63 feet, but it is hoped the contractors will be enabled to add another stage to contain the clock-chamber. The inside of the tower is to be of native dressed stone, pointed, and the other portions will be finished in tinted stucco. The chancel roof is to be boarded, and the nave and aisle roofs plastered between the rafters. The roofs are to be felted and covered with slate from the Whitland Abbey quarry. All the external dressings of the windows, copings, doorways, &c., are to be of Ham Hill stone, and all the internal wrought work, including the arcade, chancel arch, window jambs, sills, and strings, are to be of Bath stone. The style selected is Early Decorated, and the building is planned to seat 190 people.

PONDER'S END.—The memorial stone of the new district church of St. Matthew was laid here, on Monday last, 17th inst., by James Meyer, Esq., of Forty Hall, Enfield. The present contract comprises the nave and north aisle only, with accommodation for 304 adults and 38 children; a portion of the east end of the nave being appropriated for a temporary chancel. The complete design includes a nave of five bays, with clerestory and north and south aisles, a north porch, a tower 20ft. square, and spire 140ft. high, a south transept, apsidal chancel, and two vestries; the total ultimate accommodation being for 530 adults and 60 children. The present outlay is under £4,000, inclusive of all expenses except the site, which is a free gift. The walls are of rubble stone, faced externally with Kentish rag in random work; the dressings are of Bath stone, and the roof will be slated. The style adopted is 13th century English Gothic. The architect is Mr. H. J. Paull, F.R.I.B.A., of No. 9, Montague-street, Russell-square, and Manchester. The contractors are Messrs. Higgs and Hill, of Lambeth, and the clerk of works is Mr. H. Crocker.

SHEFFIELD.—The hospital for women, fronting Gell and Victoria-streets, commenced two years since, is rapidly approaching completion. It has been erected by Mr. Thomas Jessop, and when fitted will have cost between £25,000 and £30,000. The Elizabethan style has been strictly adhered to by the architect, Mr. Webster, of Sheffield, the chief features of the main frontage (in Leavygreave-road) being the bay and oriel windows, with elaborate carvings in the corbelling. No expense has been spared in the erection of the building, and it is carefully fitted for every necessary requirement. The governor's room, the board-room, the dispensary, and waiting-room are arranged on the ground floor; the first, second, and third stories are planned as wards. The warming and ventilating arrangements have been put into the hands of Mr. Phipson, of London. The hospital covers an area of 2,000 square yards. Messrs. Chambers and Son, of Commercial-street, are the contractors; Mr. Corrie, of Carver-street, is the plumber; and Mr. Kenyon, Ellesmere-road, Sheffield, the slater.

THE CHURCH OF THE HOLY TRINITY, ESCLUSHAM, NEAR WREXHAM.—This church, situate about 1½ miles from Wrexham, was opened for divine service on the 12th inst., by the Bishop of St. Asaph. The building consists of nave, chancel, north and south transepts, organ-chamber, and vestry, with heating apparatus under the latter. Accommodation is provided for 350 worshippers. The walls and masonry generally are of local stone, the

interior face being rough-stuccoed. The paved floors in nave, transepts, vestry, and organ chamber are of blue and red Staffordshire tiles. The chancel is laid with Messrs. Maw and Co.'s encaustic tiles. The roof is open, of Baltic fir, stained, and covered with red and green slates. The pulpit and font are of Bath stone. The style of the building is Early Geometrical. The future extension of the church will be effected by adding large north and south aisles, for which special provision has been made. The building is heated with hot water by Messrs. Jones and Sons, of Bankside, London; and the reading desk, lectern, and other articles of furniture were supplied by Messrs. Jones and Willis, of Birmingham. The general contractors were Messrs. Phennah and Davies, of Rhosyllen, whose contract was £2,541. Mr. J. E. Lash, of Wrexham, was the architect.

UMBERSLADE.—On Tuesday a new Baptist chapel was opened at Umberslade, near Knowle. The building is Geometrical Gothic in style, built of grey Wilnecote stone, with Bath stone dressings, carved. The church comprises a nave, seated for 200 worshippers, and an octagonal apse, in which is placed the pulpit and baptistery; also two small vestries, separated by a screen. The baptistery, in white marble, is open to the church, and is placed at the front of the pulpit. Shallow transepts give effect to the external design, and in one the organ is placed. The tower is 52ft., and is surmounted by the spire, which reaches an elevation of 110ft. The whole has been built from the designs and under the superintendence of Mr. George Ingall, architect, Birmingham, by Messrs. Smallwood and Co., builders, of Wootton Wawen.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published September 21 contains articles on Preventive Medicine in Relation to Public Health, Australian Health Statistics, Domestic Sanitary Construction, Adulterations of Food Detected, The Causes of Disease in Country Homes, Local Mortality Statistics in London, A Peculiar Case of Lead Poisoning, School Drill, The Weather and Bodily Pain, Public Health Reports, Legal Intelligence, Water Supply and Sanitary Matters, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c. Price 2s. Annual Subscription, post-free, eleven shillings. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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RECEIVED.—B. N.—J. R.—P. M. and Co.—G. T. and Sons.—J. M.—D. and Co.—J. L.—A. W. C.—B. W. and Sons.—T. H. W.—L. D. U.—W.

G. M. BUTTS. (No.)—WEST INDIES. (You will have to order such works from abroad, or through a London bookseller.)—W. A. GILDER. (You had better get from the Society of Arts the summaries of this and last year's "Health and Sewage of Towns Conference." See also indices to the last two volumes of *Public Health*.)

THE MECHANICS OF SHORING.—There are two errors made by the printer in this article, which appeared last week. 1. Line 11, in 3rd column, p. 249, "walling-piece" should have been printed "walling-piece," only one l, and the a pronounced long, as in walling. 2. Half-way down 2nd column, p. 250, the formula for F should be—

$$F = P \sin. \theta + Q \cdot \cos. \theta \\ = 43 \times .98056 + 9 \times 1.6223$$

(The error consisted in the sign of multiplication being substituted for that of addition.)

Correspondence.

THE OLD HOUSE AT RYE.

To the Editor of the BUILDING NEWS.

SIR,—I went down to Rye, in Sussex, last week, intending to make measured drawings of the well-known half-timbered house in Mermaid-street. The house has been empty for some years, and was so when I made a hurried visit there in the spring, and thus I had still hoped to find it. However, to my dismay, on my last visit I discovered workpeople in possession, converting it into a pair of modern residences. That part of the building which was, to my mind, the more interesting—viz., the inside—is completely changed, and, with the exception of the front of the house, the building has now lost all its character.

My object in writing is to ask some one of those who have carefully measured this building—and I believe many have—to offer their drawings for publication in your journal, and thus, since the opportunity for study is gone, allow others to share in that which was so full of interest and instruction.

Among other details till recently remaining—and of the second period of this house—there is one of an Early sash window. In a communication made to you some time ago, when the question of Gothic principles was being discussed in these columns, I mentioned that if sash windows had been used by the Mediaevalists they would certainly have exposed the weights by which the sashes were hung, and in the present example this has been done. The pockets for the weights—the bottom sash only being hung—were formed by deep grooves cut in the face of the stout posts of the window-frame on the side towards the room, and not apparently in any way concealed; and no doubt the weights themselves were formed in such a manner as to be interesting and good to look at, and the lines possibly made of twisted gut, or some other durable material. The sash pulleys are in hard wood.

I think the origin of these hung sash windows is clearly traceable to the old two-light sliding sash window, one light of which was always fixed. If such a sash frame and sashes were put on end it would be almost identical with the early type of a hung sash window, the outside bead being worked on the frame out of the solid, and, if the sash were not hung, kept up when open by the sort of hinged slip still seen in many old sash windows of later times.

During the Mediaeval period window glass was apparently more precious abroad than with us, for, although here the window-frames and shutters to them were often made as if to remove, and considered as tenants' fixtures, yet abroad this principle seems to have been observed even more generally, for the glass itself, instead of being worked into lead lights, was often in small buildings—where the chances of removal were greater—fixed with little projecting sprigs into wooden bars forming small squares, and thus the glass could easily be taken out and put away when not wanted, and also the frames and everything removed at any time with less liability of damage.

A marked feature in houses of this period—i.e., of the fifteenth and sixteenth centuries—is the great similarity existing in the joinery, panelling, and so forth, and noticeable in all parts of the country. There is an illustration of it in the earlier work in this house. The wainscoting being sometimes removed like the window-frames is only a partial explanation, and it is difficult to explain the rest. Sir Digby Wyatt, speaking some years ago on this question, said, "We know that the difficulties of locomotion were very great, and that such poor means as then existed for the transmission and intercommunication of ideas were constantly more or less suspended or interrupted by the exigencies of war, and other innumerable accidental causes. Yet that there existed a sort of electric current which ran during the middle ages through the minds of all practising art over the whole continent of Europe, we cannot fail to discern and admit. Thus, in architecture, the moment a real important structural change took place in our country, its echo

seemed to make itself audible in some other in an incredibly short space of time. In a similar way, from province to province, and almost from village to village, the movement seemed to be propagated."

It would be interesting if more light could be thrown on this subject, and that at no distant day, for, as we see, the opportunities for obtaining it are gradually lessening.—I am, &c.,
R. MORRISON MARNOCK.
32, Southampton-street, Strand, Sept. 17.

DESIGNS FOR LIBRARY BUILDINGS.

SIR,—There will be held on October 2, 3, 4, and 5, a Conference of Librarians in the theatre of the London Institution, and during those days there will be in the adjoining large library an exhibition of all kinds of library appliances and designs. In evidence of the important and influential character of the conference it is enough to say that the principal librarian of the British Museum will be nominated for its president, and will deliver an inaugural address, and that many librarians from other countries, including a large delegation from the United States, will come to England for the purpose of attending it.

The organising committee will gladly give room to any designs for library buildings which may be sent here. They cannot undertake to repack and return exhibits of any kind, but everything will be kept with care, and may be sent for on or after October 6. Will you allow me to add that, while librarians do not yield to other people in their appreciation of architectural beauty, they set a still higher value on the provision of as much shelf-room, as much reading space, and as much light as possible, and the designs which best satisfy these conditions will undoubtedly attract the most notice.—I am, &c.,

EDWARD B. NICHOLSON,
Secretary of the Organising Committee.
London Institution, Finsbury-circus, E.C.,
September 17.

THE RULE OF ST. BENEDICT.

SIR,—I observe that a difficulty has been felt in an expression which occurs in the charter of Kymmer Abbey, as though it were strange that Cistercians should live under the rule of St. Benedict. They adopted it in its most rigorous form. Allow me to explain that there are three rules recognised by Jus Commune, to one of which the religious must conform—those of St. Benedict, St. Basil, and St. Augustine. The first in the West, the second in the East, is observed by monks, and the third by canons regular. [See *Lyndwood, Lib. III., tit. 20, p. 213.*]

The substantials—that is, the three vows—were common to all monks and regular canons. In their habit or dress, to the inexperienced eye, all monks were much alike, except in variation of colour, the Benedictine and Cluniac wearing black, and the Cistercian undyed woollen. Canons regular adopted shoes [sotulares], monks wore boots [ocrea]. Friars and the military orders were under the Augustine rule. There was an old saw . . . nigræ vestis nec nota rotunda non faciunt monachum. . . . [*Jo. de Athon. App. Lyndw., Prov. p. 146.*]
—I am, &c., MACKENZIE E. C. WALCOTT.

FORCE OF WIND.

SIR,—The "Author of the Article" on the above subject appears to think that he defends the formula he used in calculating his table of the force of wind on inclined surfaces, by calling attention to an apparent irregularity in Prof. Unwin's table. That gentleman is, I have no doubt, well able to defend his work, and I should say, is much too good a mathematician to have adopted the table without noticing the apparent anomaly referred to.

The formula used by the "Author of the Article" was pointed out by Mr. Froude to be erroneous in the case of fluids (see Vol. XXXII. Proc. Inst. C.E., p. 233), and the Aeronautical Society had some experiments made in 1872, which, as regards air, further proved the erroneousness of this formula, which is now adopted by the writer of the article in question.—I am, &c., J. S.

PRESSURE OF WIND ON OBLIQUE SURFACES.

SIR,—My attention has been called to a letter in your issue of September 14, in which Hutton's formula for the pressure of wind on oblique surfaces is called in question. Your correspondent says:—"The formula, however, as worked out by Mr. Unwin, contradicts itself, for on the supposition that the wind blows horizontally against a roof, it gives the normal pressure per foot on a roof of 60° pitch as the same as that on a perpendicular wall, against which, of course, the wind would have its maximum effect. And, what is still more extraordinary, when the pitch is 70° the normal pressure per foot is actually greater than that on a vertical wall—that is, greater than the maximum." Now, sir, I do not know on what grounds your correspondent assumes that the normal pressure on a surface freely exposed all round to an unlimited current would be greatest when the surface was perpendicular to the direction of the current. The action is so complex that I should myself hesitate to predict in what position of the surface the normal pressure would be greatest. I therefore feel obliged to have recourse to the results of experiments to determine the point, and, so far as I know, they entirely agree with Hutton's formula.

A few years ago some experiments were made by the Aeronautical Society on the pressure of a current of air from a large foundry fan on a small plane surface opposed to it at various angles. The apparatus used for measuring the pressure was very delicate, and was so contrived as to register separately the two components of the normal pressure, one parallel the other at right angles to the current. Combining these two components we get the resultant normal pressure on the surface. The results are given in the following short table. The fan was run at a constant speed, giving a constant volume and velocity of air, and the results of several trials gave the following resultant pressures on a plate exactly 1ft. square:—

	Normal pressure in lbs. on the plate.
Plate perpendicular to current	3.24
Plate making angle of 60° with current	3.45
Plate making angle of 45°	3.40
Plate making angle of 20°	1.90
Plate making angle of 15°	1.55

I have quoted these results because they are quite independent of Hutton's; they were made on a larger scale, and the plate during the experiment was fixed, while the air was in motion. They give results not widely different from those obtained from Hutton's formula, but they make the pressure on the inclined surface more markedly greater than that on the perpendicular surface than is the case in Hutton's experiments. For many reasons it is doubtful how far Hutton's formula is applicable in determining the pressure on such a surface as a roof, but it appears to me that we have no reason to discard it because it makes the normal pressure on a moderately-inclined surface greater than on a surface perpendicular to the wind.—I am, &c.,
W. CAWTHORNE UNWIN.

STUCK ON.

SIR,—If any of your readers wish to pick up a useful idea about competitions, let them inspect the drawings for the North London Consumption Hospital, on view at the hospital in Tottenham Court-road. They will find that one competitor has commenced his report by giving his address, and they may wonder that he thought it worth while, after that, to use any motto. However, the motto is there—"Stuck on," the meaning of which is explained on holding it up to the light, for, behold! his signature is there also.—I am, &c., W. M.

Messrs. Reid and Co.'s brewery, extending as it does from Gray's Inn-road, on the west, to within a few yards of Farringdon-road to the east, is now drawing near its completion. It is said the machinery, vats, and general plant is on a scale of the greatest magnitude. The builders are Messrs. W. Cubitt and Co., Gray's Inn-road, and the whole of the telegraphic arrangements have been placed in the hands of the eminent telegraph engineers, Messrs. Francis and Co., of Hatton-garden.

Intercommunication.

QUESTIONS.

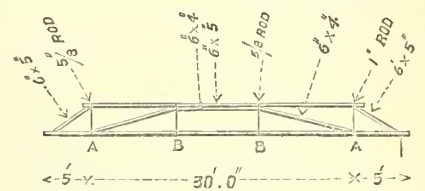
[5126].—Chemical Test for Impurities from Wells.—Will some of the contributors to "Intercommunication" kindly give me a chemical test for impurities in water from wells—such impurities as filter from cesspools, &c.—CESAR.

[5127].—Flooring.—Will any correspondent give me his opinion as to the merits of flooring matched—i.e., one board having a wooden tongue, and the other grooved—over the old plan of both boards being grooved for and having iron tongues? Which makes the best job?—ENQUIREE.

[5128].—Winchester and St. Alban's.—Will one of your correspondents kindly give me the exact internal dimensions of Winchester and St. Alban's? I saw them given anew in some paper very lately.—MACKENZIE E. C. WALCOTT.

[5129].—Grey Granite in North Germany.—Will some reader inform me in what part of Prussian Poland or North Germany the grey granite quarries are situated? I have been informed the granite is extensively used in Berlin and other large cities in the country. Also, who publishes the best guide and handbook with map of the district?—ANGLO-SAXON.

[5130].—Breaking Weight of Trussed Girder.—Will some one kindly give me a simple rule for calculating the breaking weight of a trussed girder of this design 40ft. long, by 3ft. 8in. high, and rule



for calculating the weight or strain at the points marked A and B? Also, for the strain on top piece between A and B.—REY.

[5131].—Fire-proof Liquid or Paint.—I am desirous of rendering the boarding along some passages in an old mansion proof against fire by means of covering it with a liquid or paint. Can any of your readers kindly inform me how to do this?—TOR.

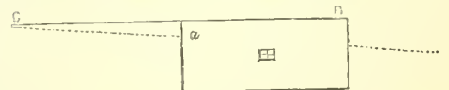
[5132].—Compensation for Deficient Quantities.—Will any reader kindly say if a builder can obtain compensation from a quantity surveyor for errors in bills of quantities supplied, if after the works are executed the builder finds the works exceed the quantities supplied, and upon which he has based his estimate. Has such a case ever been tried in the higher courts? If so, please quote the case, or has the builder any remedy against the employer?—A BUILDER.

[5133].—Rolled and Built Girders.—Is there any difference in the formula for computing the strength of a rolled girder from that used in ascertaining the strength of a built-up girder; if so, will some one kindly state it, and oblige—A YOUNG SURVEYOR.

[5134].—Charge for Taking out Quantities.—I wish to know what is the usual charge for taking out quantities of a house, &c., and preparing a draft bill for the architect to place in the hands of the lithographer? Will some more experienced surveyor inform me?—A YOUNG SURVEYOR.

REPLIES.

[5110].—Separating Fine Sand from Water.—I think if "X. Y. Z." had fully carried out the plan I recommended in my last, he would have found it to answer, for this reason:—Water, if it flows at a less rate than 12ft. per minute, will not carry sand along with it. As the quantity of water to be dealt with is only a little over 40 gallons per minute, a cistern 12ft. long, with the bottom of the outlet 9 or 12in. above the bottom of the inlet, should so reduce the velocity of the stream that it would be impossible for the sand to travel farther



than the cistern. I send a section of cistern, showing inlet and outlet, and supposed bed of channel. Let the dotted line represent the bed of channel, A the inlet, B the outlet. C D will be the surface of the water. In the centre is shown the cistern. To stop the sand, "X. Y. Z." must be careful to make the outlet above the inlet, or it will not answer.—AQUA.

[5120].—Joiner Work.—The idea of "Veneering" would not be economical. If the ornament were cut out of the veneer as suggested and let in flush with face of lighter wood, it would be equivalent to make the cheaper wood the most precious, and therefore the decoration would be untruthful. It would be like covering a precious stone with gold and only showing a small portion of it. Besides

which the labour of sinking the lighter material would be great.—G. H. G.

[5121.]—Purification of Sewage.—I am not aware that the Local Government Board have approved of any precipitation scheme. They only sanction precipitation under certain conditions, or when it can be combined with irrigation.—SURVEYOR.

[5124.]—Strength of Arch.—“C. E. E.” had better not trust to a tile arch of the span and flatness he proposes, without an iron tie-rod on each side of the furnace. If he can insert stone flags into the side wall so as to form a corbelling it would greatly help, and allow of a considerable weight.—G. H. G.

[5125.]—Flitch Girder.—If the side timbers are each 13 × 6, with an iron flitch, say, $\frac{3}{4}$ in. thick, the weight will be adequately borne.—ARCHITECTUS.

CRIPS.

The members and association of the Society of Engineers visited the works of the Great Eastern Railway Company at Stratford on Wednesday week, on the invitation of Mr. Adams, locomotive superintendent of the company.

Mr. Jonas Turvey, a working man, was elected surveyor to the Romford Local Board of Health on Monday last, at a special meeting, out of a considerable number of applicants.

The Barnacre Shooting Box, illustrated by us last week, is, we are informed, not heated by steam coils throughout, but by hot water, pipes and coils, fixed by the Cowan Patents Company.

An inquiry was held at Loftus, on Thursday week, before Mr. Arnold Taylor, one of the inspectors of the Local Government Board, respecting an application from the Local Board of Health for sanction to borrow £450 for widening the bridge and approaches. The inspector complained that the Local Government Board had not received a tracing of the proposed alteration, and requested the surveyor (Mr. Stainthorpe) to forward one.

Plans have been prepared for the Cambridge guardians by Mr. Bays, their architect, for additional receiving and tramp wards, to be placed on either side of the entrance to the Cambridge Union-house. The following tradesmen's tenders have been accepted for work to be done during the ensuing half-year: Carpentering, Mr. Reeve; bricklaying, Mr. G. Barbage; plumbing, Mr. Scales; and whitewashing, Mr. Munns.

The Local Board of Driffield have requested Mr. Banks, borough surveyor of Kendal, to examine into and report upon the scheme for the drainage of the town prepared for the board by Messrs. Oldham and Bohnhill, recently their engineers. Mr. J. S. Latus, of Driffield, has been elected inspector of nuisances and buildings to the board at a salary of £50 per annum.

The local authority of the hamlet of Brentwood last week voted an addition of £25 a year to the salary of Mr. Shelley, inspector of nuisances to the rural sanitary authority of Billericay, Essex.

The inner harbour at Arbroath, originally constructed in 1725, has been rebuilt and converted into a floating basin. The area of the dock thus formed is $2\frac{1}{2}$ acres; space, 1,313ft.; depth of water, 13ft. at neap and 17ft. at spring tides. The cost has been £40,000. The gates were closed, without a public ceremony, on Thursday, on the completion of the work.

Roan's Charity School for Boys, Greenwich, is nearly completed, and will be opened on the 1st prox. Mr. Walker is the architect.

The grand old church of Holy Trinity, Hull, now under restoration, narrowly escaped destruction on Sunday week. A fire broke out in premises near by, causing great destruction of property, and communicated to the scaffolding around the tower and to the belfry louvres and roof beneath, the lead of which was melted.

The Rev. Wm. Kingsley, the rector of South Kilvington, near Thirsk, has, at his own expense, just completed the improvement of the old parish church by re-stalling the chancel, building a new organ, containing 20 stops, and putting in heating apparatus, and new north window in chancel.

Chipping Norton parish church is about to be re-seated and otherwise restored.

The Cardiff guardians opened tenders on Saturday for the building of a dormitory and storehouse at the workhouse, and, after a discussion, decided by 10 votes to 5 to accept the tender of Messrs. Jones Brothers, amounting to £1,075, although another contractor offered to do the work for £102 less.

The Lancashire magistrates, at their meeting in Quarter Sessions on Thursday week, received a report from a committee on the county provision for the care of lunatics, recommending that “annexes capable of holding not less than 500 or 600 patients of the chronic class, of plain and simple design, with associated dormitories,” be added to the asylums at Laneraset, Prestwich, and Whittingham, and that a building of similar character be erected at Rainhill, if land can be obtained for the purpose on fair terms. The report was adopted, and the committee were authorised to take steps to carry it into effect.

Our Office Table.

THE new dock at Leith, which was commenced in 1873 from plans by Messrs. Rendel and Robertson, is being steadily proceeded with. The space of ground enclosed by the breakwater is about 120 acres, the water space of the dock is $16\frac{1}{2}$ acres, and some idea of the immense amount of material used may be formed from the fact that the stone-pitching on face amounts to 120,000 cubic feet; facework dressed for dock, 80,000 cubic feet; concrete pitching on face, 15,000 cubic yards; rubble heaving in embankment, 90,000 cubic yards; clay puddle, 30,000 cubic yards; banking behind wall, 100,000 yards. These quantities expressed in weight amount to about 400,000 tons, or about 550 tons per day since the commencement of the work. The sons and nephew of the late Mr. William Scott, who took the contract, are carrying out the work.

THE *Financial Chronicle* refers to a system which has been found successful in France by which it is proposed to indemnify architects against any loss to which they may be subjected under contracts with their clients. By the French Code architects and contractors are held responsible, for a period of ten years after the completion of structures, for the total or partial loss in buildings constructed by them, if such loss is caused by a fault either in the building or the foundation. It is evident that such a law cannot but have a good effect, as it offers a guarantee for the efficiency of the building in all its parts, and a safeguard to the public against accidents to life. But, on the other hand, it has often proved disastrous to architects and contractors, and large sums of money have been lost by them from the class of accidents mentioned. *L'Argus* is of opinion that data to found upon in carrying out such a system of insurance could easily be had; and, considering the very great responsibilities of this class of men—the sum insured on a single building amounts often to half a million or a million of francs—it is believed that every member of the profession would readily take advantage of this form of insurance. The question of the professional honesty of the architect or contractor remaining at its present high worth under the operation of such a ready means of indemnification against loss is considered, and decided, we think justly, in favour of the architect, who would still have a reputation to gain or to preserve, and for the sake of that reputation would continue, as now, to put honest work and good material into the building, and to render it as lasting as possible.

AN important point relating to the rights of artistic property has recently been tried in France. M. Clesinger, a well-known sculptor, in 1873 gave up to the Society Marynhac the sole right of reproducing his works, and the question now arises as to how far an artist is justified in selling to different purchasers works similar in design and composition, though not absolutely identical. The society has seized two new sculptures by M. Clesinger—a Phryne and a Roman Bull—under pretext that they are only reproductions of previous works over which they have exclusive right. Several sculptors were called in, and after careful comparison of the alleged reproductions they gave it as their opinion that, though the external resemblance was undoubtedly great, different ideas were expressed in the several works, and that therefore this could be no case of simple reproduction. The tribunal accordingly decided in favour of M. Clesinger, condemning the Society Marynhac to pay the costs.

Apropos of the opening of the new Town Hall at Manchester on Thursday, the *Preston Herald* eulogises the concentration of arrangement displayed in its planning, adding:—“We have a handsome building in Preston, with a very beautiful interior, and with a fine assembly-room, but its defects in the matter of accommodation are of the most glaring character. If Mr. Gilbert Scott had been specially instructed to design an edifice wherein all the space should be devoted to staircases, corridors, and lobbies, and from which the light should be carefully excluded, we do not think he could have produced a better building than our Town Hall. We know to our cost that our municipal

offices are widely distributed, and many are the aspirations that it were otherwise.”

A NEW street-sweeper, invented by Mr. Warren, of Cheltenham, was tested before the members of the Clerkenwell Vestry on Wednesday week in Corporation-row and Goswell road. In the latter thoroughfare a section 200 yards in length, traversed by tram rails, was saturated with water from the vestry carts, and speedily cleansed by the machine, no surface water being visible after it had been used. The machine consists of a rotary band of brushes feeding a shallow on wheels. The shallow fills itself in two minutes, and contains the same quantity as an ordinary slop-cart. It can be detached when full, and a fresh one substituted without deranging the sweeping power.

THE art classes in connection with the Royal Architectural Museum will recommence their studies on Monday, October 1st, on which date the newly-formed sketching club will be inaugurated. The classes are held under the auspices of the Science and Art Department and the students receive instruction from a fully certificated master, while they enjoy the advantage of using the large collection of casts and examples in the museum. A life class for men is also held, besides the art workmen and ladies' classes and the sketching club we have already noticed on a previous occasion but it may be here pointed out that prizes are offered by the Council of the Museum, and an annual exhibition of the sketches will be held. A selection of drawings by members of the club will be made for publication, and we have undertaken to help forward the work of the club by making room for some of these sketches in the BUILDING NEWS. Particulars of the club and classes may be obtained of the Curator, at the Museum, 18, Tufton-street Westminster, S.W.

At the last meeting of the Hackney District Board of Works a correspondence was read originating in a complaint addressed to the Local Government Board respecting some streets of new houses of the speculative class (locally known as “jerry buildings”) in Hackney Wick. The clerk informed the Board that he had written to the Local Government Board informing them that the matter was not within the jurisdiction of the Local Board but that the complaint had been forwarded to the Metropolitan Board. To this a reply was received from the Metropolitan Board, enclosing a copy of the district surveyor's report. This was to the effect that most of the houses were of such a character as to require the close attention, and a portion of the brickwork had been ordered to be taken down, course by course; and a pledge had now been given that “not less than half the bricks in the wall should be whole bricks.” This, with the other remedial steps, would, it was believed, adequately meet the case. Mr. G. B. Holmes, member of the Board, said he had visited the locality, and could fully corroborate the statements of the complainants. The mortar used was composed of cinder siftings, and did not contain a particle of sand, and the sewers were very inadequate, there being only a 12in. pipe in a long street—laid, moreover, among dust and refuse which had been freely shot there. The course taken by the clerk was approved.

A NEW dock, which will be known henceforth as the Queen's Dock, was opened on Tuesday by the Clyde Navigation Trustees. The work which are situated at the western extremity of Glasgow Harbour, cover 61 acres. Of these are water. The extent of quays provided is 3,344 yards, or about one-half the quay space which at present exists on the river. The total cost of the undertaking when completed will amount to £1,600,000. The Lord Provost of the city performed the opening ceremony, and in the course of some remarks in connection therewith he rapidly sketched the history of the Clyde since 1769, when there were only two feet of water at Dumbarton and 14in. in the harbour of Glasgow. Now they had 14ft. of water at the lowest of low water, and were dredging away with the expectation that they would have 20ft. At the accession of his Majesty in 1837 the yearly revenue of the trust was £37,644, and now it was £208,752; the tonnage at that time outwards and inwards was 929,732 tons, and it was now 2,428,616 tons.

ONE of the most interesting visits to works yet made by the Society of Civil and Mechanical Engineers took place on Friday afternoon, the 7th instant, when, by the kind permission of the architect and contractors, the members made a detailed inspection of the new Courts of Law, now building at Temple Bar. The members were received by the clerk of the works, and after a brief inspection of the great quadrangle the members went to the architect's temporary office, and there the general scheme of the buildings was fully explained, and various questions as to the working of the different parts answered in detail. The members were then taken to the eastern block, facing Bell-alley, which is now rapidly approaching completion, and begins to give a very fair idea of what the completed buildings will be like. Great interest was shown as to the internal finishing of the walls, the construction of the floors, and the general arrangements for lighting and ventilation. From this point the visitors were taken to the main block of buildings, which will contain the great Central Hall, surrounded by the courts, retiring rooms for the witnesses, counsel, &c. This part of the works is at the present time but little above the main floor level of the Central Hall, but is quite far enough advanced to admit of the ultimate "working" of the buildings being fully explained and understood. The clerk of the works then led the way to the western part of the site, where is situated the machinery and sheds in which the stone is sawn, moulded, and worked in readiness for fixing, and from which tramways lead to all parts of the works. This part of the work, which was only of less interest than the finished buildings, having been thoroughly inspected, the visit came to an end, and the members and their friends left, loud in their admiration of the work, very much interested in all they had seen and heard, and feeling a great debt of obligation to the clerk of the works for the kind and painstaking way in which he had conducted his visitors over this most important addition to the public buildings of London.

CHIPS.

Mr. William Tuley, assistant borough surveyor, Kendal, was last week appointed to the office of borough surveyor of Chesterfield, at a salary of £150 per annum. There were 58 applicants.

The foundation stone of the new waterworks at Leamington was laid on Tuesday week. Mr. R. Davidson, C.E., is the engineer.

The foundation stone of a new Congregational chapel, at Barton, in Cheshire, was laid on Saturday week. Mr. Thomas Huxley is the architect and builder. The chapel will be a plain brick building, with stone facings, and will find accommodation for 200 people. The cost will be about £500.

The Local Board of Farnworth have applied to the Local Government Board for sanction to borrow £1,800, for carrying out a drainage scheme in connection with the workhouse at Fishpool, from plans by Mr. Lomax, surveyor to the board.

An experimental well is being sunk for the Frome Local Board at Egford, under the superintendence of Mr. Tomlinson, C.E., with the hope of obtaining a supply equal to the wants of the town.

In Breslau, a successful attempt has been made to erect a paper chimney, about 50ft. high. By a chemical preparation the paper was rendered impervious to the action of fire or water.

At the Court of Common Council, last week, Deputy Fry wished to know what was to be done with Temple Bar. The Chairman of the City Lands Committee said the committee had made certain suggestions to the Government, but no reply had yet been received. The committee, however, expected communications from the Government very shortly, and they would then be enabled to make a satisfactory report as to the removal of Temple Bar and other important improvements that were intended to be carried out.

The ceremony of laying the foundation stone of the University-buildings at Nottingham has been fixed for Thursday next. The cost of the buildings, including the land, will be £60,000. The architects are Messrs. Lockwood and Mawson, of London and Bradford.

The works of rebuilding the parish church of St. Nicholas and St. Runwald, in Colchester High-street, from Sir Gilbert Scott's designs, are rapidly approaching completion. Tessellated pavement has just been laid to the architect's designs by Messrs. Goodwin, of Hereford. That in the chancel is based on the 14th century pavement in Milton Abbey, Dorset. The contractor, Mr. G. Dobson, has completed the tower and lead-covered spire, which rise to a height of 150ft.

The Barton Regis Board of Guardians have requested Messrs. Foster and Wood to prepare plans for three new infirmary buildings for 205 patients, at their union house.

The Duke of Cleveland owns the racecourse in the centre of Wolverhampton, which the townspeople want for a public park. In a letter read out at a special meeting of the town council on Friday, the Duke offered 50 acres in the middle, on lease at a little over £3 a year for 63 years, with the option of purchase then at £100 an acre. The offer has been accepted with thanks.

The science and art prizes gained by students at the Mechanics' Institute, Accrington, were distributed on Wednesday week. It was stated that the competition for the prizes had been very keen.

It is proposed to rebuild the nave of Edgefield church, near Holt, Norfolk, at a cost of £2,000.

The foundation stone was laid last week of a new Congregational chapel, at Furthergate, Blackburn. When completed the building will seat 1,000 persons, at a cost of £4,000.

The sword-room in Norwich Guildhall has just been redecorated under the direction of Mr. Lake, city surveyor, and embellished with some of the portraits removed from the window spaces of St. Andrew's Hall, in order to give more light to that noble room.

SLATES — SLATES — SLATES. —

Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each; 2ft., 2d. per foot; 5ft., 2d. per foot.

DEALS — BATTENS — FLOORING. —

Send for price list.—R. MAY & SON, Timber and Slate Merchants Acorn Wharf, Old Kent-road, London, S.E.

Trade News.

WAGES MOVEMENT.

LONDON.—Within the last day or two the concession of the 10d. an hour demanded by the masons of the metropolis has been granted by two large West-end building firms—those of Messrs. Wheeler and Warren, of Lansdowne-road, Nottingham, and of Messrs. Hook and Aldred. Other employers are expected to accede to the men's demand in the course of the present week. The firms above referred to have taken on a number of men at the increased rate of wages, and hence the strike list is proportionately reduced. The masons held a private conference on Wednesday at Wilcox's Rooms, Westminster Bridge-road, when the prospects of a speedy termination to the strike were discussed, and a resolution passed as to the future conduct of the movement.

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Holloway's Pills are especially recommended to all annoyed by tender bowels—a source of constant weakness, if not indicative of danger. Diarrhoea, flatulency, nausea, spasms, and distension yield to the extraordinary power this purifying medicine exerts over digestion, and those subversive functions which extract the food's nutriment for the body's maintenance.

TENDERS.

Bow.—For proposed additions to the Old Ford Mission Hall, Tredegar-road, for Arthur Farnau, Esq., Messrs. Hills and Fletcher, architects; quantities supplied:—
Sheffield and Prebble £593
Selby 585
Coleman 529
Rohey 529
Johnson (accepted) 493

CARDIFF.—For the erection of a dormitory and store-room at the workhouse, for the Cardiff Board of Guardians:—

Two lowest tenders:

Jones Bros. (accepted) £1,675
Geen 1,573

FOREST-HILL.—For two villas. Mr. R. E. Crossland, architect:—

	For villas.	Fencing.
Bowyer and Son	£2,190	£90
Downs and Co.	2,130	90
Rider and Son	2,038	98
Larke	1,850	77

GLENTWORTH.—For Mr. Brown's farmstead and foreman's house and cottage, at Glentworth, on the estate of the Rt. Hon. the Earl of Scarbrough. Mr. James Whittin, Lincoln, architect:—

Hobson and Taylor, Hogsthorpe	£2,057
Woodhouse and Doughty, Grimsby	1,939
Crosby and Sons, Lincoln	1,912
Taylor, D., Lincoln	1,910
Parker, J., and Brigg, Lincoln	1,889
Bell, J., Fillingham	1,876
Brown, J. P., Lincoln	1,876
Swaby and Son, Lincoln	1,855
Sutton, W., Scawby	1,798
Kendall, C., Market Rasen	1,795
Harrison, W., Lincoln	1,782
Harrison, J., Market Rasen	1,780
Spencer, R., Glentworth	1,736

GUILDFORD.—For repairing the town hall, for the town council of Guildford:—

Garnett, G.	£291 15 6
Strudwick, G.	220 10 0
Mason, R.	217 0 0
Clarke, M. P.	198 17 6
Swayne, Thomas (accepted)	196 0 0
[Surveyor's estimate, £200.]	

HAVERSTOCK-HILL.—For mission room and Sunday school, Fleet-road, Haverstock-hill. Messrs. Batterbury and Huxley, architects:—

Scrivener and White	£2,535
Downs and Co.	2,490
Newman and Mann	2,441
Manley and Rogers	2,328

HOLTON-LE-CLAY.—For Mr. Farr's house, Holton-le-Clay, Lincolnshire, on the estate of the Rt. Hon. the Earl of Scarbrough. Mr. James Whittin, 22, Newland, Lincoln, architect:—

Nightingale and Dauby	£1,235
Woodhead and Doughty	1,216
Hunter and Son	1,200
Brown, Jno. P.	1,199
Crosby and Sons	1,195
Parker, Joseph	1,161
Hobson and Taylor	1,157
Pearl, Thos.	1,155
Riggall and Hewins	1,123
Sutton, Wm.	1,100
Kendall, Chas.	1,090
Wallis, H., and Co.	1,080
Harrison, Joshua	1,078
Harrison, Wm. (accepted)	1,023

Tenant to do all leadings.

HULME.—For the erection of the Royal livery stables, for S. S. Grange, Esq. Mr. T. R. Williams, architect:—

Credland	£1,915 8 11
Wharton (too late)	1,846 0 0
Wood	1,755 0 0
Hodkinson	1,544 10 0
Ellis (accepted)	1,450 0 0

LONDON.—For warehouse, 40, Gresham-street, City, E.C. Messrs. Ford and Hesketh and Neve, architects:—

Lascelles	£3,633
Scrivener and White	3,515
Boyce	3,483
McLachlan	3,468
Lawrence	3,452
Perry and Co.	3,437
Ashby Brothers	3,400
Brass	3,382
Browne and Robinson	3,350
Mark	3,199
Crabb	3,053

LONDON.—For shops and warehouse in Basinghall-street and Mason's-avenue. Messrs. Ford and Hesketh, architects:—

Ashby and Horner	£6,947
Kilby	6,770
Boyce	6,746
Ashby Bros.	6,633
Lawrance	6,600
Brass	6,526
Scrivener and White	6,516
Brown and Robinson	6,505
Newmann and Mann	6,346
Crabb	6,317
Nightingale	6,086
Mark (accepted)	6,000

LONDON.—For new warehouse, Church-lane, Aldgate. Mr. W. Lambert, architect; quantities by Mr. W. H. Barber:—

Perry and Co.	£3,650
Stevenson	3,630
Pritchard	3,421
Elkington	3,330
Phillipson	3,298
Downs and Co.	3,212

MONMOUTHSHIRE.—For new Board Schools, Beaufort Hill, near Ebbw Vale, for the Langatock School Board. Messrs. James, Seaward, and Thomas, Cardiff, architects; quantities supplied:—

Jenkins, Pontypridd	£3,350 0 0
Burgoyne, J.	3,250 0 0
Davies, Cardiff	3,215 0 0
Foster Bros.	3,100 0 0
Thomas, S.	3,025 11 3
Thomas, J. G.	2,875 0 0
Davies, S. P.	2,987 9 9
Daniels, Nantyglo	2,841 12 6
Morgan, E.	2,730 0 0
Stephens, E.	2,709 0 0
White, T., Strand, Swansea	2,692 0 0
Williams, J., Nantyglo	2,587 0 0

SEPPERTON GREEN.—For the Bull public-house, for Messrs. Neve, Reid, and Co., Windsor. Mr. J. G. Carey, architect:—

Knight and Sons, Chertsey	£920 0 0
Gray, H.	895 15 0
Reavell, G., Windsor	870 0 0
Hogg, T., Sunbury	860 0 0
Forsey, Windsor	850 0 0

SHOREDITCH.—For new hot-water boiler, setting, connections, and valves, for the Shoreditch workhouse. Mr. J. Wallace Peggs, C.E.:—

Wray, J. and F.	£285
Smith, J. W., Son, and Co.	268
Pontifex and Wood	210
Ladd	178

SKEGNESS.—For pavilion, &c., at the Skegness Pleasure Gardens, Skegness, Lincolnshire, for the Skegness Pleasure Gardens Co., Limited. Mr. Jas. Whittin, 22, Newland, Lincoln, architect:—

Andrews and Walker	£2,487
Wallis	2,450
Hunter and Son	2,430
Hatchife and Bell	2,376
Kidd	2,310
Hobson and Taylor	2,297
Walter and Hensman	2,225
Durkley	2,120
Bims	2,110
Kendall	2,099
Turner	1,984
Laycock and Holmes (accepted)	1,969

SWANSEA.—For new Board Schools for the Oystermouth School Board, near Swansea. Mr. W. Thomas, architect, Swansea; quantities supplied:—

	School.	Houses.
Fox, Morgan...	£3,279 7 0	£650 10 0
Llewellyn, J. ...	3,247 16 0	1,343 18 0
Jones, P. ...	2,960 10 0	1,050 12 0
Lloyd ...	2,714 4 0	1,148 0 0
Walkins, Thos., & Jenkins	2,700 0 0	1,100 0 0
Davies, Morgans, & Thomas	2,305 6 0	910 0 0
White, Thos. ...	2,204 0 0	966 0 0
Lewis, B. ...	2,174 13 0	947 15 2
Richards and Billings	2,109 14 0	876 0 1

TETNEY.—For house at Tetney, Lincolnshire, for Mrs. Travis, on the estate of the Rt. Hon. the Earl of Scarborough. Mr. Jas. Whitton, Newland, Lincoln, architect:

Nightingale and Danby	1,245
Woodhead and Doughty	1,243
Brown, J. P. ...	1,225
Hunter and Sor	1,205
Crosby and Sons	1,163
Parker, Joseph ...	1,150
Wallis, H., and Co.	1,146
Pear, Thos. ...	1,144
Harrison, Joshua	1,134
Hobson and Taylor	1,099
Kendall, Chas. ...	1,045
Harrison, Wm. (accepted)	1,045

Tenant to do all leadings.

WAKEFIELD.—For the erection of a town hall and other municipal buildings in Wood-street. Mr. T. E. Colcutt, architect; quantities by Mr. Jas. Gandy:—

	Warwick stone.	Spinkwell stone.
Kimberly, Banbury	£66,244	£66,808
Lovatt, Wolverhampton	47,681	49,031
Whitely, Leeds	46,807	51,307
Ives and Sons, Leeds	46,642	50,142
Booth, Gosport	46,000	47,200
Wood, J., Leeds	45,380	47,000
Beanland, J. and W., Bradford	44,577	45,777
Thorpe, Leeds	44,200	45,600
Brien, Jas., and Sons, Dewsbury	43,999	45,367
Holdsworth, Bradford	42,500	43,700
Graham, A., & Sons, Huddersfield	41,202	...
Baker and Firbank, Dewsbury	40,620	41,720

* Accepted in Spinkwell stone.

WANDSWORTH.—For roads and drains to a portion of the new cemetery for the Wandsworth Burial Board. Mr. Keith D. Young, architect; quantities by Mr. Morgan H. Young:—

McKenzie	£1,750
Prout	1,395
Nicholson	1,335
Blackmore	1,333
Neal (accepted)	1,197

WANDSWORTH.—For the erection of two chapels, gate-keeper's lodge, and inclosures to the new cemetery for the Wandsworth Burial Board. Mr. Keith D. Young, architect; quantities by Mr. Morgan H. Young:—

	Chapels.	Lodge.	Inclosures.	Total.
Nightingale	£2,910	£893	£1,343	£5,146
Beal	2,518	868	1,398	4,784
Avis	2,605	816	1,320	4,736
Prout	2,625	775	1,185	4,585
Parsons (accepted)	2,522	782	1,271	4,575

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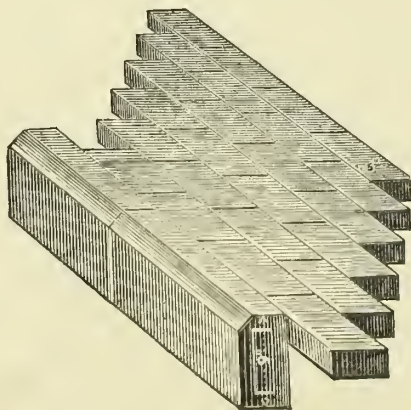
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THE BUILDING NEWS.

LONDON, FRIDAY, SEPT. 28, 1877.

THE TECHNICAL EDUCATION OF THE ARCHITECT AND ENGINEER.

THERE will always be a disagreement between the theorist and practician so long as the disjointed system of professional training exists. This feeling springs more from ignorance or prejudice than from any irreconcilable elements. The school or book-learned and the practical mechanic often entertain a deep-rooted jealousy for each other, springing usually from a misunderstanding of one another's methods. It is to be regretted that the training of the architect or engineer, and that of the building or mechanical operative are not more in harmony; but the fact is, one only learns just that part which the other rejects—one acquires a knowledge of abstract forms and theories, while the other learns to handle and to use his senses. Now, both these parts are, or should form, a complete knowledge, but there happens to be a good deal of manufacturing detail, or friction between theory and actual practice, and the empiric dexterity necessary to overcome this is sought to be made the most of by the practician. The estrangement, however, is one of those which our technical schools, treatises, and periodicals are doing a vast deal to lessen by that process of intercommunication which brings the wants and ideas of one class into the cognisance of the other. If each class would just consider that they are lacking what the other possesses, good feeling and understanding would be promoted.

In the discussions on Technical Education, at the Congress of the American Institute of Civil Mining Engineers, held at Philadelphia last year, the subject of education was thoroughly entered into; the questions raised being:—1. Should a course of instruction in works precede, accompany, or follow that in a technical school? 2. Is it practicable to organise practical schools under the direction and discipline of experts in engineering works? Mr. President A. L. Holley's address at Washington on this subject contains some very important recommendations. He shows the value of precedence in practical culture, and the remarks made apply with so much force to the teaching of those destined as architects or builders that we may refer to them. He defines three classes of engineering-learners; the original investigators, who come close to nature, "who search into first principles, and who follow that scientific, and, therefore, fruitful method by which the relations of matter and force are discovered, classified, and brought within the reach of practice. These men do not create the laws of nature as they almost seem to, but they go up into the trembling mountain, and the thick darkness, and bring down the tables upon which they are written." Another class are the schoolmen; they are learned in the researches and conclusions of others, and skilled in reasoning and speculating from these upon certain or probable results of physical combinations; and a third is the great army of practicians, from the common labourer to him who exhibits judgment and power. The author proceeds to illustrate his proposition by reference to the progress of metallurgy. Thus, while the metallurgists are still "disputing over the sequence of reactions in combustion and reduction, the iron-smelter has felt his way from the barbarous practice of a century ago to the economical production of to-day;" the improvements in the hot-blast, shape, and proportion of stack to different fuel and ores, have grown out

of "constant handling, not of books, but furnaces." Bessemer is mentioned as an instance of one who with a chemical knowledge only superior to that of an average schoolboy, developed a revolutionary process in iron manufacture. As Mr. Holley shows, it is the inadequate union of engineering, science, and art that is at the bottom of the present educational difficulty. The hiatus must be bridged over. The schoolman or graduate has the advantage of the practician, in that he can cast away the dross, and precipitate the rubbish, and proceed by surer and quicker methods. The practician, on the other hand, is jealous of the schoolman's interference, while the schoolman too often despises the manual skill of the mechanic. Well may the author say, "while the un-schooled practician wastes his energies in unscientific methods, and on impossible combinations, but generally carries into successful use his comparatively few well-founded attempts, the student, merely of principles and abstract facts, so usually originates the ideas upon which progress is founded, but rarely clothes them with practical bodies. In this chasm between science and art, how much effort and treasure, and even life, are swallowed up year by year." These observations apply with equal force to those engaged in the building art. Any one acquainted with building operations will often have remarked the almost intuitive mode in which the artificer skilled in his work will overcome a little difficulty, and yet how staggered he becomes if some unforeseen change of design, or something of which he is not familiar in his trade occurs. He is at once embarrassed—his practical methods fail him. On the other hand, one merely learned in principles and abstract facts can rarely apply them to the most practical advantage. The economics of the builder's workshop or the foundry, the forge or the machine shop, can only be learnt by an acquaintance made face to face with the materials, and by manipulation or a handling of them. Again, in bridge-building it is not so much to failure in calculating the strains we owe the disastrous accidents that have taken place, but the hundred other causes, such as vibrations, buckling, imperfect fitting, wear or corrosion of important parts, and various details that can only be learnt from a course of observations in the workshop, or by actual experience of the behaviour of such structures and their materials. Another hindrance to a complete union of science and art is unquestionably the combined ignorance of a class of "practical men" of the meaning of the term "theory." As Mr. Holley says, many of this class take it to be something discordant with fact. This incomprehension and ignorance of the results of science—we may call it bigotry—prevails largely among those whose knowledge is confined to their own practice, and to whom analysis and generalisation in their business affairs, as well as in morals and politics, are unknown.

Turning to the remedies suggested for this discordance between the theoretic and the practical, Mr. Holley proposes that practical culture should precede the science, and, in order that it should be efficient, it must instruct, not *men* of good general education, but *artisans* of good general education. He instances the greater rapidity in knowledge of capable and ambitious practical men derivable from books as compared with schoolmen. The advantage of a practical familiarity with tools and materials, for example, in the study of carpentry or ironwork is beyond dispute, and every learner from books would find immense aid if he could refer to or realise the subjects of his study. "Beginning with theoretical and abstract knowledge is no less an in-

verted process in the useful than in the fine arts, than it would be to take a course of Ruskin within brick walls as preparatory to opening a studio, and then climbing the mountains to square nature with the book." Mr. Holley proposes, not that mere school-boys shall go into works and then into technical schools, but that young men of more advanced general culture shall apply first to Nature, and to the schoolmaster afterwards. Mental training can be acquired quite as well in the works as in the school, and an objection urged to beginning with the technical school is that it cannot stop at logical methods which are abstract, and must come from the fountain-head. The second point affirmed is that the desultory study in works should be systematised for the benefit of the student, and that owners of works shall grant facilities and establish organised schools in the various engineering works. The students would be, of course, learning, not receiving pay like the other operatives, and there would, it is thought, be little difficulty in the management. Several of our science schools are attached to workshops, or have entered into an arrangement with contractors and owners of works for a similar object. Thus Mr. Holley's proposition consists in a practical knowledge acquired in works, not desultorily, but by an organised system, and afterwards the investigation of general facts and their relations. By this procedure, it is believed, a better class of experts would be produced in little more than half the time required by the reverse order. It would discourage none from finishing an engineering education, which would be complete in its parts if only time were allowed. Professor Egleston, in the discussion, dissented from the proposition that manual work is desirable in the engineer, and he contended the schoolman acquired experience in a much shorter time than the workman. Professor Thurston specified three courses, any of which may effect the generally-admitted combination of knowledge—first the usual method in which the student receives his education, and is then sent into business; second, that which gives a boy a common school education, and sends him into the office or the workshop, and finally places him in the technical school to obtain the professional education and scientific basis; and thirdly, a mixed course of study and practice, extending throughout the early life of the man up to his complete immersion in practice. The latter plan is preferred for economical reasons. The first plan is defective, inasmuch as the youth's habits have been formed, and he has become unfitted for the vastly different habits of the workshop. The second is far better, and Prof. Thurston seems to agree with Mr. Holley, that a simultaneous acquirement of both branches is desirable and necessary. Other speakers took the view that book knowledge should precede practice; among them Mr. Thomas C. Clarke, M.I.C.E., thought observing facts and acquiring data should be the first step; observing the relations of phenomena and of drawing conclusions therefrom the second; and the third, that of verifying conclusions by observation and experiment. In short, general culture seems to have been tacitly if not openly admitted as essential, but at what point the practice should be acquired the discussion has hardly settled. Whether technical education in works should precede or follow technical education in the school is a question, we think, that may be generally left to the individual capacities and proclivities of the student himself. In some cases it would be undesirable to place an uncultured youth among workmen at first; it would have the effect, probably, of deterring him from after reading or book knowledge. A general school education, combined during later years with the run

of the "works," or "shops," would be far more desirable. We cannot overlook the fact that the pupillage system adopted in this country for both architects and engineers is defective, and demands improvement. It does not take into account the education of the eye or the mind; while if the pupil were permitted to avail himself of works in progress, and then to enter a technical school, he would be virtually receiving the most valuable of all educations. Whatever course be adopted we wish to impress upon the minds of instructors as well as pupils that study of principles, together with facts, are necessary; that books and classes are as vital to the future architect or engineer, if he wishes to become something higher than a handicraftsman, as works or the "shop;" but that to get the greatest benefit a method is necessary, which may be summed in two words—observe and generalise. Let the student first grasp the great facts of his profession in the concrete, and then he will be better able to understand the value of the abstract as taught in schools and books—a portion of his curriculum without which he cannot be considered cultured or worthy of a liberal profession.

OPTICS AND PAINTING.

AMONG the charges delivered to the new Government Commission which is to inquire into the state of the Arts in France, is one concerning the relations of optics with painting. It might have been thought that a subject so delicate and abstruse might have been left to pure scientific examination, and, indeed, we should not have ventured to touch upon it, were it not that two most experienced Parisian critics have ventured to attempt applying this test to the Parisian *salon* of 1877. Their experiments and experiences, their suggestions and ideas, if not conducing to any full-formed ideas, are worth remembering, especially when it is kept in mind that a considerable degree of artistic art and knowledge is brought to bear in connection with them. They, in fact, regard a picture as a study in, or illustration of, Natural Science. Suppose we enter, at midnight, into an unknown country: its horizon is strange; the relative positions which it reveals are not easy to reconcile; the sun seems in the wrong place, and the colours are anywhere that, for the moment, the fancy may determine. But there is a science which studies and appreciates light, and assigns to all things, whether colours, proportions, or positions, their relative outlines on the map, and this is the knowledge that M. Jules Jamin, and his equally erudite colleague, claim to have interpreted. They put aside the general graces, such as were almost worshipped by the Greeks and the Romans; they object to the ancient calculations of the sciences, and they aver that, in fact, photography is the groundwork of all graphic art. It is an idea likely to meet with encouragement; yet it is one of which the justification may excite more controversy than the French Government Commission might desire to stimulate. Most people will be surprised to note the simple premises whence these Art reformers start. They say, like Persians, that the sun is the source of all light and warmth; it is the centre and pivot of mathematical science; it gives its tint to every uncovered earth-flower in bloom, and stone taken from the quarry; all whereof is confessed; but then, they go on to insist, pictures are pictures, bad or good, simply because the artists have had or good lights in their studios—lights which refract their reflectives; lights which intermingle with the mixed tints upon their palettes; lights which supply them with oriel radiances and cryptic shadows at pleasure. This is all, exclaims M. Jules Jamin, an affair of paint

and powder. Let us venture to differ from him. The question is—What relation can be established between the art and science of the optician, and the art and science of the painter; though the two professions are far from occupying a common ground. The business of the optician is to see with an unimaginative exactitude; the business of the painter is to reflect with such a glow as he can add from his imagination. Even the French Commissioners, in their preliminary report, hard though their restrictions be, admit so much. They repeat, "there may be nothing in common between an optician and a painter, yet the one cannot be perfect unless he understands the other." The two, no doubt, examine the same figures and scenes in different lights; the one may be looking for phenomena, and the other for effect; but the inspiration is the same, and the "Holy Family" of Raphael, the "Marriage of St. Catherine" of Corregio, and the "Virgins," bathed in mystic light, of Murillo, are sufficient to prove it. They drew their religion from Heaven, and they carried their genius to it. It has been the same with all great artists, imitators, and worshippers of Nature. They have wanted light, and they have been compelled to use shadow. But the former has been infinitely less easy to manage than the latter—a secret which the Dutch found out long before their monotonous school became famous—as, for example, the dreary cellarages of Granet, and the kitchens of Drolling, compared with the sunshines of Claude and Cuyp. Nevertheless, in optic or perspective illusion the Low Country masters may be accepted as perfect, no other painters having mastered with equal power, for instance, the candle-lights of Schendael. At the same time, notwithstanding the judgments of the French critical commission, whence can be produced the challenges, in sunrises or sun sets, or moonlight splendours of Turner? If, indeed, the comparisons are to be fairly carried out, no slight amount of national egotism, and not a less degree of critical prejudice, will have to be got rid of. The question now before the learned societies of France is, however, one which concerns science in its highest, rather than art, in its most obvious sense.

M. Jules Jamin now asks whether we are certain, after the travels of the sun's rays through a space more or less indefinite, our drawing-room artists—painters of blood in Moorish palaces—of children's dresses in Belgravian nurseries—of barbarous costumes in Montenegrin defiles—are not sure whether they see red instead of yellow, purple instead of blue, green instead of white, upon their easels. "Are they certain," he asks, "that they are not mixing up in one pot all the hues of the rainbow?" And may they not fall back upon the doctrine of Newton, that there is no such thing at all in nature as colour? We may go with M. Jamin so far, without agreeing to the least extent with his judgment that there is no such element as colour in art. In point of fact, he is not upon this topic, consistent with himself, because his preliminary reply to the queries of the French Fine Arts Commission exhibits a totally different view. "The knowledge of a combination of colours," he writes, though the remarks are not yet generally published, "once acquired, and the science of combining them once mastered, must lead to immense advances in art and industry." We look at a crimson cloth; let us look directly from it to the crimson rays of the sun. They may, for the moment, appear scarlet, amber, blue, green, or even white; but still they are the same rays, and every painted picture presented to our eyes is, in its way, discoloured—glorified or degraded by them—which may be news welcome to some artists, and indignantly repudiated by

others. We will not, however, pursue M. Jamin through his excessively minute discourse concerning the influence of a picture upon the human eye, or—which we had never heard of hitherto—the influence of Paul Potter's "Bull" upon an average ox; but he does seriously assert that, every season, in the Parisian *salon*, people—and even critics, armed with *lorgnettes* and magnifying glasses, do mistake red for blue, and green for yellow; and that optical illusions are rarely more active than when the qualities of pictures are involved. Every gallery is a *camera obscura*, a transit-chamber of shadows and lights; an illuminating and darkening of figures by turns. This appears, however, to be somewhat of an imaginative view, and we are rather anxious to range the facts before us. The optician, of course, like the artist, studies nature through the grand effects and contrasts of shadow and light; he finds them changing as the hours progress; he does not see at twilight a picture, or even a common wall, under the same aspect in which it was shown him in the morning. There was light, here is shadow; there was crimson, here is rose-blush. And yet, we are assured, there are certain celebrated pictures which never vary in expression or in tone, whatever the radiance, toned or brilliant, that may be thrown upon them. Murillo's "Ascension of the Virgin" is among them; so is the celebrated "Descent from the Cross" at Antwerp, though that hangs in a perpetual *chiaroscuro*. With critical nicety, M. Jules Jamin says: "I station myself before a wall, having a plain and uniform surface; I assume it to be painted all over in the same colour—yellow, if you will—and I watch at the same time the shadow of the next house falling upon it, at a moment when the wall is divided into—one-half bright, and the other half darkened. It is evident that there can be no actual differences of colour created between these two points of view;" and yet how different, and even distracting to the eye! The criticisms of the French Commissioner, however, do not stop at this point. He is evidently anticipating the great art rivalry at Paris of 1878. The artists of our day, he asserts, are timid; they are afraid to employ colours, and they have ceased to use light; "they paint as if the sun had ceased to shine;" they would rather photograph a yellow wall than sketch a living landscape; and as to evening or night illuminations, they are nowhere. Listen to the master again. "Certain artists are renowned for their *spécialité* in reproducing night-scenes, and they almost invariably employ a flaring lamp which, placed in the centre of the canvas, kindles up an interior wherein every object is made distinctly visible through a strong light, or left in shadow by a doubtful flicker." Is this right? we are asked; is it true to nature? The inexorable critic replies by a detail of his own experiments with wax, tallow, and oil. Surely such an analysis of canvas goes beyond criticism altogether. As well might we count the puckers on the countenance of the famous "Egg-Merchant," or the shrinking wrinkles on the back of the humiliated Ganymede at Amsterdam. This is not the study of art, it is the appraisal of an auctioneer. It reminds us of Granet, the miserable courtier of Louis XVIII., who said to his master, "Your majesty, I have seen the heavens through your windows, but found nothing outside equal to that within." But M. Jules Jamin keeps himself, upon the whole, far away from these extravagancies. He used his *photomètre* with conscientious exactitude; he endeavoured to compare the colours of nature, fleeting though they must inevitably be, with those of art, necessarily fixed, and therefore artificial, and he confessed himself vanquished. He denied the veracity of

the painter; but he could tell him nothing beyond that which he had been taught already. Darkness, he assures us, was scarcely less perplexing to him than light itself; and so, in despair, he gave himself up to general principles, convinced that not the glimmer of a star, or the shadow of a tree, or the gloom of a midnight could ever be represented, on canvas or paper, faithfully. In such a spirit of despair the latest treatise on light, as applicable to art, has been delivered to the students of France. There could be delivered to the art of the 19th century no more expansive lecture, no finer doctrine than that which is offered within the light of this optic treatise, which proves that, not only is humanity part of industry, and human strength at large as represented as it should be represented. The incentives, or at least the instincts of this new artificial art, as it may be termed, are fallacious. Within the experience and knowledge of the living generation a choice may be made out as viewed by the experienced eye, and art as looked at by tradition between the experiments of the present and the past.

COMPETITION DESIGNS FOR LODGE TO THE PROPOSED RECREATION GROUND, SYDENHAM.

A KEEPER'S COTTAGE, with a refreshment buffet attached, presents a somewhat fresh and inviting subject for the architect's pencil. The requirements are necessarily few, while the accessories gave an opportunity for the display of artistic handling. The conditions in the present instance were not restrictive. A lodge for the keeper of the recreation ground, consisting of a parlour, kitchen, washhouse, three bedrooms, and offices; together with a waiting or refreshment-room with counter, a caterer's-room, and retiring-room for ladies comprised the main features, the total cost being limited to £1,000. It is surprising to notice how these very simple requirements have been met. Some of the authors have gone out of the way to give us examples of the most far-fetched modes of solving the problem; we see almost burlesques of an arrangement that would have been very obvious to any of the old builders, of whom we entertain such unbounded admiration, or indeed any builder who looked upon the plan in a common-sense and really artist-like manner. To take a few of the prominent types, we find the lodge and waiting-room inextricably combined without any distinction apparent in the external design. In some cases, the refreshment room is made to occupy the flank of a long range; in others it is placed at one end, and in a few we lose sight of it altogether. The site selected by the Board, near the Mayow-road from Lower Sydenham to Perry Vale, does not confine the architect to any particular arrangement or disposition, and therefore each author was enabled to choose which disposition he liked. Looking at the points of the compass, it is clear the most westerly side was that best adapted for the refreshment-room, and the south-easterly for the lodge. Taking the selected design by Mr. Robert Walker, under the motto "Respice Finem," first, we find the author has carefully studied the requirements. The lodge is placed near the entrance, and the waiting-room on the inner side. A public waiting-room, 30ft. by 18ft., and 19ft. 6in. high, is placed transversely with the main frontage. At one end of this room is a females' retiring-room, with w.-c.'s well arranged for privacy. The doorways are placed on the long side of the waiting-room, under the shelter of a verandah, which encloses two sides of the building. The counter is placed centrally, on the longest side, facing the entrance. Examining the sections, we

observe that the waiting-room is carried up two stories, the upper range of windows being above the verandah, giving the appearance of a two-story dwelling. This is rather a demerit. The ceiling is coved and panelled. The lodge is well planned; there is a corner entrance between the parlour and kitchen, the walls of lobby cutting off the angles of those two rooms, and the parlour projects with a square bay, and is 13ft. x 14ft., the kitchen being of the same dimensions. Three bedrooms are provided above. Behind the counter is a door, leading into the caterer's room, and a good-sized yard fills up the angle between the two buildings, which are kept quite distinct. Mr. Walker has adopted a half-timbered brick style in a Gothic spirit, and has distinctly externalised the separation of the refreshment-room and lodge. The upper portions of the gables and the roofs are tiled, and a well drawn perspective accompanies the design. "Rusticus," by Mr. Henry Shaw, of New Broad-street, E.C., is another of the five designs the committee have been pleased to recommend. This plan is hardly so economical, the author making a feature of his waiting-room by giving it an apsidal or circular bay end, surmounted by a conical roof, and surrounded by a verandah. Instead of being placed crosswise, it occupies a longitudinal position, the lodge being placed on one side, partly overlapping the waiting-room. We observe a rather wasteful entrance-hall to the lodge. The caterer's and retiring-rooms are at the end of waiting-room, the entrance to the latter being on the opposite side to that of the lodge, so that the bay end would face the pathway. In treatment, the design is timbered in the upper portion, the basement being of red brick. There is considerable merit in the general conception, but the plan of lodge has not been studied with sufficient care. We see two designs bearing the motto "Pro Bono Publico." In one of these, shown by an admirably tinted perspective, and some good elevations, in which red brick and tile, slightly timbered, have been employed, we have a refreshment-room placed lengthways along the front 35ft. x 17ft., the retiring-rooms being at one end, and the lodge at the other. In general arrangement the design strongly resembles a village school, for which purpose it would be better suited. The treatment is quiet, unpretending, and picturesquely handled, with some good detail; but the plan is defective. The entrance of lodge directly opens into the living-room, and the stairs are between this and the kitchen. A lean-to roof forms a verandah along the waiting-room, over which is a square clock-turret. Another design, under the same motto, exhibits a waiting-room with octagon end, in one splay of which is the entrance, the lodge being at the other. The ladies' retiring-room has an outer yard intervening between it and the closets, and the men's are similarly arranged. The lodge plan appears economical. The waiting-room is 24ft. by 20ft. with the retiring and caterer's room at the end, and a counter in one corner. The bedroom arrangement is defective, and the skewed landing is inadmissible. Externally a low roof covers the verandah; the gable treatment is redundant in its woodwork, and the white stock and red brick courses are not happy. Taking the plan as a whole there is an approach to the right solution. An ink perspective, with darkly-tinted plans and elevations, under the motto, "Spes," indicates some character; the gables are timbered and filled with parquet work, and the style of a vernacular Old English is thoroughly suited for bricks. Of the plan we note the following faults:—A wasteful lodge and kitchen, the latter about 20ft. by 12ft.; caterer's room entered from kitchen of lodge; female retiring-room unnecessarily

large; washhouse ditto; stairs from kitchen; bedroom plans irremediably spoilt by a crooked passage to rooms. "XXX." is a piquant half-timber lodge, with buffet combined cleverly, and shown in a well-drawn pen-and-ink sketch. The latter, 26ft. by 19ft., forms one gabled front towards the pathway of a plan cruciform in shape, the lodge occupying two other arms, and the conveniences the fourth. The lodge is scarcely separated enough. Externally the author has covered his waiting-room with a span roof, which embraces the kitchen of lodge and the caterer's room, and the gable end has a mullioned window, which partly lights the buffet, the other windows being on the front and return sides below a deep-tiled roof or lean-to, which is supported on bold cut wooden brackets. The ceiling of buffet is plastered between ribs which form a cove. The details display taste, and the panelling of buffet is a sensible treatment, though perhaps the design as a whole is open to the stricture of being rather too rural. Of other designs we may notice "Pavilion," the principal feature in which is an octagonal refreshment-room, surmounted by a conical roof of tile, and surrounded by a verandah. At the other end is the lodge, certainly not economic in its arrangement. There is certainly a meritorious attempt to make the refreshment-room a public feature, and the elevations exhibit a skilful handling in the grouping and detail; but the limited means at the disposal of the committee preclude any elaborate or costly timbering, such as the timber pavilion roof would entail. Barring these objections, we believe the author of "Pavilion" has hit on a something far more suitable for recreation grounds than many of his co-competitors. Another design displaying merit is certainly "Minotaur," shown in some effectively-coloured elevations in red brick with tile roof, and gables, simple and broad in its masses. The plan, confused by a heavily-coloured tile paving, shows the waiting-room on one side placed crosswise, with centre entrance inside, the lodge being on the gate side. The two buildings are, however, mixed up, with a small yard intervening. The perspective sent is weak and ill-drawn, and rather detracts from the elevations. Cost is put at £980. "Spero" is a set of sketch drawings in colour, with some good points, but wanting in sufficient *prononcé*. "Lewis" is a fanciful gala sort of structure, with lodge and waiting-room in one range, more resembling a school. "Simplicity," another design in ink, certainly belies its motto; it is anything but simple in arrangement. A small waiting-room is placed at the end of a Gothic lodge, Jacobean in detail, but with fair grouping. "At the Eleventh Hour" is a rough though clever pen-and-ink sketch in brown ink, picturesquely conceived, but so rough that its author might have withheld it. In plan we have a waiting-room, 18ft. 6in. by 15ft. 6in., with bay window, porch on one side, and a shelter on the other, with settles in them. The lodge stairs break awkwardly into waiting-room, and the ladies' room is lighted by windows over lean-to of offices. We may just note also another, "Pro Bono Publico," in an enervated style of Gothic; Triangles in Circles, in which the waiting-room is placed side by side with the ladies' retiring-room; "Welcome," a confused plan; "Una," an economical arrangement, but savouring too much of the acrobatic in style; "Castissima," a design that might well be mistaken for a small church or suburban vestry-hall, with cupola; "May," and "Laboratur," both ill-considered and confused; "Intus si Recte ne Labora," a design displaying considerable labour, but wanting in a due subordination of the apartments, and with a refreshment-room 30ft. by 18ft. "Blenheim," "A. R.," "Plevna," "Lodge,"

"Vale," "Study," "Utile Dulci," are other studies failing in some essential, and many of them betraying either misconception of the requirements, confusion of the apartments, want of subordination or distinction, defective construction, ignorance of detail, or some architectural vulgarity. The plans and elevations of "Lodge" appear to be the work of two distinct hands, as the details are worthy of better plans. "Study," too, might have been more successful. The item of cost has not been taken into the consideration of many of the competitors, and we should not like to say that any one of the designs which the Lewisham Board have selected can be carried out for the expenditure named.

EARLY CHRISTIAN ARCHITECTURE. XII.

IN our last article we illustrated and gave a general description of Sau Lorenzo at Milan, a structure resembling in its main outlines the well-known church of St. Vitale, and once the cathedral of that city. We now proceed to give some particulars of other structures based on the octagon, the plans of which will be found illustrated in our impression of to-day. It will be noticed that the Early Christian architects were striving to convert the Roman circular baptistery, or sacramental temple, into a square form, an achievement which the Byzantines ultimately accomplished. In Isabelle's "Edifices Circulaires" may be found several examples of circular structures, which have been reproduced by Fergusson, the leading feature in all being a circular drum, carried by an inner and concentric row of columns, forming a circular aisle, the centre portion being covered by a flat conical roof, under which, as at the Baptistery at Nocera dei Pagani, there was sometimes a dome. These circular tomb-houses or baptisteries were the germs of those later developments which the Byzantine architects have left us. Sometimes there were two rows of columns, as we find in the ruined building of San Stephano Rotondo at Rome, forming two circular aisles, the centre being carried up and roofed. Generally, the columns supported arches, as shown by MM. Isabelle and Hübsch. The next stage of development seems to have been the octagon, or some modification of it, as we find at San Lorenzo Maggiore, Milan (see p. 97), and the ancient Cathedral of Florence, now called the Baptistery, plans of which we illustrate to-day. If our readers will turn to our photo-litho. illustrations of this structure—of which we give four plans with details of the same (see Figs. 1 to 6)—they will see what masters of constructive masonry designed and executed these buildings. In Fig. 1 we have the ground plan, showing an octagon of about 84ft. internal diameter, the thickness of the walls and counterforts making an external diameter of 108ft. The necessity of resisting the thrust of a cupola of this space has been ingeniously met by the arrangement of the recesses in the sides of the octagon and the gallery above. By reference to plan 2, it is seen the thickness of wall has been economised, and a gallery obtained in its thickness, approached by two spiral stairways. M. Hübsch, in describing the building, observes that it belongs to the Early Christian age, and that it is built entirely of stone, though so small a quantity of that material has been used that in appearance it is quite aerial. It is observed that the thrust exerted by the cupola 83ft. in diameter is entirely neutralised by eight counterforts only 12ft. in thickness, and each of these had to be pierced in two places to allow of communication between the various parts of the two galleries. Hübsch, describing the cupola, says, "The enormous vertical weight of this cupola is chiefly sup-

ported by two columns placed on the lower story at each side of the octagon. (See plan, Fig. 1). These columns, which are of ancient origin, are monoliths of oriental granite 2ft. 3in. in diameter. On the upper story there is a corresponding number of piers of masonry, which assist to support the dome, which by means of a well-known technical arrangement, is securely tied to the outer wall. Beside the eight counterforts, sixteen keys (*lanquettes*), corresponding with the sixteen pillars of the upper story, tie the eight faces of the octagon to the cupola. These keys, while serving for a support to the stone covering, assist to neutralise the thrust of the vault, the thickness of which is rather over 3ft." Fig. 4 in our plate shows these and the cellular construction at the springing of the dome.

M. Hübsch alludes to its extraordinary stability, and its resistance to the action of centuries. He says, "After a very careful examination we are convinced the edifice has not undergone any restoration. The walls and pilasters, from base to summit, are all of a piece, perfectly harmonised in all parts, and composed of the same kind of stone (*macigno*) squared." The stones, he says, too, are large at the base, and gradually diminish in bulk as they get towards the top. Referring to the decorations, external and internal, the same authority declares them to be of later date. "Giovanni Villani, writing in 1340, states that the external dressings of black and white marble, in the style of the first Renaissance, dates from 1293." It is also said that this monument was converted into a baptistery at the commencement of the twelfth century, after having been the cathedral church. Hübsch informs us that "it is probable the altar, which until that time stood in the centre of the octagon, was then transferred to the recess marked *a*, originally the main entrance." The interior refacing with slabs of marble of the second story is supposed to have been done at the same time as the exterior facing. Contemporaneously the lights of the first gallery, originally quite open, were supposed to be ornamented with small Doric columns, one in each opening, with half-columns against the piers, and surmounted by arches in the style of the first Renaissance. (See detail, Fig. 6.) Kugler attributes these details to the first half of the middle ages, but Hübsch shows that he is mistaken. The dome is lined with mosaics, and also the groined roof of entrance. The lower panels are said to be the work of some masters of the Florentine school, themselves pupils of the Byzantine school. Some doubt is expressed as to the architectural integrity of the panelling, and the upper mosaics are thought more recent. The opening at the summit of dome was not originally surmounted by a lantern, and, according to Villani, this opening lighted the interior far more effectually than the small piercings in the rotunda. The form of cupola is a pointed arch, and, as observed by Hübsch from a statical point of view, is the most advantageous when the roof has to rest directly on the vault. Numerous modern monuments, some very precious, cover the walls of the lower story between the columns. The pavement, formed of small pieces of marble of various colours, is noticed as bearing the date 1207.

Archæologists have widely differed as regards the date of the first construction. Kugler assigns the cupola to the middle ages, but Hübsch does not think his theory rests upon any researches made on the spot. Fergusson thinks it was erected as a cathedral in the time of Theodelinda, Queen of the Lombards; though, if this be so, he says it could not originally have had its present form, but that the columns now ranged round the walls stood in the centre as in the Roman examples. He also speaks of its

being remodelled when the new cathedral was built, by Arnolfo da Lapo, in both its form and decoration, and says, "It must be considered rather as a building of the thirteenth century than of the sixth, in which it seems originally to have been erected." It will be seen authorities differ materially as to the date of the first structure which Hübsch places before us from personal researches. At any rate there is evidence of its antiquity, and it was doubtless as he asserts, "the model from which the illustrious architects of Italy took their ideas." "Arnolfo da Lapo, who in 1296 began the new cathedral, would not," says Hübsch, "have dared to conceive so vast a cupola had he not daily contemplated that of St. John, which faces it. In the fourteenth century Bumelleschi undertook to carry out the desigus of Arnolfo, and when, two centuries later, Michael Angelo had the boldness to undertake the construction of the dome of St. Peter, it was surely due to the fact that from a child he had been accustomed to gaze on these two grand cupolas at Florence."

In Fig. 7 we give the plan of the ancient church of Neocesarea, in Asia Minor, erected by the father of St. Gregory Nazianzen, who died about A.D. 374. The church is no longer in existence. It was a remarkable example of the octagonal plan, and a detailed description was left by this father of the Church, which is given by Hübsch, but the leading features will be readily seen by examination of the plan and section (Fig. 8) which we give, and which will enable the reader to compare the plan and structure with the church of St. John at Florence. Fig. 9 is the plan of the early Christian church of Sta. Mariadelle-Cinquo-Torra, and presents us with an interesting instance of a square plan.

INDIVIDUALISM IN ART.

IT may be a profitable inquiry to what extent should the individual be impressed or reflected in his work; in other words, how far is individuality compatible with art? The question, we admit, is not easy to answer, and from a rather extended study of writers and authorities on art, it appears to us there is a decided conflict of opinion on the point, though a general consensus is evident if we carefully compare them. All ancient art decidedly negatives the idea that the peculiarity or mannerism of the individual artist should be paramount. Greek and mediæval architecture, if appealed to, alike refute the individualistic theory of art, and it has only been reserved to modern times and artists to propound the doctrine. We shall find, indeed, it to be quite a modern quality of art, and to have arisen when society shook off the thralldom of the middle ages. It was a kind of reaction from the previous national and communal character of art, and, within certain limit, it was beneficial. Like religion, art was thoroughly communal before the fifteenth century revival of literature, and we look at any epoch in vain to discover the peculiarities of individual workers who are lost in the general result. To use a very expressive phrase of a modern writer, we must admit, then, the "efflorescence" of individuality is a phenomenon that has arisen from our disconnected and individual study of art, and we are inclined to lay down the proposition that individuality has been exaggerated at the expense of art. But let us here examine a few opinions on the subject. Sir Joshua Reynolds in his admirable "Discourses" says:—"Peculiar marks I hold to be generally, if not always, defects, however difficult it may be wholly to escape them. . . . Peculiarities in the works of art are like those in the human figure—they are always so many blemishes." Again, he says:—"The works, whether of poets,

painters, moralists, or historians, which are built upon general nature, live for ever; while those which depend for their existence on particular customs and habits, a partial view of nature, or the fluctuation of fashion, can only be coeval with that which first raised them from obscurity." To imitate a favourite master is a practice held by the same great authority as a pernicious one. He takes to task the artists of his time who imitated peculiarities, and he impresses upon artists that, as Raphael took many models without their peculiarities, so if "they would equal Raphael they must do as he did, take many models, and not even him for your guide alone." Referring to another great art writer—Ruskin—we find him constantly upholding the unselfishness of art; he speaks, too, of comprehensiveness and moderation, and his "Lamps of Sacrifice and Truth" follow a similar strain. No less an authority than the late Slade professor, in one of his Cambridge lectures, alludes to the Socratic reply that "Man is the measure of all things. By descent deeper into his personality, you will find that underneath all varieties there is ground of steady truth. . . . Agreement is the region of truth." No writer on art ethics maintained so strongly as the late Digby Wyatt the necessity of a wide and comprehensive basis. He designates the classicist creed as "subjective," and the mediævalist as "objective." In the first, man's physical and intellectual condition were made the basis of the art creed; in the second or mediæval theory man was regarded as comparatively nothing, but each "variety of matter possessed properties and rights of its own." The Classical theory supposed man to do all; the Mediæval, a very little. Digby Wyatt, however, in adopting these terms, has not given them their full and philosophical significance, as taught us by the great minds of the age, and as employed by German metaphysicians. We apply the term "subjective" to art as meaning that art which is the result of thought, and has been evolved by a mental process going on in the mind; while the "objective" belongs to the "Non-Ego," or that in which imitation of nature, or some particular school or master, is concerned. It is the external, as the other is the internal product. Mr. E. L. Garbett, in his excellent treatise, also alludes to the value of a generalised art, which means a subjective one; and Mr. Fergusson, in his "Historical Inquiry into Beauty," and in his well-known Handbook has insisted upon the fact that architecture has never been the result of individual action, but a combination or concert of skill of the particular age in which it was produced.

Having shown the general opinion of writers, let us briefly make a distinction—a very necessary one—namely, that between art which is the outcome of individual thought, and that which simply expresses a mere whim or sentiment. We may call the first, for distinction's sake, originality; while the latter we must call mannerism or idiosyncrasy. In a settlement of this distinction, we believe, resides the solution of the question we are considering. The followers of "Queen Anne" architecture are certainly mannerists. Others like to individualise their work, to stamp it with something different to the general expression. Another coterie of architects take up the individual peculiarities of a particular master. In each case the generic qualities of good art are sacrificed to the personal whim of the artist. To take a work out of the common groove, to place it above the level of contemporary works, is a pardonable ambition; but to individualise it with a character that is essentially selfish and personal, is to degrade the art in which the artist works. We are quite

willing to admit that "genius can only breathe in an atmosphere of freedom." The late J. S. Mill says in his celebrated Essay: "Persons of genius are *ex vi termini* more individual than any other people; less capable of fitting themselves, without hurtful compression, into any of the small number of moulds which society provides in order to save its members the trouble of forming their own character." Now, this is perfectly true of social and political life, and it may even be argued that, as architecture is the expression of our wants, it is quite reasonable that every man's house should have a character of its own. We should allow the greatest range of variation; but, as a fine art, we are compelled to accept the general humanitarian ideal in preference to the individual. If we were dealing with domestic wants or political considerations we should allow the individual the greatest freedom compatible with the freedom of other people; so in a fine art certain limits are set. If it professes to appeal to the taste of the greater number, it must be unselfish, and reject all monopoly of pleasure. Again, Mr. Mill, it must be remembered, was speaking of persons of genius who could not fit themselves to the more contracted ideas or moulds of ordinary society. Now, the moulds or ideas of architecture—its types—it must be admitted, come under another category. They are the products of experience, science and social wants, and to supplant them we must justify putting our personal taste against these things. The only consistent individuality in art is that which, renouncing the monopolist or selfish pleasure, freely accepts those elements which have been sanctioned by experience, and have undergone the crucial test of the designer's own mind. It also appears to us that the quality of individuality in a work of architecture is more permissible in works of a private than of a public character. In domestic architecture the architect is unrestrained by considerations due to a public building, and we consider in proportion to the general or public character of a work should this element be subordinated. In the subordinate features of buildings and their ornamentation, there is obviously more scope for the individual artist to impress his personality, though the most successful and long-lived reputation may be said to depend on the predominance of a taste that does not militate against the common sense or ordinarily accepted taste. The Greeks, who were, of all people, the most free as individuals, amongst whom the individual life was estimated largely—in short, deified—produced an art that of all others was profoundly generic and abstract. It was an ideal form of art, and had nothing peculiar or particular about it. But there is another cause of individuality to which we may briefly refer. It is the lack of culture. Architects often assume a style simply because they have not studied all styles, in the same way as a man of one idea rides a particular hobby to death. This kind of egotism is painfully apparent. Some artists of low standard of education are the most egotistical; they like to impress their individuality on everybody, not considering that no two persons perceive any sensible property in precisely the same way. It has been shown by every writer on æsthetics who have regarded the only reasonable foundation of our perceptions, that the impressions one receive depend on the education or susceptibilities of our nervous organisation (see Grant Allen's "Physiological Æsthetics," recently published), and that, therefore, the general level of the cultivated taste of the age is something widely different to the taste of the uneducated artist. In every fine art we find the truth of this position illustrated. The eye, like the ear, perceives at every step in its

education something that gives it greater pleasure: it sees some new element, it corrects its imperfect taste, till at last what was once sensibly pleasing becomes positively distasteful. Hence it is evident the architecture of the future must become amenable to cultivated criticism, and that this must be its only test.

LIVERPOOL ENGINEERING SOCIETY.

ON Wednesday night (Sept. 26) this society held its usual fortnightly meeting at the Royal Institution, Colquhoun-street, Mr. H. D. Baldry, A.I.C.E., vice president, in the chair. A paper was read on "Some of the Advantages of the Metrical System," by Mr. E. T. Jones. After explaining the metrical system, and pointing out the value of a convenient standard of length used decimally, Mr. Jones proceeded to demonstrate the saving of time and labour in engineering calculations upon the metrical system over those on the English method. Sections of the same piece of railway, plotted on the two systems, were exhibited, showing that the metrical system reduced the number of figures required by at least one-fifth. In the metrical system one of the greatest advantages is the definite relation between the units of length, volume, and weight. The labour of calculations in hydraulics, for example, is reduced to a minimum. It was thought that the compulsory introduction of the metrical system into England would cause but temporary inconvenience, and, judging from the experience of other countries, no serious difficulty need be anticipated. From the discussion at the end of the paper it appeared that the opinion of the meeting was divided upon this latter question.

BOOKS RECEIVED.

Preventive Medicine in Relation to Public Health, by Dr. Alfred Carpenter (London: Simpkin Marshall and Co.), is a very useful re-arrangement of a series of lectures delivered by the author at St. Thomas's Hospital and elsewhere on hygiene. It would form a very good class-book for use in institutions devoted to the acquirement of useful knowledge. The facts are clothed in plain comprehensive language, and the style is attractive.—*Round About London*, by a F.S.A. (London: Edward Stanford), is a well-condensed, historical, archaeological, architectural, and picturesque note-book, suitable for the tourist within a circle of twelve miles around the metropolis, to which are added specimens of short walking excursions to Hatfield, Knole, St. Albans, and Windsor. There is a very good map and a copious index, and the information, so far as we have been able to test it, is reliable and accurate.—*The Timber Merchant and Builder's Vade Mecum*, by George Bousfield (London: E. and F. N. Spon) has reached a second edition, which has been revised and enlarged, and which we have again the pleasure of commending as a cheap and simple series of tables, and supplying a want previously felt by all in the trade.

The Galway Town Commissioners recently accepted the tender of Mr. Bagnell, amounting to £4,500, for carrying out drainage works for the town. At their meeting on Thursday week the other two tenderers, who had each offered to do the work for lower sums, wrote in complaint. The first, Mr. Henry Abbott, of Albano, whose tender was for £4,651 10s., objected to the proceedings as illegal, as Mr. Bagnell's tender was not received till Thursday, whereas the advertisement had named the previous Saturday noon as the latest day for sending them in to the secretary. Mr. James Swallow acknowledged his tender (£3,753) was not on the printed form, but said that the others were more informal, inasmuch as Mr. Abbott's was not handed in till 3 o'clock, and the chairman (Mr. O'Hara) then produced Mr. Bagnell's from his pocket. It was admitted that those statements were correct, but the chairman said no discussion must take place unless members were prepared with a motion, and as none was proposed, proceedings terminated. The transaction reflects no credit on the commissioners.

The Guildford Town Council having received a report as to the inadequacy of the present pumping apparatus at the waterworks to meet the requirements of the borough, have decided to call in Messrs. Easton and Amos, civil engineers, of London, to advise on the matter.

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ILLUSTRATIONS.

DESIGN FOR NEW VESTRY HALL AT KENSINGTON—EARLY CHRISTIAN ARCHITECTURE—SHOPS IN BRIDGE-STREET, CHESTER—SECOND PREMIATED DESIGN FOR PROPOSED MORTUARY CHAPEL AT NOTTINGHAM.

OUR LITHOGRAPHIC ILLUSTRATIONS.

DESIGN FOR THE NEW VESTRY HALL AT KENSINGTON.

We have much pleasure in giving illustrations of the design by Mr. J. W. Bryden, of 98, Gower-street, submitted in the recent competition, which, under the motto of "Alpha," attracted so much attention when the drawings were on view in the old school-room at Kensington. It is designed in that phase of English Classic which the author considered most in harmony with the traditions and associations of the old Court suburb. The fronts were intended to be executed in red cut brick-work, with Portland stone for the mullions of the hall windows, the base, plinth, &c., and the roofs to be covered with dull red tiles. As we noticed at the time, the site is of rather an irregular shape, and hampered with old buildings and ancient lights, but it will be seen from the plan that the arrangements are exceedingly simple, the vestry-hall itself forming the *motif* of the design. The offices of the various departments were all on the ground floor, opening from a central hall and the grand staircase, while the hall and committee-rooms form a suite of apartments by themselves on the first floor. The vestry hall is 73ft. long by 43ft. wide by 40ft. high, has a gallery for the public at one end, and is covered with a vaulted ceiling in plaster. The walls are panelled in dark walnut up to a height of about 10ft. from the floor, and the space above to the springing of the vault ornamented with plaster panels of characteristic design, a large open fireplace being a marked feature on one side of the room.

SHOP AND HOUSE, BRIDGE-STREET, CHESTER.

In erecting this building an attempt has been made to preserve the general character of the old half-timber work so prevalent in the city, without losing sight of the modern conveniences and arrangements necessary to the business of the present day. The shop, which is on the street level, has a total depth of 85ft., the area of floor space therein being 2,667 superficial feet. Beside the front window lights there are skylights, which light the shop from an open court on the first floor, round which are placed warerooms accessible from the shop. In common with the other buildings in this street, the front portion of the first floor, to the depth of 18ft., is given up to the "Row" or public passage, which in this city forms a promenade over the shops on the street level. From this "Row" level access is obtained to the dwelling-house and to the court in the rear; the steps shown on the left side of shop afford means of access to the "Row" from the street. The drawing-room to house is over this "Row," and occupies the entire frontage, the central bay window making an important addition to this room, and affording an excellent view of the street. The dwelling-house consists of 2 large entertaining rooms, 6 bedrooms, kitchens, and the necessary offices;

the warehouse in rear is 4 stories in height. The total cost of buildings, exclusive of site, was £2,850; and has been carried out by Mr. Vernon, builder, under the direction of Mr. Thos. M. Lockwood, architect, Chester.

PROPOSED MORTUARY CHAPEL, NOTTINGHAM.

The design which we publish to-day was awarded the second place in the recent competition. The building is designed to serve as a public mortuary, as well as a chapel, and with this object two dead-houses have been provided, and also a large room for inquests, as well as a vestry for the chaplain. The materials proposed are local stone, with wrought stone dressings for walling, lined with red brick; the roofs to be covered with green slates, and the bell turret with oak shingles. The estimated cost is £2,000. The author of the design is Mr. Richard C. Page, of 18, Buckingham-street, Strand, W.C.

EARLY CHRISTIAN ARCHITECTURE.

A DESCRIPTION of these photo-lithographic illustrations of Early Christian Architecture will be found on p. 302.

THE GREAT BARN AT HARMONDSWORTH.

This famous barn, which we illustrated last week, is one mile from West Drayton station. It is supposed to have been built about the middle of the 14th century. The outside dimensions are as follows:—198ft. long, 41ft. wide, and 40ft. high to the ridge, the width of the bays inside being 15ft. The timber is of oak, axed to the required sizes, and is in an excellent state of preservation. The average scantlings of the timbers are as follows:—Principal uprights, 1ft. 2in. by 1ft. 2in.; tie-beams, 1ft. 8ft. by 1ft. 2in.; collars, 1ft. 2in. by 8in.; plates, 7in. by 6in.; cills to the trusses, 1ft. 2in. by 10in. It is worthy of notice that the trees were turned upside down for the principal uprights, the butt ends being placed at the top, so that the tie-beams might have a better bearing. The roof is covered with red tiles. The low side walls are of rubble work, chiefly of plum-pudding stone. The sills of the trusses stand upon roughly-tooled hard stones.—G. R. WEBSTER.

A QUESTION OF QUANTITIES.

A RATHER noisy discussion on a question that has lately occupied a large portion of our space took place last Thursday at a meeting of the Southampton Town Council. It appears that a member of that body, Mr. Parmenter, an architect and surveyor, has been busying himself in not a very friendly spirit towards the town surveyor, Mr. Lemon, and been asking for the returns of sums paid by contractors to surveyors; the question being whether the contractors who carried out works for the corporation should pay their own surveyors for taking out the bills of quantities, the percentage, of course, being charged to the ratepayers, or whether the borough surveyor should take them out, thereby saving the pockets of the ratepayers. This seems to be the main question involved, though the mover in asking for returns of board contracts during the past ten years, and the sums paid by the contractors to their surveyors, proceeded in a very roundabout manner, and defeated his own object by the feeling and animus displayed towards a brother professional. The plain facts are, that the Corporation of Southampton have for years followed the very independent and justifiable procedure of allowing every party tendering to take out his own quantities, or to employ some independent surveyor to do so for him. As the town clerk explained, it was pretty well understood among intending contractors that their least costly and most direct plan was to agree among themselves in selecting a surveyor to take the quantities out, the surveyor being paid a percentage of from 1½ to 2 per cent. as a commission. By this means the corporation had nothing to do, directly or indirectly, with the quantities of materials and labour, and was consequently not responsible for any inaccuracies, or, indeed, for any error in the tendering or contract price. As before observed, we think the rule the only justifiable course for corporations as well as for individuals, and it is somewhat remarkable that

a town council should be blamed for doing what they are bound, in justice to themselves and the ratepayers, to do. But another point to consider was the independence of the surveyor to the corporation. As the arbitrator between the contracting parties, he should always be free from any responsibility in respect of the quantities prepared. If he prepared them himself, the corporation would necessarily be held liable for any deficiency. It was said what check had the corporation as to the correctness of the quantities supplied, or the work actually performed, as the surveyor appointed looked after the interests of his employers. This was equivocal, as the town surveyor exercised his independent judgment free from any interest, and beyond this it is clear that the contractor's tender must be a reasonable one, and could not greatly exceed the surveyor's protecting estimates. If the corporation surveyor took the quantities out, the responsibility would fall upon him or the corporation, who would thereby compromise themselves. The weakness of the attack was that the mover failed to show how the ratepayers' pockets could be saved in any case. We have already expressed our unqualified opinion that the interests of the architect or adviser demand his entire independence in all work which he designs, and upon which he exercises his professional skill. To make him responsible to those who carry out his intentions, is to frustrate the very object of his appointment. Indeed, we cannot understand the object of a member of the Town Council placing himself in such a hostile position to the interests of his constituents. From the sequel of the proceedings we gather the motive which prompted the action, and it is too clear that a personal enmity is at the bottom. The borough surveyor is taunted with having time to devote to other extra official work at Winchester and Basingstoke, a matter quite distinct, and one which his employers are no doubt aware of. But it appears from one member's remark there was an ulterior aim which the said Mr. Parmenter had in view in asking for returns of the contracts and the sums paid to surveyors. One of the council asked whether the borough surveyor had been paid this money, meaning, of course, the percentage. Such a charge amounted to a personal attack upon the surveyor's integrity, and we are glad, for the sake of the town and their professional adviser, it was summarily dismissed.

But the discussion settles at once the opinion we have constantly expressed upon this matter. The special and general works committee reported that no less than 80 letters had been addressed to various authorities and corporations throughout the kingdom, and it was found from 73 replies that in 13 towns only the borough surveyors took out their own quantities; in 14 they were paid extra for taking them; and in 42 the contractors obtained their own. From these figures it will be seen that the general opinion is in favour of the quantities being taken out of the town surveyor's hands. But the very acrimonious feeling displayed is not creditable, and we should at least expect that an "architect" would have known the general feeling of the profession upon the subject if he had not been made acquainted with the recent by-law of the Institute of British Architects. We are further informed that the motion was lost by a large majority.

A new Congregational chapel was opened for worship at Preston, by Brighton, on Wednesday week. It seats 300 persons, and cost £3,000. Mr. Gibbins, of London and Brighton, was the architect, and Messrs. Cheesman and Co., of Brighton, the contractors.

At a meeting of the shareholders of the Sunderland Improved Dwellings Company, held on Friday last, a dividend of 6 per cent. was declared, after a sum had been carried to the reserve fund. The dwellings of this company consist of a row of houses two stories in height, built of concrete, each story or "flat" forming a separate dwelling of two rooms, after the fashion so common in the North. The advocates of concrete and others will, doubtless, continue to watch with interest the success of this experiment as a solution of the problem of how to erect dwellings for the working classes in the most satisfactory manner, with due regard to financial results.

Parish of St. Mary Abbots
KENSINGTON.
Design for New Vestry Hall.

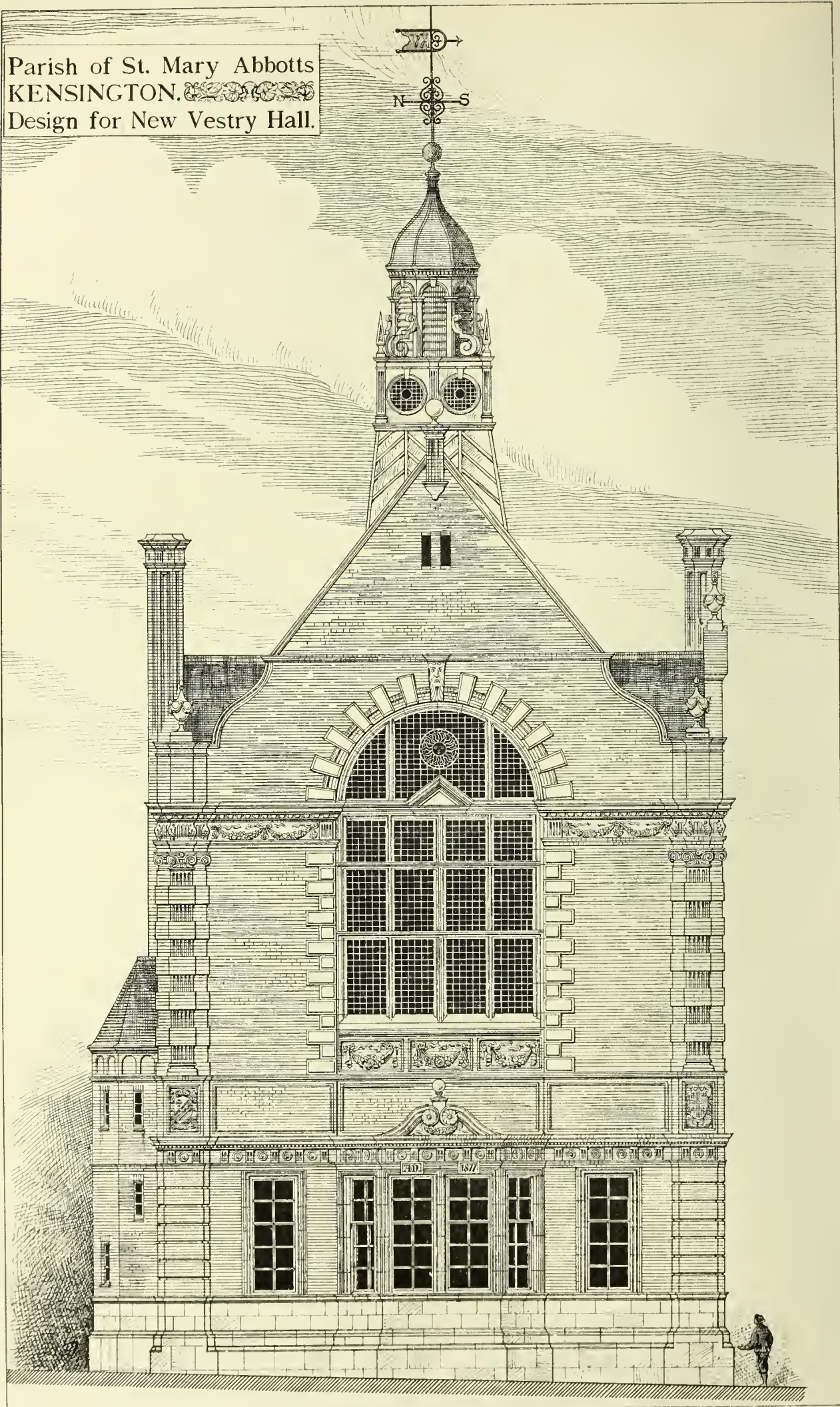
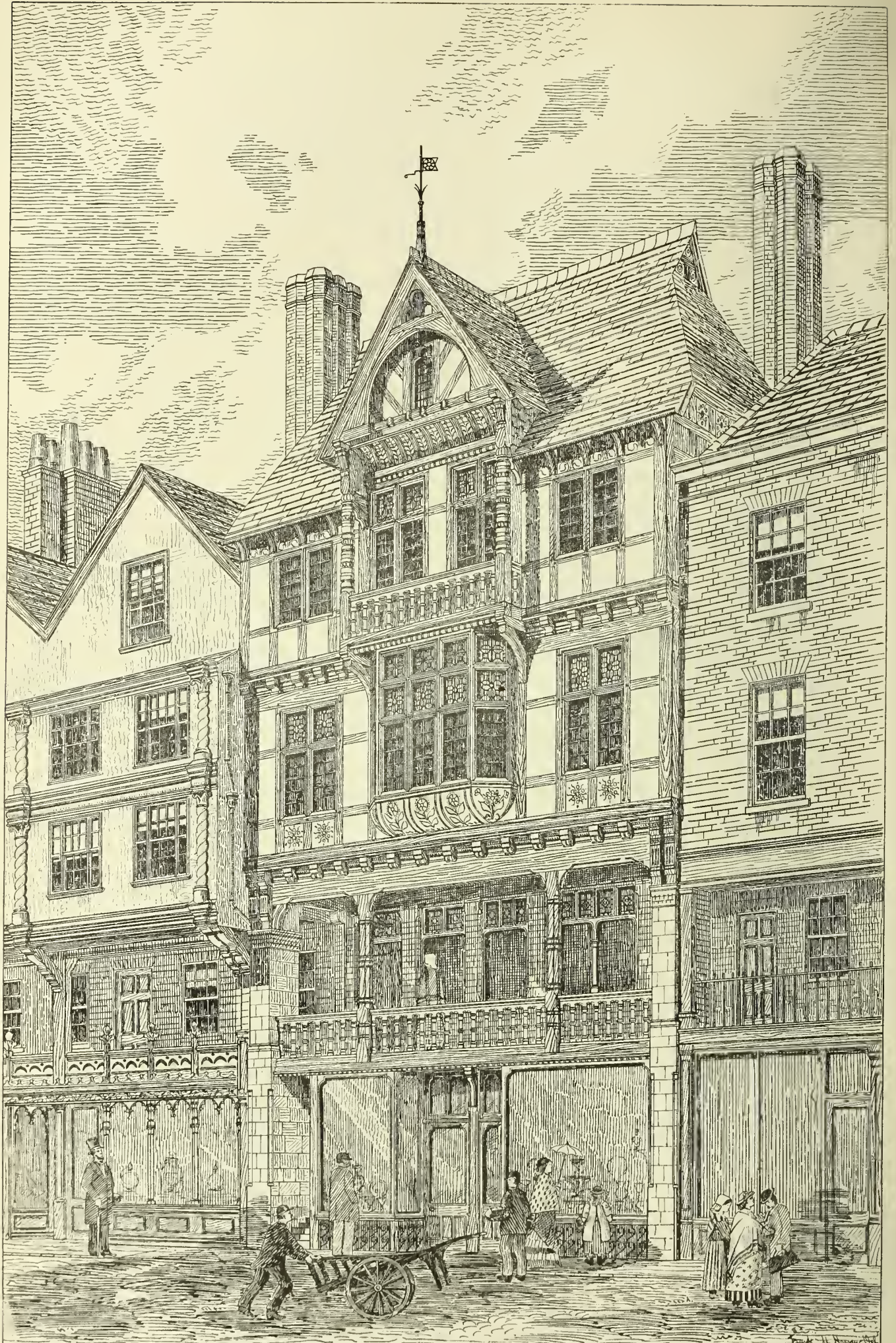


Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

WEST ELEVATION OF HALL.

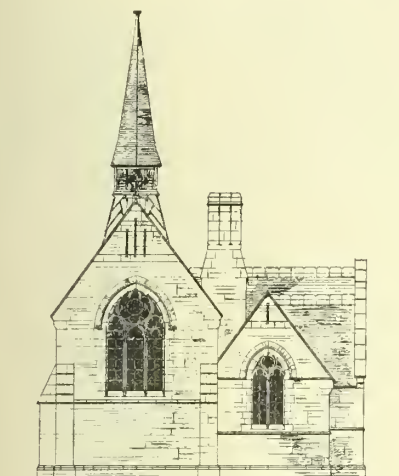


SHOPS BRIDGE STREET CHESTER
T.M. LOCKWOOD ARCHT

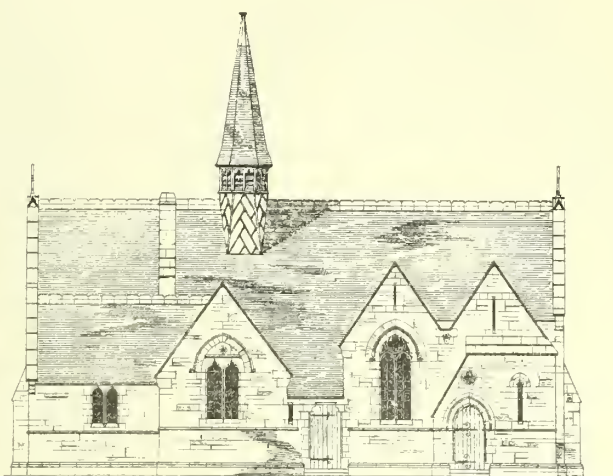
Photo Lithographed & Printed by James Ackerman.

Proposed Mortuary Chapel - Nottingham

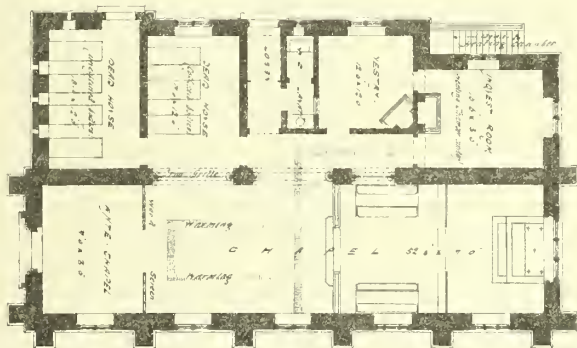
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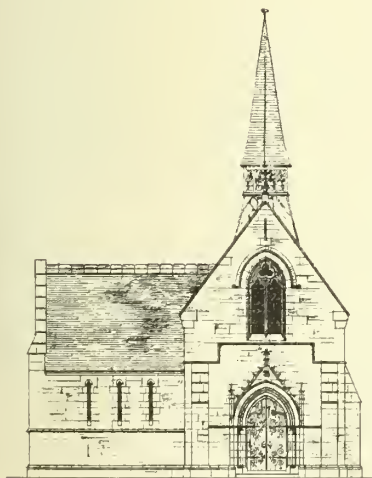
EAST ELEVATION



NORTH ELEVATION

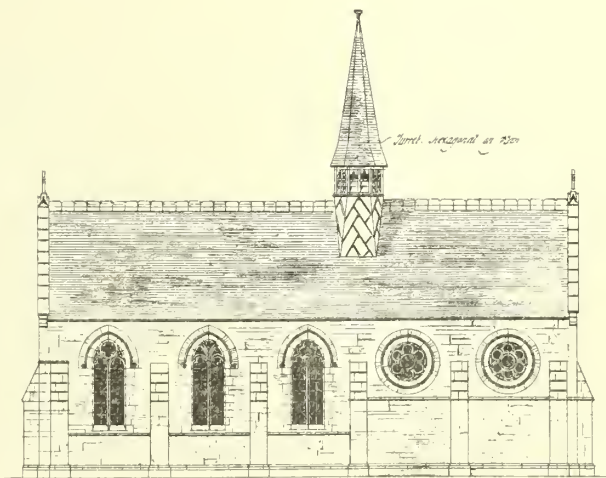


FLOOR PLAN



The openings in this wall are not to be glazed.

WEST ELEVATION



Spire horizontal at 200

SOUTH ELEVATION

g.otto - "Black and White"

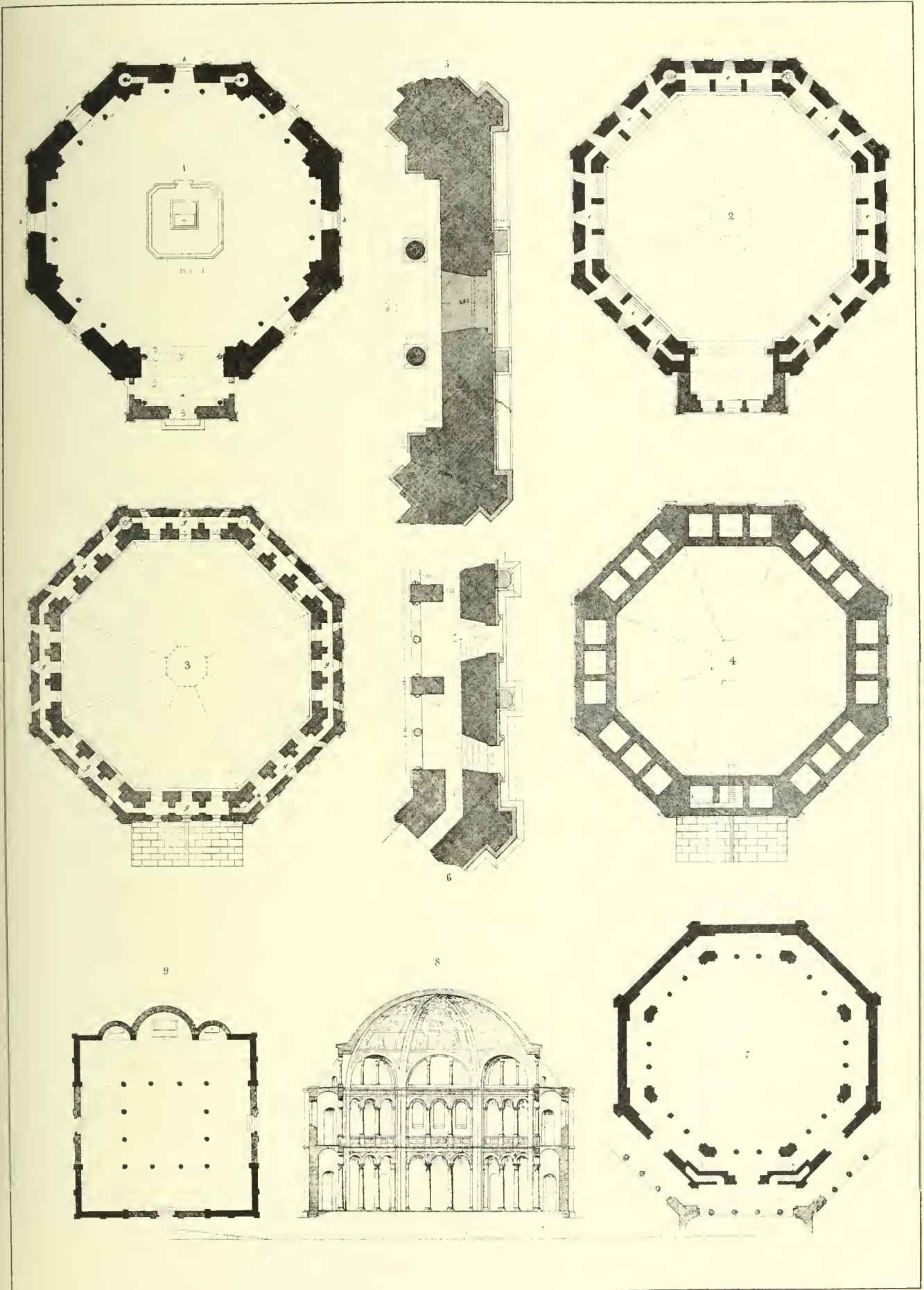
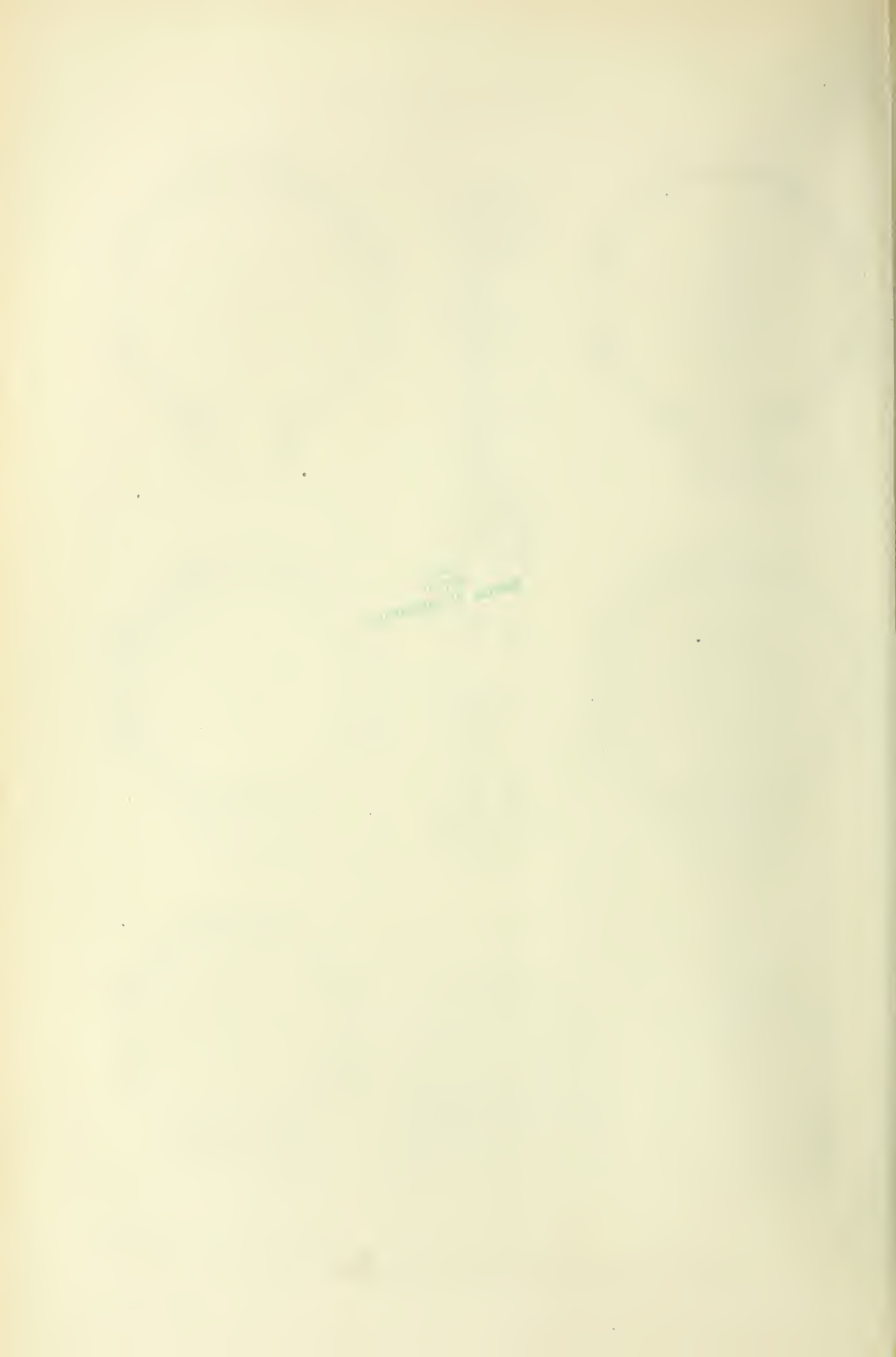
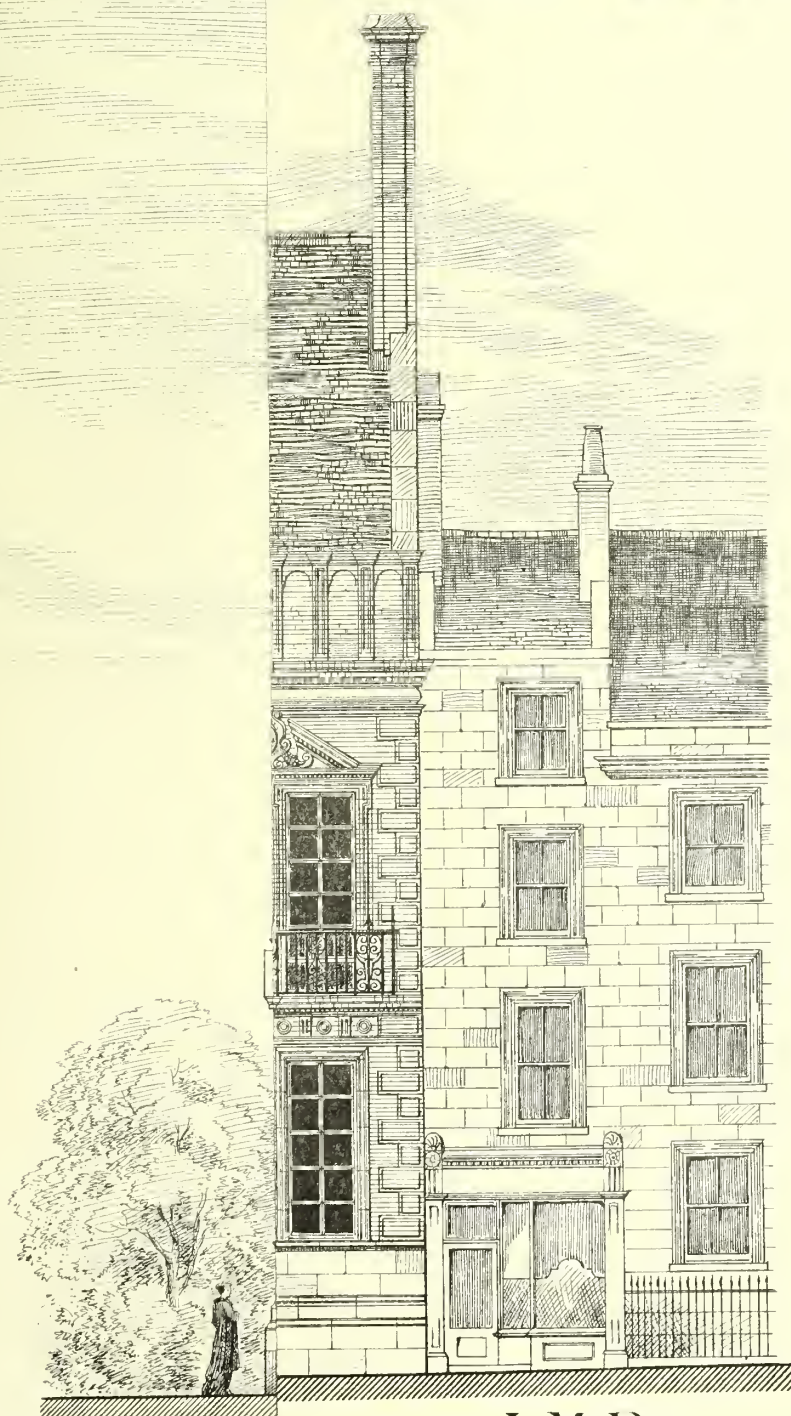
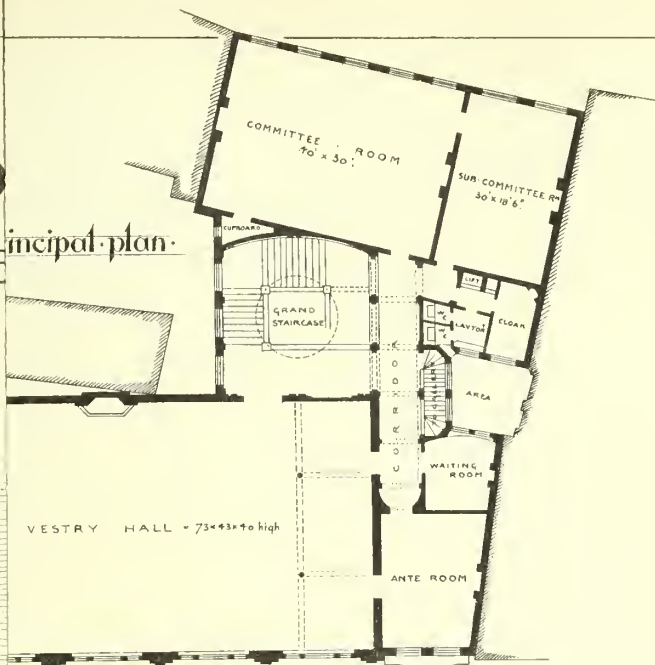


Photo-lithographed & Printed by James Akerman, 6, Queen Square, W.C.



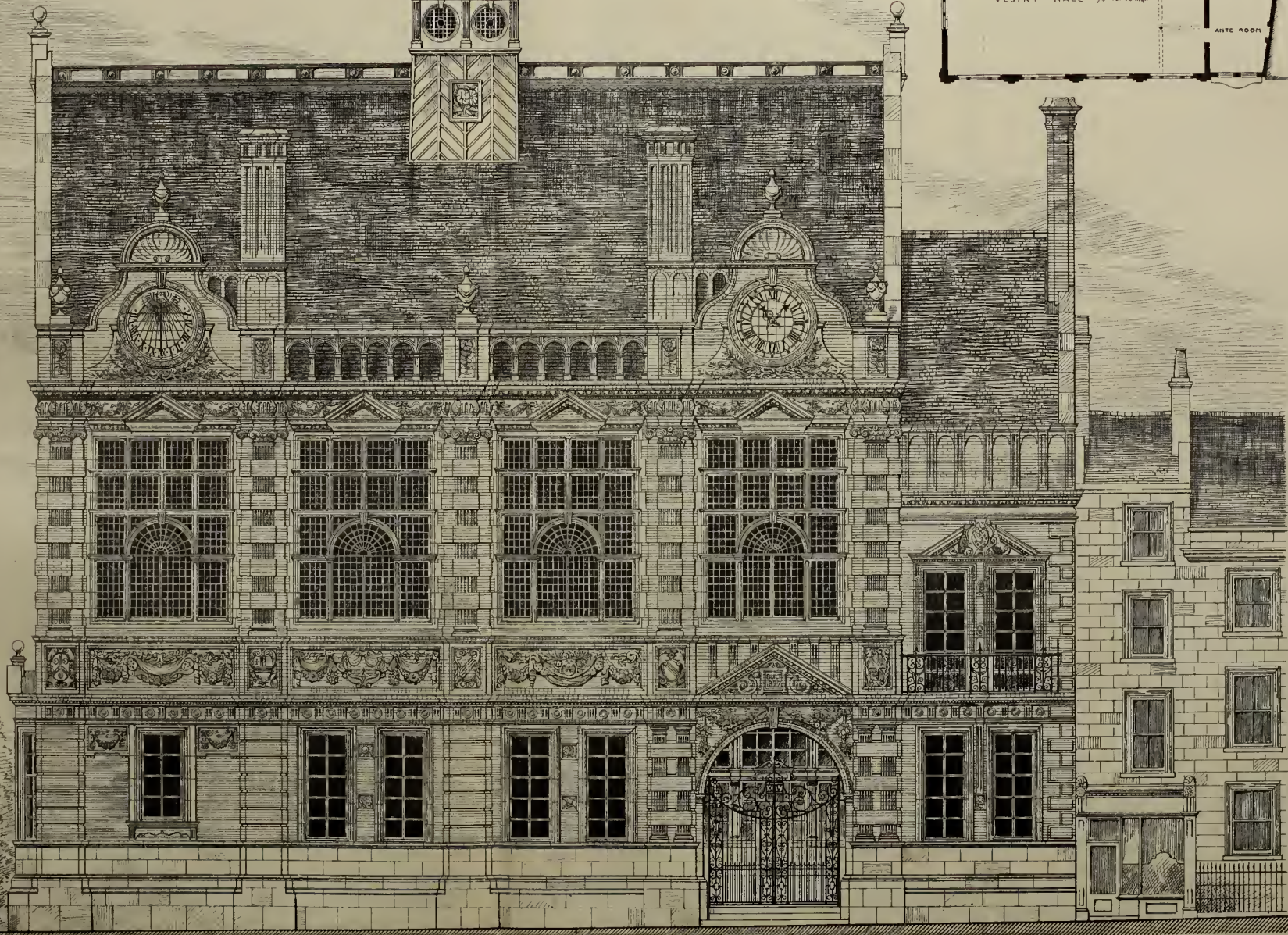
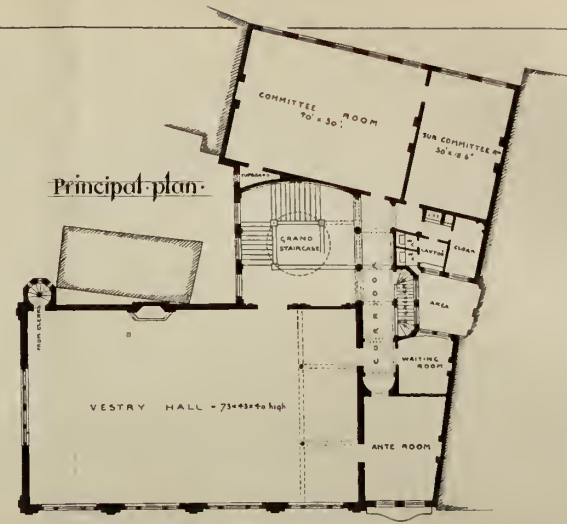
Parish of St. KENSINGTON Design for New

Principal plan



J. M. Brydon ARCHT.

Parish of St. Mary Abbotts KENSINGTON. Design for New Vestry Hall.



10 15 10 10 120 130 140 feet

J. M. Brydon ARCHT.

ELEVATION TO KENSINGTON HIGH STREET.

Photo-Lithographed & Printed by James Acland, 5, Queen Square, W.C.

THE SOCIAL SCIENCE CONGRESS AT ABERDEEN.

THE Social Science Congress commenced at Aberdeen on Wednesday week, under the Presidency of the Earl of Aberdeen, who, in his address, touched on the subjects of education, prison labour, the management of work-houses, and intemperance.

DWELLINGS FOR THE LABOURING CLASSES.

On Thursday the work of the Departments commenced. In the Health Department, presided over by Mr. Edwin Chadwick, C.B., the special question for consideration was "What is the best mode of providing suitable accommodation for the labouring classes, and of utilising open spaces in towns?"

Dr. WILLIAM HARDWICKE opened the discussion by reading a paper, in which he explained a model block system, which he inspected on the Continent, and which he hoped to see some day adopted in London. The most interesting part of the address dealt with the question of utilising open spaces in London. He was anxious for the multiplication of such spaces, but he pointed out that when they were closed against the public they were deprived of half their value. London squares and gardens presented good opportunities for recreative purposes, and he agreed with those who thought there should be legislation on the subject, believing that compulsion, with proper compensating clauses, would not fail to acquire these spaces for the public benefit. The speaker also pleaded for graveyards being used as ornamental recreation grounds.

Mr. WILLIAM BOTTLEY, London, recommended that drainage should be carried from the backs of houses and not under the floors, that dwellings should have a southern exposure as much as possible, that greater care should be taken in the construction of cisterns in the future than there had hitherto been. Mr. BALDWIN LATHAM, London, mentioned that the question of accommodation for working men in the metropolis had within recent years been settling itself by the railway companies providing means of transit to suburbs, fifteen and twenty miles distant. With regard to open spaces, he agreed with Dr. Hardwicke that they should be made public. Ex-Bailie ESSLEMONT, Aberdeen, said that the English spirit of independence revolted against a system of aggregation of populations in large blocks. Dr. FARQUHARSON approved of the co-operative principle adopted in connection with the block system. Dr. STEVENSON MACADAM, Edinburgh, and other gentlemen took part in the subsequent discussion. The other papers contributed to the section related to the health and climate of Aberdeen.

RESTORATION.

In the Art Section, which was presided over by Lord Ronald Leveson Gower, the first paper was read by Mr. G. AITCHISON, on "The Principles which should Govern the Restoration of Ancient Buildings, or their Preservation as Memorials." So far as the latter was concerned, he said they should preserve as many of them as they could, and where there was only a chance of preserving one, they should preserve the best. It was impossible to reproduce old art. The seething thoughts and stirring action of the 13th century were not those of the 19th. It was the very quintessence of folly to destroy the invaluable records we have to get a deplorable imitation of what has been. The monuments of real art which we possessed should above all things be kept from the hands of that worst Vandal that ever lived—the restorer.

Mr. E. M. WARD, R.A., read a paper on the same subject. As prevention was better than cure, he maintained that preservation was better than restoration. He instanced as specimens of the best style of restoration what had taken place in St. George's Chapel at Windsor, and of the neighbouring Eton College. The dilapidations had been made good, consistently with the general tone of the original design, while adding to the durability of the structure and preserving the venerable character of the buildings. With respect to the changes of our cathedrals, he mentioned some changes that were highly desirable in Westminster Abbey. He applauded the enlightened action of the present Dean and Chapter, who

had done a great deal, and stated that stained glass windows were about to be uniformly introduced. He hoped the artists employed would be guided by the still existing specimens of ancient art in this department. He thought a restorer of ancient buildings should be mainly directed by deep reverence for the work on which he is employed, and the associations connected with it. In no case should he take on himself to make any serious innovation on the character of the work, or imprint his own style on any part of it, as unfortunately was too often the case. He also referred to the colouring of ecclesiastical buildings.

Mr. J. F. White, Mr. John Forbes Robertson, Dr. Stevenson, Mr. Statham, Dr. Phené, and Mr. W. Brodie continued the discussion. Mr. G. Aitchison was then heard in reply.

HUMANISING EFFECTS OF ART.

Dr. PHENE, F.S.A., read a paper on "The Humanising and Refining Effects of Art."

TRADE UNIONS.

In the Economy and Trade Section, which met under the chairmanship of Mr. James Caird, the special question for discussion was, "What are the social effects of Trade Unions, Strikes, and Lock-outs?"—the first paper being by Dr. Watts, Manchester. In his absence, it was read by the secretary, Mr. Neison. Dr. Watts remarked that while trade societies no doubt tended towards the increase of capital, they did so indirectly, and not with a good spirit; while, on the other hand, they crippled the extension of technical knowledge. They also did a fair share of work among their own members in lessening pauperism and crime, but that was negated to a great extent by their exclusiveness, which condemned others to poverty. Adverting to the Clyde lock-out, and to the strikes in the coal and iron trades, the writer said that while no doubt unions did sometimes raise wages in prosperous times before the rise would otherwise take place, as employers would then rather suffer loss than stand a strike, yet when capital became unremunerative, no power of combination among workmen could long withstand a fall. He believed that while unions amongst working people for good objects, such as the support of the sick, were commendable, still, on the other hand, when the principal object was to raise the price of wages and shorten the hours of labour, they were very questionable. As to strikes as a *dernier ressort*, the demoralisation arising from them was wholesale, the employment of capital was dissipated, families became disorganised and driven into debt and penury, and an evident breakdown of all self-respect when obliged to seek parochial relief. The only practical way out of the difficulty seemed to rest in compulsory arbitration. Then strikes would be at once abolished, and workmen, giving up the restrictive rules which had not protected them, would ultimately rise to the level of employers.

Mr. JOHN GREY, Aberdeen, also read a paper on the same subject. He argued that trade unions were necessary to prevent unfair depression of wages by the combination of employers, and to obtain a ready rise of wages in times of prosperity. It was admitted that some of the practices of unionists were unjustifiable, but these had been mostly rejected by the better societies. Trade unions, he contended, conferred great benefits on workmen—(1) by preventing, in the case of large and well-organised unions, a frequent resort to strikes; (2) as benefit societies; (3) by fostering habits of discipline and self-government amongst workmen, and thus paving the way for the future adoption of co-operation.

In the discussions which followed the Rev. Dr. BROOKE LAMBERT expressed astonishment that Dr. Watts should have used such arguments as he had done at this time of day. All the mischief which had been done to trade of late years could not be attributed to trade unions; but the surplus of capital which flowed to particular trades in good times had also to bear a share of the blame. Mr. HOYLE, Nottingham, thought that working men in their combinations should have respect, not to their own particular interests, but to those of the general community. Mr. WATHERSTON, London, believed that combinations among masters had done nearly as much harm as those

of the workmen. The latter were, however, frequently conducted in defiance of the principles of political economy, as, for instance, when they tried to increase wages and decrease labour. He thought Fawcett's "Political Economy for Beginners" should be put into the hands of all working men. Mr. LINDSAY, barrister, London, was of opinion that, as trade unions were managed at present, it could not be said that they were productive of good to the community, though the principle on which they were based was sound. Mr. EDWIN CHADWICK said he was connected with establishments which employed over 50,000 men, and he believed that if the managers of those establishments had met their men in a fair, conciliatory way nine out of ten of the strikes would have been averted. Dr. McLEOD, Birkenhead, also spoke, and the chairman shortly summed up the discussion.

ART COMPETITIONS—THE MANCHESTER TOWN HALL.

On Friday the special question for discussion was, "Are Art Competitions Favourable or Unfavourable to Art Progress?" It was introduced by Mr. J. Forbes Robertson, the well-known art critic. In a paper of considerable length, Mr. Robertson pointed out that competition for Civil offices in the service of the State was a practice as old as civilisation itself. The Eisteddfodau of the Welsh and the gathering of the Clans on the Braes of Mar were doubtless a survival of competition. He admitted that art competition properly conducted, and entered upon in a proper spirit by those concerned, undoubtedly accelerated art progress. Excellence in any branch of art, however, presupposed a life's devotion; and a man to judge of such excellence must not only have been born with the art instinct, but his natural perceptions must have been quickened by travel and his knowledge extended by much study. If a public competition took place in a great commercial city for a building, or a statue, or a mural painting, there could not be many men in that city capable of pronouncing on the merits of the various works, and it might happen, and in fact did happen very often, that these men were out-voted by a parcel of well-meaning but unhappy busybodies, which spoiled all. Mr. Robertson continued—"We have something of this kind happening at the present moment in Manchester. The city magnates of that great centre of manufacture were fortunately successful in securing a fairly good design for their Town Hall, and now that that hall is finished, they naturally wish the walls decorated with appropriate paintings. Well, first we heard of one set of artists being engaged, and then another. At one time distinguished Englishmen were to be employed, at another distinguished foreigners; and so it has been going on for many months, and the Corporation seems as far from decision as ever. I have no doubt that the souls of the few righteous men of Manchester whose opinion is worth anything are being periodically vexed by the babble of a set of most unconscionable and irrepressible Philistines." He was far from saying that art competitions were prejudicial to art progress; but it was our duty to free from all unnecessary restrictions what was evidently a law of our nature. Set all art contests open and free; let the judges be the most cultured men within the city, whether they were poor or rich; and if an expert from afar was within reach, the circumstance that he was a stranger should prove no bar to the acceptance of his services. Above all, the interests of the citizens at large should be enlisted, and the general community should be educated up to feeling that they had a stake in what concerned the adornment of their cities, and the art success of their children. A brief discussion followed, in which Mr. E. M. WARD, R.A., took occasion to defend the Royal Academy from certain strictures passed upon them by Mr. Robertson, and to express the opinion that if well-known names were selected as judges of competitions the issue would be the same.

ART FURNITURE AND BRIC-A-BRAC.

Mr. STATHAM read a paper entitled, "Is the Prevalent Taste for Art Furniture and Bric-a-brac Indicative of a Sound and Æsthetic Culture?" The paper was an onslaught on the prevailing taste for crockery, fancy dresses, imitations of the Queen Anne style, &c.

Mr. T. S. MILLS said that art from one point of view was the endeavour after perfection of execution, and what was truly workmanlike was almost always artistic. Such a thing as art furniture, as a separate species of materials, did not exist. We might as well ask a boot-maker for a pair of art boots. Indolence of mind, combined with the love of show, was at the bottom of this. It was a common phrase that art was not confined to sculpture and painting, but should be shown in all the objects collected in a room, and aim at the totality of effect. This was to bring down painting and sculpture to the level of furniture, instead of looking on each work of fine art as a poem in itself. He deplored that style of painting in which all meaning was eliminated from a picture, which, in consequence, sank to a piece of decorative furniture. Mr. ARCHISON could not assent to the view that if we had a fine picture or statue it was no matter what the rest of the room was filled with. If our perceptions were so blunted that we could endure ugliness around us, was it likely we could appreciate the exquisite qualities of works of fine art? In the discussion which followed, and in which Mr. Ward, R.A., Mr. J. F. White, Mr. Robertson, and Mr. W. C. Dalrymple took part, the opinion was maintained that the practice of sticking china plates over the walls of rooms was a barbarism.

BEAUTY NOT INCOMPATIBLE WITH LABOUR.

Miss BURTON, of Edinburgh, read a paper on "Beauty not Incompatible with Labour." She contrasted the condition of the mining villages in Scotland and England with the picturesque mining districts of the Hartz Mountains, and pointed to the difference in the dress of the miners as proving the title of her address. She was afraid that the secret of our want of feeling in this matter was due to the fact that we were ashamed of work.

Miss LYDIA BECKER said she did not attribute the ugliness which characterised the dressing of our working classes to any shame of work. She added: There was something in the fact that when important work was to be done a uniform dress increased the spirit of the workers. Probably the army would not be so attractive as it was but for the uniform. It was a matter for regret that the characteristic uniforms of the country were dying out and being substituted by the present very common dress which both for men and women was undesirable. For women it was highly inconvenient, unwholesome, and unbecoming; but men had secured a certain amount of conscience at the sacrifice of a great deal that was becoming. In the manufacturing districts great obstacles to beauty were coal smoke and chemical vapours. She thought ascetic and gloomy opinions on religious matters had something to do with our want of the sense of beauty, and that the love of dress in women itself was to be regarded as evidencing a sense of beauty, and should not meet with denunciation at the hands of men as it did. Of course a sense of fitness should guide women in this matter; but if they took the men at their word, and made frights and guys of themselves, she thought men would soon be glad to have all the finery back again, with all its evils.

ART IN THE HOUSE.

On Monday, in the Art Section, Mr. John Forbes White read a paper entitled, "How can Art be best introduced into the Houses of Persons of Limited Income?" Mr. WHITE commenced by observing that art cannot be introduced into houses like water and gas. In one and the highest sense, it must be already in the house, seeking only how it can best manifest itself and clothe itself in visible form. He would attempt to show that there was not a room of the humblest mechanic that might not be made a beautiful home. How was this to be attained? By using their eyes. They must learn to enjoy the beautiful things around them in everyday life, to note the beauty of the passing cloud and of the world of colour at their feet. By noticing the relation of the component parts, of the landscape, the harmony of form and colour, and the distribution of light and shadow, all uniting to make up one whole, they could come to understand what the greatest artists had put before them in their representations of the breadth and simplicity

of nature, as well as of its variety, subtlety, and mystery. As Mr. Ruskin had well said, "all judgment of art finally finds itself on knowledge of nature." If to this careful study of nature they added, as they had opportunity, an equally careful study of the best of the old masters and of the best workers in every material, they would gradually arrive at some knowledge of whatever was best in art. His first suggestion was as to the colour of the walls—which should be in tertiary hues. Here science confirmed all we had learned in our study of nature, which was so sparing in her employment of bright colours, using them only as enrichments. We should be shocked if we saw a gaudy background in a picture, and yet we were content to live in rooms so hideously painted or papered that even our ladies' complexions were robbed of their beauty by the background against which they were set. As this was demonstrated by science, our ladies should look to it, and prefer a colour that will enhance rather than destroy their good looks. The ceiling should receive special attention. If it could not be decorated it should at least be toned to a pleasant colour. The use of gold should be sparing. When used in masses it became vulgar. Here, as in many other parts of domestic arrangement, economy and good taste went together. In furniture, he insisted on simplicity and suitability. Regarding the floor, they should remember that it was a plane surface, and we should not in our carpets go in for elaborate effects of light and shade. There should be no representation of objects in relief, to make us feel as if we might trip over a bunch of roses or a heap of ferns. Curtains might be plain enough if the materials and colours were well chosen, and they could be best and most cheaply hung from a brass rod, as in the old times, to modify the light and exclude drafts. The gilt valances that were so common were both ugly and costly, and a mere make-believe. As to introducing things of beauty into such a household, everything must depend on the amount that could be prudently expended; but whether that was much or little one principle should guide them—that what was selected should be best of its sort, avoiding everything that was an imitation of what it was not, or which did not in its own department reach a high degree of excellence. Plaster casts, coloured wood-cuts and autotypes were strongly commended. Etchings were rapidly taking the place of line engraving. To the matchless and incomparable Bewick we owed the revival of the art of engraving on wood. He referred to the illustrations of the *Illustrated London News*, *Once a Week*, *Punch*, the *Graphic*, the *Cornhill Gallery*, and even the *Band of Hope*, which often contained wonderful productions. He also called attention to the revival of the art of pottery, and the establishment of Messrs. Doulton, at Lambeth, as affording means for the acquirement at a cheap rate of many articles of domestic use of a highly artistic character.

Mr. WARD, R.A., expressed his obligations to Mr. White for his very admirable paper, and congratulated the people of Aberdeen upon possessing among them so able an expositor on art subjects. There was one point which had struck him, and that was the importance that artists of eminence in this country should aid in forwarding the general object by doing practically what Flaxman undoubtedly did in assisting Wedgwood to make his admirable designs for his ware. Raphael and Michael Angelo did not disdain to assist decorative art, and he did not see any reason why our modern painters should refuse to do so. He was glad to say that there was a very good opportunity of restoring the art of tapestry in this country, and he trusted that it might be the nucleus of a great movement in the right direction. A gentleman—a very skilful artist in his way—of the name of Henry—a Frenchman by birth, but, from long residence in England, with a strong feeling for his adopted country, had brought over a number of skilled artists from France, with a very able director at their head, and they were now engaged in a small studio in executing tapestries after designs of an English artist for the ensuing great Exhibition in Paris. There were also executed, after designs of the same artist, several pieces for the Queen and other mem-

bers of the Royal Family, and her Majesty felt so strong an interest in the matter that she had bestowed a valuable piece of ground belonging to the Royal domain on which was to be erected the future manufactory. It was the intention of Mr. Henry to select English boys who showed any art talent, and have them educated under the French director, so that the fabric should ultimately become strictly English, as was formerly the case at Mortlake, the only instance in this country where any effort had been made in the manufacture of tapestry. He felt so strongly on this matter that he had determined to execute designs for three pieces of tapestry himself, in the hope that some well-known artists might be induced follow his example. He was glad to be able to mention among the supporters of this scheme the names of Prince Leopold, the Duke of Westminster, and Sir Richard Wallace, and their noble chairman had consented to act as honorary secretary. Mr. Ward concluded his remarks by referring to the colouring of the walls in which they were now assembled as one of the worst specimens in that way he had ever seen. At the same time, he congratulated the college on the many fine pictures which he had had the happiness of seeing in one of their rooms, and which merited better treatment and a better position than they had hitherto met with. He was glad to say that the walls required no other restoration than that most simple and harmless one—soap and water.

HOUSE ACCOMMODATION IN RURAL DISTRICTS.

In the Health Department the question set down for discussion was—"The present state of house accommodation in rural districts. Can its evils be remedied?"

Dr. HAVILAND introduced the subject. He stated that he was an officer of health in Northamptonshire, the area over which he had charge extending to about 1,000 square miles, and having 365 towns and villages within it. Great misery was to be witnessed in consequence of the wretched dwellings, for which he thought the landlords were to blame. He would have the houses improved by the proprietors, and was in favour of Government loans being given for the purpose. He would abolish piggeries, as they generally existed at present in connection with country cottages, and would allow no pig to be kept without a licence being obtained from some proper authority.

Principal BROWN, of the Aberdeen Free Church College, pointed out that Dr. Haviland's statements chiefly referred to England, and suggested that before the discussion was begun they should hear something about the circumstances of Scotland in regard to this matter.

The Earl of ABERDEEN, who entered the room while the Principal was speaking, was briefly informed by the President of the position of the discussion. His lordship once remarked upon one point as to which there was great diversity of opinion—namely, whether country cottages should be of one or two stories. In Scotland the custom of the people was against an attic story, which they usually converted into a loft for storing purposes. He believed there was no intrinsic objection to having all the rooms upon the ground floor if sufficient accommodation could be provided. He had generally adopted ground-floor cottages.

AIR SPACE IN COTTAGES.

Dr. STEVENSON MACADAM, Edinburgh, then read a paper, in which he dealt mainly with air space that should be provided in cottages, and with the water supply and drainage that should be provided for them. To give 500 cubic feet of air for a family of six persons it was necessary to have a house 24ft. long, 16ft. broad, and 8ft. high interiorly. No cottage should have less than that. Then the air should be constantly replenished from the outside, so that there should not be stagnation or starvation of air, and the people should be instructed upon these points. At night room-doors should be left open, and the curtains should be drawn back from beds. He did not care for artificial systems of ventilation, which were sure to go wrong. As to drainage, a gravelly site should be selected for the house, and slop water should not be thrown upon the ground to sink near a

well. To prevent damp walls, there should be a layer of pitch at or immediately above the surface of the ground. The rooms should be lathed and plastered, and whitewashing should be adopted in preference to covering the interior walls with paper. Pure water should be obtained from a running stream, and if there was a closet it should be on the dry system. In the rural districts, to allow of the sick being properly cared for, there should be cottage hospitals.

Mr. CHADWICK, the President, mentioned that in two-story cottages it was often found that the lower flat was let, or that the upper one was unoccupied. His father-in-law had built good cottages in a Scotch glen for some of the families, but he found on coming back that the upper story was occupied as a roost for the poultry, and the goodwife said, "Jock couldna be fashed gaun up the stairs after he was tired." He said the walls should be dry and washable.—Dr. HAVILAND submitted a resolution as to some legislative action to enable, if not to compel, landlords to build cottages.—Rev. Dr. McLEOD, Birkenhead, while agreeing with this suggestion, and admitting its necessity, as he had seen his people in houses unfit to live in, remarked that landlords could not be expected to build houses that would not yield a fair return for the capital invested, and therefore it was really desirable to see if they could suggest some way by which the rural population could earn higher wages so as to be able to pay better rents.—The EARL of ABERDEEN said the rev. gentleman had hit the real point. It was certainly difficult to get proper cottages erected, as after they came to be occupied defects were found in the building or its surroundings, and much money was wasted. He had tried wooden cottages—the cost not being quite two-thirds of that of stone and lime—and the experiment promised to be successful, especially where there were changing circumstances connected with the land. A lining of 6in. of sawdust in the walls made the interiors dry and warm. He did not think a landlord should be compelled to erect cottages, but he should be enabled to do so by borrowed money.—The discussion was continued by Principal BROWN, Aberdeen Free Church College, and Mr. W. PAUL, advocate, Aberdeen, the latter maintaining that the suggestions made about legislation were impracticable.—After the adjournment for luncheon the Earl of Aberdeen presided, and the following resolution was adopted:—"That this meeting is of opinion that the Standing Committee of this department should take into consideration what further legislative measures are necessary for the extension and improvement of the house accommodation for the rural population, and report to next annual meeting." It was understood that this would include inquiry as to accommodation for unmarried ploughmen.

THE TAY BRIDGE.

ONE of the most notable triumphs of modern engineering is achieved in the completion of the construction of the Tay Bridge, which carries the North British Railway across the Frith of Forth. The project has repeatedly been brought forward during the past thirty years, but it was not till 1871 that the work was commenced. The history of its execution, which we take from the *Scotsman*, is interesting as a record of engineering difficulties overcome by persistent perseverance and high professional attainments. The plans were originally prepared by Mr. Bouch, C.E.

What with the novel and extensive character of the undertaking, and the arduous conditions under which it had to be carried out, the bridge has taken longer to build than was at first anticipated. In the outset the operations were necessarily to a certain extent of a tentative character. When one difficulty after another had been overcome, steady and rapid progress began to be made; but still the ever-varying contingencies of wind and weather remained to be dealt with; and we believe that a detailed account of the practical problems which arose at various stages, and the manner in which, under the superintendence of Mr. A. Grothe, the resident engineer, professional skill was brought to bear on their solution,

would form a most interesting chapter in the history of modern engineering. At the point selected, about a mile and a-half above Newport, the river has a breadth of nearly two miles, its depth at high water of spring tides attaining a maximum of 45ft., and the velocity of its current ranging up to 5 knots an hour. To bridge this formidable stretch of water the engineer had planned a structure of 85 spans, which, as now realised in brick and iron, presents a noteworthy example of the purpose-like adaptation of means to ends. The spans vary in width from 67ft. to 245ft., those of the largest size, to the number of thirteen, being placed over the navigable part of the river. In this central section, where it is necessary to provide for the passage of such shipping as frequents the ports of Newburgh and Perth, the bridge has a clear height of 88ft. above high-water mark, from which it slopes down to the Fife side with a gradient of 1 in 356, and towards the Dundee end, where it takes a curve to the eastward, in order the more conveniently to join the land line, with a gradient of 1 in 73. The spans are formed of wrought-iron lattice girders, and the supporting piers in some cases entirely of brickwork, in others of a combination of brick with iron columns.

It was, of course, mainly in the construction of the piers that the special difficulties of the enterprise were encountered. The system adopted was no less remarkable for effectiveness than for its extreme simplicity. Without any elaborate apparatus of coffer-dams or wooden staging, workmen were enabled to operate under water, or at great heights above it, the work itself being ingeniously turned to account as a means of facilitating its own progress. Commencing from the south end of the bridge, it was found that for a considerable distance a foundation of rock could be reached at the depth of from 10 to 15 feet below the river bottom. Here, accordingly, it was decided that a sufficient substructure would be provided for each pier by sinking to the rock two cylinders of iron and brick work, with a diameter of 9 feet 6 inches. These cylinders were built on shore in such lengths as would reach from the rock on which they were intended to rest to a point above low-water level. Each consisted of a cast-iron shell, with a lining of brickwork set in Portland cement, leaving inside a central shaft, 3 feet 6 inches in diameter, through which workmen might pass up and down. The absence of brickwork from several feet at the bottom left that portion in the form of a round chamber with iron walls; while above the brick lining the iron casing was continued, so as to constitute an air-tight compartment of considerable size. Two cylinders thus constructed were connected by means of a wall of brickwork about 3 feet wide, thus placing a space of 12 feet between their centres. The whole being then made fast to a system of strong iron girders, barges were introduced at low water underneath the girders, so that when the tide rose, the ponderous mass, weighing, it might be, as much as 120 tons, was lifted bodily and quietly floated out into the river. Having been towed out to the site of the intended pier, the cylinders were lowered by hydraulic apparatus till they rested on the river bottom. The top of each having been closed, air was blown in by means of a steam pump the result being to force out all water which had entered below, and leave the interior dry. This pumping in of air was continued while workmen, descending the internal shafts, excavated the material from beneath the cylinders, and so caused them gradually to sink till they reached the rock, in which a level bed was cut for their permanent resting-place. The upper iron chambers were then removed, and the interior of the cylinders filled with concrete to the top of the brick lining—being just above low-water mark. From this point the work was continued, by bringing men and material in barges alongside, till it reached, in the form of a solid brick pier, the level of high-water, where it received a course of Carnylie stone, showing externally on the cylindrical columns as slightly projecting rings. Meanwhile, the double girder intended to form the span had been getting built on shore, to be, when completed, floated off by the same simple device as was adopted in the case of the cylinders. A couple of piers having, in the manner described, been brought

up to the high-water level, the girder was floated over them, allowed to sink on the receding tide till its ends rested on the masonry. When this had been accomplished, nothing remained but to raise the girder by hydraulic appliances in short lifts of 2 feet at a time; while the brickwork of the pier was carried on *pari passu*, so to speak, by men planted on light scaffolding suspended from the girder.

At the fourteenth span it was found that the rock suddenly shelved away to a great depth under beds of clay, gravel, and sand. To continue sinking the piers to that foundation consequently became impracticable, and a method had to be resorted to which would give equally secure foothold in one of the overlying beds. On the one hand, the weight of the pier had to be lightened, and this was done by the substitution, in the upper works, of iron columns for masses of solid brick; while, on the other hand, the adoption for each pier of a single oval cylinder, measuring 23ft. 6in. by 13ft. 6in., ensured a larger bearing surface than had been obtained by the use of two smaller ones. The cylinders were, as formerly, constructed on shore, and on the same system as those above mentioned, with the exception that the outer casing was of malleable instead of cast iron. These large masses were then duly floated, towed out, and lowered to the river bottom; and when they had been got into position the sand underneath was removed by means of a sand pump contrived for this special purpose by Mr. Reeves, one of the assistant engineers. This apparatus consists of iron tanks connected with ordinary air-pumps, and having flexible pipes running down to the river bottom, where the ends have to be manipulated by divers. When, by working of the air-pumps, a vacuum has been created in the tanks, a current of water and sand rushes up through the pipes, the sand sometimes being in the proportion of one-third of the total quantity raised. By this process a large cavity was speedily formed under the cylinder into which the mass sank by its own weight; and the operation being continued till it reached the gravel at the depth of about 18ft. below the river bottom, any remaining sand was carefully cleared out, and the interior of the cylinder filled to the top with concrete, while a mound of rough stone was deposited around its base to give protection from the scour of the current. The upper part, so far as it stood above the bottom of the river, was next removed, thus leaving an ample platform of artificial rock for the reception of the superstructure, which consisted, to begin with, of a mass of brickwork, in the form of an elongated hexagon, measuring 20ft. by 10ft., and placed with its greater length in the direction of the current. This part of the pier was likewise put together on shore and floated out between barges in a length of about 20ft., being sufficient, when placed upon the cylinder, to reach above low-water mark. In order to keep down the weight to be lifted, these masses were, in the first instance, built hollow. When placed in the river the interior was filled with concrete so as to confirm the solidity of walls whose brick and cement, without any assistance from iron bracing, had been found to hold together with perfect tenacity.

From the low-water level the pier was formed of solid brickwork, built in the ordinary way by workmen brought alongside as the state of the tide would permit; and at high-water mark four courses of Carnylie stone, of an aggregate thickness of 4ft. or 5ft., finished off this portion of the work. The piers of 14 spans were founded in this way, their upper works being formed of iron columns of 15in. and 12in. diameter, arranged on the hexagonal basement in the same manner as those of the great central section of the bridge, now to be described. In dealing with the navigable channel, it was necessary to increase the length of the spans, and, this involving an increase in the weight of the girders, the foundations of the piers had to be correspondingly enlarged. For the oval cylinder a round one, 31ft. in diameter, was here substituted, the hexagonal mass of brickwork rising to high-water mark having its dimensions increased to 27ft. by 16ft. The piers having been brought to that level, the girders, measuring for this section 245ft. in length, and weighing 190 tons for each span, were towed out and deposited upon them in

the manner already indicated. The hoisting of these girders to their ultimate height was, however, a much more serious operation than in the case of the smaller spans; for, not to speak of the greater weight to be raised, the process had to be performed in much longer lifts. The cast-iron columns forming the upper part of the pier were, in the first instance, built up to their full height. These columns are for each pier six in number, corresponding to the angles of the hexagonal basement, those placed at the ends which look up and down the river measuring 18in. and the other four 15in. in diameter. Cast in lengths of 10ft. they were securely bolted together and made fast to each other by strong vertical and diagonal braces, forming for each pier a sort of composite column with a bearing power such as would hardly be imagined from its comparatively light appearance. When the piers had been completed the raising of the girders was commenced, and carried on, in lifts of 20ft. at a time, by hydraulic apparatus placed upon stages bolted between the columns. To the north of the deep-water channel the foundations for the piers had still to be laid on gravel; but the spans here being shorter, and the upper works consequently lighter, it was deemed expedient to revert to the double-cylinder system pursued on the south side, with this difference, that the cylinders were made of the considerably greater diameter of 15ft. The work was continued to high-water mark in much the same manner as in the central section, and the upper part of the pier formed, as for the large spans, of six coupled columns, the diameter of these, however, being again reduced to 12in. and 15in., so as to preserve a due relation to the weight to be carried. In the curved portion of the bridge, where it nears the north shore, a different arrangement of columns was resorted to, and a series of stays put down on the west side to resist the outward thrust of trains going round the curve.

The girders forming the upper part of the bridge, of which two, connected by transverse braces, go to each span, have been made of various depths, according to the width of the space to be crossed. In the case of the thirteen large central spans the depth is 27ft., and here, in order to secure the greatest possible amount of clear space underneath, the railway has been carried along the lower member of the girders, which accordingly stand, by their entire depth, above the other sections, where the line runs on the top of the girder, and present, when seen in perspective, something of the appearance of a tubular bridge. On either side of the navigable channel, where the length of the spans diminishes towards the north and south sides of the river, the depth of the girders is correspondingly decreased, reaching at the shore ends a minimum of 12ft. At one point, near the north shore, where provision had to be made for the extension of the Esplanade, a span of 160ft. is crossed by a bowstring girder. In order to provide for expansion by heat, which, it is calculated, will amount to something like 7ft. in the whole length of the bridge, the girders have had to be so adjusted to the piers as to allow a certain amount of free play. They are accordingly arranged in sets of four, the girders composing each set being connected together, but the outer ones standing clear of the set next in order at either end, so as to admit of self-adjustment at twenty-one different places over the length of the bridge. To the pier which comes in the centre of a set the ends of the girders meeting there are bolted down; but at the other piers the girders merely lie upon rollers over which they can slide longitudinally when expansion or contraction takes place, lateral motion being provided against not only by the weight of the girder, but by projecting flanges on the rollers fitting close to both sides of the bed plates on which they rest. The open lattice-work of the girders offering comparatively little resistance to wind, there is no such tendency to sway sideways as might perhaps have been expected. The Tay valley is well known to be exposed, not only to severe easterly gales, but to heavy blasts from the western mountains; and during two years remarkable for the frequent recurrence of boisterous weather, it has been impossible to observe the slightest movement produced by wind in any of the girders which had been

deposited on the top of the piers, even when only resting on the temporary blockings which afterwards gave place to the more secure rollers. In regard to its bearing capacity, again, the bridge has been calculated for a rolling load of $1\frac{1}{2}$ ton to the foot run. Under such a burden, which is more than could be brought upon any span by filling its whole length with loaded goods waggons, no part of the structure would have to undergo a strain of more than 4 tons to the square inch; and when it is borne in mind that the iron is actually capable of sustaining a strain of 21 tons to the square inch, it will be seen that there is an ample margin of surplus strength to come and go upon. For the railway the girders afford a surface 15ft. wide, being ample space for the single line to which it has been deemed expedient to restrict the undertaking. In forming the road the first step was to lay down cross sleepers of creosoted timber, measuring 12in. by 9in. in the section. Over these were placed longitudinal sleepers to receive the rails, the remainder of the flooring being laid with substantial planking covered with asphalt, to prevent the wood catching fire from the ashes of passing engines. In order to obviate the possibility of trains getting off the metals, each rail is furnished with a guard, the two being laid in substantial double chairs; while, for behoof of those who may have occasion to walk along the track, each side is furnished with a handrail, which at the same time answers the purpose of a gas main.

During the six years that have been occupied in its construction, the bridge, as above hinted, has had a somewhat eventful history. The work having been contracted for by Messrs. De Bergue and Co., London, in May, 1871, the foundation-stone was laid, in the land abutment at the Fife end, on 22nd July of the same year. On 20th October following, the first cylinder was floated out; but it was not till August, 1872, that the works on the north side were commenced. Slowly but steadily pier after pier and girder after girder were got into their places in the face of difficulties and dangers significantly illustrated by an accident which occurred in August, 1873. A pier was then in process of being sunk to the rock, and six men were at work in its bottom chamber digging out the sand and gravel of the river-bottom, when, through some unexplained mishap, the upper part of the cylinder burst, and the water rushing in, drowned all the poor fellows where they stood. Considering the character of the work, the wonder is not, perhaps, that such a disaster should have occurred, but that, by care and foresight, operations of such magnitude, and extending over such a length of time, should have been carried through with, comparatively, so little loss of life or personal injury. In May, 1874, the death of the principal partner of De Bergue and Co. led to the transference of the contract from that firm to Messrs. Hopkins, Gilkes, and Co., Middlesboro', by whom it has since been prosecuted with characteristic energy. Thanks to the experience gained in the earlier stages of the work, it has, during the last three or four years, been possible to make more rapid progress. As many as 600 men have latterly been employed upon the bridge; and, while in the summer twenty hours out of the twenty-four were turned to account by working two shifts of ten hours each, the electric light was taken advantage of during the long nights of last winter to push forward the operations on shore. The last of the great 31ft. cylinders was floated out on 26th December, 1876, and at that time it was confidently anticipated that the ensuing summer would witness the completion of the work. With February of the present year, however, came another serious accident, which necessarily occasioned considerable delay. During an exceptionally heavy gale, two of the large girders, which had been raised to the top of the piers, but were still hanging in the lifting gear, were blown down, carrying with them a portion of one of the piers. While entailing serious loss, both of time and money, this disaster had, on the other hand, a reassuring effect in calling attention, so pointedly as it did, to the perfect stability of that portion of the bridge to which the finishing touches had been given.

Of the subsidiary works necessary to render the bridge practically available, the south connection consists of five miles of railway, form-

ing a junction with the North British line at Leuchars station. This part of the undertaking does not seem to have involved any special difficulties, the cuttings and embankment being mostly of moderate dimensions, and none of the fifteen or sixteen bridges exceeding a single span. Laid with two sets of rails, the line is now so far completed as to admit of waggons being run from Leuchars on to the bridge, though a good deal has still to be done, more particularly towards the north end, in the way of ballasting and trimming. From the south end of the bridge another railway is to be carried to Tayport; but with this line, which runs along the hillside overlooking the Frith, and passes through the south part of Newport, only a beginning has yet been made. Passing to the north side of the Frith, we find that the bridge joins up to a land viaduct, which, after crossing the carriageway of the Esplanade with a bowstring girder, runs on with a falling gradient, through a series of over thirty brick arches, to the embankment which the company has reclaimed from the foreshore, and which carries the railway into its Dundee station, a little to the west of the Ferry Pier. By the time it reaches the station the line has sunk considerably below the general level of the ground thereabouts, and immediately to the eastward it plunges into a tunnel in which it is carried alongside of the docks for a distance of 700 yards, when it emerges to form a junction at the East Station with the Dundee and Arbroath Railway. In glancing over these works we noted that all along the viaduct and embankment the permanent way is still rather rough—a gang of workmen being, however, employed in getting one line of rails down, to be ready against the opening. The passenger station—a substantial brick building with iron-roofed sheds, has made considerable progress, but some months must evidently elapse before it and the goods station, another brick structure immediately to the southward, can be got ready for occupation. The scale of the latter building, it should be added, is commensurate with the extent of siding accommodation which the company will here command when they have reclaimed the whole area that has been acquired for the purpose—an area which looks sufficient to receive the whole rolling stock of the North British Railway. The tunnel, which forms the connection with the Dundee and Arbroath line, has been formed as an open cutting, and afterward covered in. The walls are of substantial brick work, and the roof presents a series of transverse iron girders, placed at regular intervals and having the interspaces filled in with brick arching. The work seems complete, except that the permanent way has yet to be laid down, and some excavation and building to be done at either end. On the bridge itself workmen were last week engaged in placing the last of the rails and completing the woodwork. A portion of the planking remained to be laid and there were still some gaps in the handrail, but all was got into good form in time for the preliminary inspection with which the directors have anticipated the public inauguration of the bridge.

On Monday the foundation stone of a new Presbyterian church and school was laid at Houghton-le-Spring. The church will be a Gothic building of the fourteenth-century style, with a tower 100ft. high. The plans have been prepared by Mr. W. Lister Newcombe, architect, of Newcastle. The contractor are Messrs. Robinson and Tremble, of Hutton-le-Hole, with Mr. L. Wilford as clerk of the works.

The workmen—about 100 in number—employed on the construction of the new barracks at Richmond, North Riding, were on Friday evening entertained at supper at the Talbot Hotel. Mr. Truman, the engineer, presided, and after other toasts gave "The Workmen." Mr. Etherington, in responding, congratulated those present on the fact that no serious accident had occurred during the construction of the barracks, which would be a favourable comparison with any in the kingdom for workmanship.

The foundation stone of the Episcopal Church of St. Modoc, in course of erection near Woodside, Doune, N.B., was laid on Saturday. Mr. James Brooks, of Wellington-street, London, W.C., is the architect, and Mr. William Jones, of Doune, the builder. We gave a perspective view, plan, and description of the church on June 30th, 1876 (Vol. XXX., page 685).

COMPETITIONS.

BOLTON.—To-morrow (Saturday) designs will be received by the Town Clerk of Bolton for a new museum. Premiums of £50 and £35 are to be awarded.

CLIFTONVILLE, BRIGHTON.—The newly-formed School Board for Hove are about to erect their first school, and have selected a site for this purpose in Ellen-street, Cliftonville. Designs will be sent in under motto on Monday next. The chief requirement is to provide for a large number of infants besides the boys' and girls' schools, and this has to be done with one-story buildings chiefly, and on a rather limited site for the purpose. The buildings are to be of brick.

COVENTRY.—A new hotel is to be built at Coventry, at a cost of £5,000, and those who have responded to the offer of the projectors—viz., £30 for the accepted design—are to forward their drawings on Monday, Oct. 1st.

KENSINGTON.—The vestry-hall competition is so far settled that the premiums have been paid within the last few days to the authors of the designs selected by the vestry. The premiated designs have, however, been referred to a committee to consider as to what further steps should be taken with a view to obtaining designs that will meet all their requirements both as to accommodation and cost. The other designs it was determined to return "carriage paid." All we can say is, that if the vestry and their committee were unable to select a design out of all the 65 sets which they received in competition, some of which were of exceptional merit, they can scarcely be equal to the task which, with all the expenses already incurred, is still before them.

MANCHESTER.—An important competition is now in progress at Manchester. Designs were sent in on Wednesday last for new baths and wash-houses on a rather extensive scale, to be built by the corporation. Premiums of £200, £100, and £50 are offered, and several well-known architects in London have sent in designs.

NEWCASTLE.—Ten competitive designs for the new Byker School have been received by the Newcastle-on-Tyne School Board. The estimates of cost ranged from £5,485 for materials in brick, or £7,025 for stone, to £9,500 for brick and £10,000 for stone. The committee recommended that the three premiums of 30, 30, and 10 guineas be respectively awarded to the plans marked "Epsilon," "Labor omnia vincit," and "Common Sense." The report has been adopted; and the author of the first-mentioned design was appointed architect for the school. The estimates of the three competitors were as follows:—The first, the lowest already quoted; the second, £7,500 for brick or stone; the third, £7,600 for external walls of stone and internal of brick. The successful design is by Messrs. Austin, Johnson, and Hicks; the second, by Mr. Thomas Oliver; and the third, by Messrs. Oswald and Sons.

READING.—A new town hall and free library, with museum and school of art, are about to be erected at Reading. Designs will be received on November 1st, and the premiums offered are £150, £100, and £50 for the three best designs.

The plans of Mr. Angell were accepted by the Southend-on-Sea Local Board, on the 18th inst., for the pier extension and new tram pier, so far as they relate to that portion south of the offices, and Mr. Angell was instructed to furnish detailed plans with regard to the offices themselves. At the same meeting Mr. Storey, surveyor to the board, was requested to furnish the members with specifications and estimates of the cost of a new landing pier eastward of the present one (plans for which were shown), in wood, iron, and concrete.

Messrs. Beanland, of Bradford, have entered into a contract with the Engineers' Department, War Office, for the erection of new infantry barracks near Fulford, York, at an estimated expenditure of nearly £150,000.

An appeal is being made for aid in the restoration of St. Mary Coslany, Norwich, one of the handsomest parish churches in the diocese, the roofs and walls of which are in such a state of dilapidation that unless repairs be speedily effected the fabric will become a wreck. It was recently said that half the seats had been destroyed by dry rot, and these have been replaced. Why have the churchwardens allowed the church to fall into such a condition of neglect?

Building Intelligence.

BROCKLEY.—The new Wesleyan chapel was opened on Tuesday, the 18th instant, by the Rev. Dr. Pope, the new president of that body. The chapel is in the Brockley-road, at the corner of Harefield-road. The building is in the Gothic style, built of Kentish rag, with Bath stone dressings, and comprises chapel, capable of sitting 1,016 persons, 2 vestries, lobbies, &c., organ gallery and practising room for singing, large vestry in mezzanine, lofty schoolroom with two large class-rooms, kitchen, with coppers, heating chamber, &c. The architect is Mr. Banister Fletcher; the builder, Mr. Bishop, of Reading, Berks.

CARDIFF.—Plans have been submitted to, and approved by Lord Bute, for the development and improvement of the whole of the land belonging to him on the west side of the river Taff. Park-street will be widened 20 feet by throwing land from the park into it. An iron girder bridge of similar width (60ft.) will be thrown over the river Taff, and a street on a line with Park-street will be carried along on the other side of the river. A promenade, planted with trees and shrubs on each side, will extend from Coldstream-terrace to the Great Western Railway bridge, and the houses to the south of Brook-street are to be built on three sides of the square only, the space between being laid out as an ornamental flower garden. The desire of Lord Bute is to make the new district one of the handsomest in design and architecture in the town.

EDINBURGH.—It is proposed to convert the Edinburgh Theatre, in Castle-terrace, into a new Synod Hall and Theological College for the United Presbyterian Church. According to Mr. Dick Peddie's plans, which are as yet only in a provisional form, and liable to alteration, the central portion of the block is to be appropriated for the Synod Hall. While it is proposed to take out a great many of the internal partitions, as well as the flooring and galleries of the theatre, the architect is of opinion that the external walls and almost the whole of the thick internal walls should be retained, as in this way space can be found for a hall of ample dimensions. Whereas the whole area of the Free Church Assembly Hall is 8,648 square feet, and of the part thereof devoted to the Court 3,120 square feet, the Synod Hall shown on the sketch plan presents an area of 7,230 square feet, or adding 3,014 for gallery, a total floor space of 10,244 square feet, of which the portion proposed to be allocated to the Court measures 3,672 square feet. The whole floor space attainable is thus 1,596ft. more than that of the Free Assembly Hall, while the area available for the Court is 552ft. larger. The cost of the proposed alterations and additions is estimated at £10,000.

LINCOLN'S INN.—The work of reconstructing the buildings comprised in Lincoln's Inn, from the designs of Sir Gilbert Scott, R.A., is being carried forward. At the present time the operations in progress are the rebuilding of the block of chambers of Queen Anne date adjoining Chancery-lane, next the Law Institution. These buildings are generally to resemble the other new work of Early Tudor style, with projecting bays and oriels, and like them to be in red brick, with bands of black bricks and freestone dressings. At present they have scarcely reached the first-floor stage, having been nearly at a standstill during the past six weeks, owing to the masons' strike. Mr. Shaw, of Westminster, is the builder. The great hall, built 30 years since, from Mr. Philip Hardwick's designs, is undergoing repairs and renovation, the work being entrusted to Messrs. Patman and Fotheringham, of Theobald's-road. The scaffolding has just been removed from the central lantern, which has been regilded, painted, and varnished, &c. Mr. Kaberry is clerk of works for all the works now in progress.

LINGDALE.—New Board schools were opened in the mining village of Lingdale, near Guisborough, on Saturday last. They will accommodate 660 children, equally divided into three departments, and include two large school-rooms, four class-rooms, lavatories, offices, and large playgrounds, a portion of each being

covered in for use in wet weather. The premises are enclosed with ornamental iron fencing. The work has been carried out at a cost of £5,200, by Mr. Ellmer, builder, of Saltburn, from the plans and designs of Mr. Bewick, architect, of Lingdale.—Building operations are being carried out with rapidity in the village, about 500 houses having been built during this year and last.

LONDON SCHOOL BOARD.—On Wednesday the meetings of the board were resumed after the recess, when a return was presented, showing cost of the sites of schools purchased by the board up to March 24, 1877. This shows that upon that date the purchase of 112 sites had been completed, involving an expenditure of £433,575 5s. 7d. for purchase and redemption of land-tax, and a further sum of £60,562 10s. 8d. for surveyors' and solicitors' fees and scheduling. Upon these 112 sites (of which 7 are situated in the division of Chelsea, 10 in Finsbury, 10 in Greenwich, 17 in Hackney, 23 in Lambeth, 8 in Marylebone, 18 in Southwark, and 19 in the Tower Hamlets), school buildings have been erected or are in course of completion, accommodating 101,365 scholars. A second table shows the approximate cost of sites, for which the purchase accounts are not completed. They are 96 in number, distributed thus: In City 1, Chelsea 6, Finsbury 17, Greenwich 12, Hackney 13, Lambeth 19, Marylebone 4, Southwark 7, Tower Hamlets 13, and Westminster 4. The buildings upon them will house 71,549 children, and the expense has been thus far—for purchase and redemption of land-tax, £403,193 18s. 2d.; surveyors' and solicitors' fees on both sides and for scheduling, £117,182 5s. 7d. It thus appears that the 208 schools in the metropolis have on an average 831 scholars, and that the sites have cost, before the buildings were placed upon them, about £4,591 2s. 3d. each. At the same meeting of the Board, Mr. T. Boyce, of Eagle Works, Hackney, was authorised to enlarge the school in Stepney-street, Lisson-grove, by 346 places, bringing the total accommodation to 1,046 school places, at the contract schedule of prices. Playground extensions and teachers' rooms, &c., were ordered to be added to schools in High-street, Shadwell; Wolverley-street, Bethnal-green; and James-street, Camberwell.

MARSTON MONTGOMERY.—St. Giles's Church, Marston Montgomery, which has been restored at a cost of upwards of £2,000, was re-opened on Tuesday week. The church has been almost entirely rebuilt, and enlarged by the reconstruction of the aisle, which was taken down 200 years ago, and the addition of an organ chamber and vestry. Accommodation is now provided for a congregation of 200 persons. The chancel arch is notable as being the oldest piece of ecclesiastical architecture in Derbyshire. The work of restoration has been carried out from the designs of Mr. J. P. St. Aubyn, of London.

NEWMARKET.—All Saints' Church has been rebuilt as a memorial to the late Lord George Manners, the aspect being changed from N.E. to S.E. The style of architecture is English Decorated. It now seats 600 persons—double the former accommodation—and has cost £5,148. Mr. W. O. Chambers, of Lowestoft, is the architect (selected by a competition), and Mr. Tooley, of Bury St. Edmunds, the builder. The windows in the chancel and the centre light of the west window have been fitted with stained glass as memorials, and were designed and executed by Mr. W. H. Constable, of Cambridge. The subjects illustrated are the six principal events in the Life of Our Lord, and they are drawn and coloured in harmony with the style of the church—14th century.

SUNDERLAND.—On Monday the foundation stone was laid of the Museum and Library at Sunderland. The buildings will be erected in freestone, and will be nearly 200 feet in length, and 40 feet wide. The style is Classic. The principal entrance will be from the Borough-road front into a spacious entrance hall forty-eight feet long, and twenty-five feet wide. On the right and left of this hall are the museum and curator's room, library, librarian's room, reading room, and room for science and art classes. The committee-room is directly above the entrance hall. There are three rooms provided for the hall-keeper on the second

floor. It is intended to erect a winter garden on the south side of these buildings. The contract for the works has been let to Messrs. Allison, of Whitburn, and the building will be carried out under the superintendence of Messrs. J. and T. Tillman, architects.

WESTMINSTER.—A block of residential chambers to be hereafter known as Members-buildings, is being erected at the corner of Victoria and Chapel-streets. The angle yet remains to be built over, but the structure just roofed in consists of nine stories and a basement, each floor containing twelve rooms and offices. The architect, Mr. Butler, of Bedford-square, has given the buildings façades of Late Tudor character, with projecting bays on either side of central entrances. The windows are square-headed, with large transoms. The whole of the street frontages are executed in Tisbury stone. Carving is but sparingly applied, except in the cornices and pinnacles above the projecting bays. Features of the building are that all the ornamental cresting and pipes are executed in leadwork, no iron being used for decorative purposes, and that the internal fittings are all in polished sequoia wood, scarcely any paint or plastering being introduced into the structure. Five lifts, two for passengers and three for porters, are provided. Mr. W. Holt is acting as clerk of works.—The premises of the Army and Navy Co-operative Company, on the opposite side of Victoria-street, are being extended in Artillery-row, with a new frontage, similar to the older portion. A tower is being added at the angle, to give unity and emphasis to the building. Mr. J. T. Knowles is the architect, and Messrs. MacLachlan, of Clapham, are the contractors. Mr. William Knight is clerk of works.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published September 28 contains articles on Condensed Meat in the City of London, Disease and Damp Soils, The Social Science Congress, Domestic Plagues, The Parkes Museum of Hygiene, Public Health Reports, Sanitary Novelties, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleetings, &c. Price Twopence. Annual Subscription, Post-free, Eleven Shillings. 31, Tavistock-st, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C. Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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(Payable in Advance.)

Including two half-yearly double numbers, One Pound per annum (post free) to any part of the United Kingdom; for the United States, £1 6s. 6d. (or 6dols. 40c. gold). To France or Belgium, £1 6s. 6d. (or 32f. 60c.). To India (via Southampton), £1 6s. 6d., To any of the Australian Colonies, New Zealand, the Cape, the West Indies, Canada, Nova Scotia, or Natal, £1 6s. 6d.

N.B.—American and Belgian subscribers are requested to remit their subscriptions by International P.O.O., and to advise the publisher of the date and amount of their remittance. If the last-mentioned precaution is omitted, some difficulty is very likely to arise in obtaining the amount. Back numbers can only be sent at the rate of 7d. each, the postage charged being 3d. per copy. All foreign subscriptions, unaccompanied by an additional remittance to cover the extra cost of forwarding back numbers, are commenced from the next number published after the receipt of the subscription.

Cases for binding the half-yearly volumes, 2s. each.

"BUILDING NEWS" DESIGNING CLUB.—Drawings received: Discreo Volo.—St. Lucy.—Triangle in Circle.—Unicorn.—L. S. D.—Hampton.—"Sketches by Boz."—Finem Respicere.—Susan.—Capio Lumen. Received:—George Udell, A. L. B. (The drawings of list No. 13, which were selected, will appear in due course.)—MEHLIN. (The drawings to which you refer shall be returned with your next.)—JOHN T. GROVES, J. HARRIS, EGBERT.

RECEIVED.—F. E. and Co.—H. P.—E. W.—J. H. M.—J. J. F. B.—G. R. L. S.—R. T.—T. R.—J. W.

F. R. TALLIS, GOTHICUS D. (The semi-circle arch is not in accordance with the principles of Gothic architecture, though instances of the employment of circular arches are met with.)—J. C. R. D., A. B. C. (The usual term of articleship to architects is from 3 to 5 years.)

GALLO-ROMAN REMAINS AT CARNAC (Throughout our review of Mr. Miln's book, pp. 275-6, last week, the name of the site of the excavations was printed "Carnac," instead of "Carnac.")

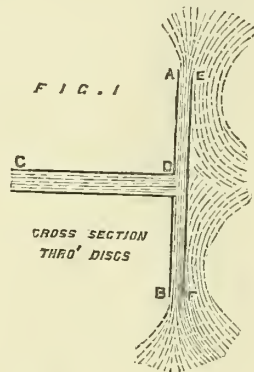
Correspondence.

PRESSURE OF WIND ON OBLIQUE SURFACES.

To the Editor of the BUILDING NEWS.

SIR,—While admitting the accuracy of the experiments conducted by the Aëronautical Society to determine the pressure of wind on differently inclined surfaces, and also admitting the truth, under certain circumstances, of the formulæ deduced by Professor Unwin from such experiments, I think the formulæ will require a little modification before it can be safely applied in the calculations of the strains on roofs with sloping sides; as I consider the action of the wind on the experimental discs, and that on the side of a roof to be slightly different, the same formulæ not being applicable to both.

As the reason of the apparent anomaly may not be apparent to all, I venture to offer the following explanation of it, which may not be the correct one, but it appears to me as the most probable one. If we take a thin disc



(A B, in Fig. 1), say 3in. diameter, and hold another disc, E F, equal in size to A B, to the face of A B, we know that, by blowing down the tube, C D, the disc, E F, remains against the disc, A B, and the harder we blow the harder it sticks. Now, the reason of this is, that the current of air passing down the tube coming in contact with the disc, E F, radiates in the direction of the dotted lines, and in the same way as the jet of steam in the Giffard's injector draws up the feed-water, the radiating currents of air draw up the air at the back of the disc, E F, thus producing a partial vacuum, the atmospheric pressure exceeding the pressure of the current of air in the tube, and so presses the discs together. A similar action takes place when a disc is held to the action of the wind, only instead of the currents radiating, they pass directly over the edge of the disc, but still cause the partial vacuum on the back side, which is, perhaps, better illustrated by the simple experiment of dropping a penny, face downwards, with a flat piece of paper on the back, when the partial vacuum formed in the descent, presses the paper to the penny, and both fall together.

Thus, we see that the pressure on a disc exposed with the face at right angles to the direction of the current, is equal to the pressure formed by the current, minus the pressure caused by the vacuum at the back. Now, if we incline the disc, the action is not the same, and we obtain different results on account of the negative pressure decreasing as the angle of the disc increases, and that this is the case will be seen by examining the direction of the currents, as shown by the dotted

lines in Fig. 2. The currents of air, instead of radiating as before, are reflected upon one side only, and consequently draw the air from one side of the back, which air is replaced by air from the bottom, thus preventing, to a certain extent, the formation of a partial vacuum at the back. Of course, the greater the angle of inclination of the disc, the more easily is the air supplied at the back.

No doubt, as Professor Unwin states, the actions of the currents of air on the side of a roof are very complex, and there are many other disturbing influences besides those have just mentioned, but if what I have stated be the true explanation of the apparent anomaly, it is very evident that formulæ deduced from experiments on discs, are not applicable to roofs, as the partial vacuum (if it be formed) could not possibly act on the side of the roof on which the wind was blowing, but would only cause a slight pressure on the opposite side.—I am, &c.,

JOHN J. WEBSTER.

Dock Office, Hull, Sept. 25, 1877.

MORTAR.

SIR,—If you will allow me the space in your paper I will endeavour to show to "Mortar" how and when it is best to use that very common substance known as mortar. Lime, the principal ingredient in mortar, is never found in the earth as pure lime, but always in union with other metals or gases. Carbonate of lime is semi-crystalline, close-grained, and cold to the touch, but submit it to the action of a strong fire for 20 or 30 hours, and it becomes non-crystalline, very porous, and warm to the touch and the reason of this is the fire has driven off the carbonic acid gas, and it is now lime ready for the builder. When water is thrown on lime while it is fresh from the kiln, it will unite with the lime in certain proportions, and form a hydrate of lime, and the latent heat of water will be set at liberty, and thus causing the great heat of newly-slaked lime, which does not (as is commonly supposed) proceed from the lime itself. Another very remarkable result of putting water on lime is that the particles of lime lose all power of cohesion, and it becomes a fine powder. No sooner has the heat evaporated from a newly-slaked heap of lime than it begins to absorb carbonic acid gas from the atmosphere, and in a short time it is reconverted into a carbonate of lime, and in this state it is said to be dead. As far as my experience goes I find that mortar is easier to use and makes cleaner work, if it is allowed to lie for two or three days after it is made up before using it, but there is no doubt that it will set better if used as soon as made up. How it is that set harder than it would without it I am not able to say. With a soft or earthy sand good mortar cannot be made, and in no case should the proportion of sand to lime exceed 3 to 1, and if really good mortar is required the proportion should be 2 of lime to 1 of clean sharp sand. With lime fresh from the kiln, 2 parts of lime to 1 of sand and clean water (a most essential thing in making good mortar), mortar will be made that will set harder and stand the weather longer than the stone or brick it binds together.—I am, &c.,

H. G. Cox.

12, Wharnclyfe-street, Rotherham,
September 26.

TECHNICAL BUILDING TERMS IN THE PROVINCES.

SIR,—It would be of great use and interest if some of your numerous readers residing in the north-west, and other remote districts, would send you a list of the technical terms adopted in their several localities, so that the same might be published with the ordinarily accepted London terms. There are several terms that are comparatively unknown except in the immediate districts. Provincial building terms would be at least a very useful addition to our vocabulary. The thing could soon be accomplished if some of your enterprising readers would forward any peculiar local nomenclature.—I am, &c.,

G. H. G.

RESTORATION.

SIR,—As public attention has been so much drawn of late to the subject of "Restoration," through the "Society for the Protection of Ancient Buildings," by the paper read by Mr. Stevenson, at the Royal Institute of Architects, on the 28th of May last, and the discussion thereon; and by the articles in *Macmillan's Magazine* for June and July, entitled, "Thorough Restoration," by the Rev. W. J. Loftie, and "Thorough Anti-Restoration," by Sir G. Gilbert Scott, I venture to hope that the accompanying remarks on "restoration" abroad, and the amusing, and but very slightly exaggerated, description of the arrangements of a modern Catholic church may be allowed a place in the *BUILDING NEWS*, and so draw others in to the fray, and keep the hurly-burly going merrily. The extracts are from the letters of a friend, and I have his permission to make what use I please of them.—I am, &c.,

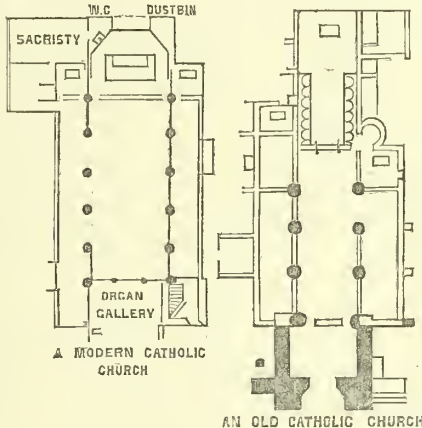
THOROUGH PRESERVATION.

"I fear that the acensation which you bring against Catholics is only too true.* The horrors being now perpetrated in France, Germany, and Belgium, under the name of 'Restoration,' are terrible; in fact, I say, without hesitation; that more harm is being now done to ancient churches than either at the Reformation, the Huguenot rising, or even the French Revolution. The French or Belgian restorer is like some disgusting animal—what he leaves undestroyed he covers with his filthy slime. Notre Dame, Paris; Cologne Cathedral, and Bruges Cathedral are the three greatest libels upon mediæval architecture existing. To come nearer home—what can be worse than the plan of church generally adopted by English Catholics? It has just enough antiquarianism about it to render it a libel upon ancient architecture, and just enough of modern arrangement to challenge criticism from a utilitarian point of view; but when we come to examine this plan we find that it has all the defects (from a utilitarian point of view) possessed by the ancient churches, together with others which are peculiarly its own. The Church, for instance, requires a large space for the divine offices, and insists that every provision shall be made for these before the congregation is even thought of. The Church demands that after the clergy and their assistants have been considered, the choir, which ought to take an important part in her services, shall be placed near to the altar and officiating clergy. Now, what do our Catholic architects do to meet these wants? Well, they generally begin by designing a very pretentious west front. Then, of course, the congregation must be considered, because, as they give the money, they must have comfortable seats, especially those who are well off. As to the poor, the aisles offer a capital place to tuck them out of sight; in fact, this is the only use of columns and arches; and then it is so thoroughly in keeping with the traditions of the Catholic Church to have a regular structural division between the rich and poor. Are not the high roof and clerestory of the nave emblematical of the loftiness and high position which the rich hold in the presence of God, and are not the low aisles emblematical of the degradation of poverty in God's sight? Really, we can get far more meaning out of a nave and aisles than they could in the middle ages when the charming separation of the rich and poor in the presence of God was unknown! Well, having accommodated the congregation, the rich in good comfortable seats, and the poor as much out of sight as possible, he thinks about a chancel and sanctuary. As the space left is very small indeed, he cuts off the angles, and makes an apse, one angle-space of which forms an excellent space for a w.c., in connection with the sacristy, and the other offers great facilities for a dust-bin or muck-heap. Of course, the sanctuary is far too small for High Mass, but really the clergy must do the best they can with it—the congregation must really not be put to any inconvenience for mere sentimental notions of this kind, so the sub-deacon can stand just outside the altar rails. He will just move a little on one side, to allow the great Mrs. Pipkins to enter the front bench when that lady comes into church during the Preface! Now, then, for the choir. What is to be done with it? Of course it can't be in or near the chancel, and must be kept well out of sight, because the great Mr. O'Howlagan can't possibly sing his solo in the 'Credo' without a quart of stout before he begins, and the chief bass singer, Mr. Abimelechson, is a member of the Jewish persuasion, and would rather not be seen in a Christian place of worship. Then, although the bishop has strictly forbidden it, we must occasionally

smuggle in a lady or two for the treble solos, and so on. Now this is really hardly an exaggeration of the way in which Catholic churches are often arranged and designed. Oh! for a good honest barn!

"If you can make any use of my letter pray do so, but I fear the evils against which we wish to protest cannot be met by a simple letter, but will require volumes of argument before they can be exposed in all their deformity. I fear much harm has been done by our reviving Gothic architecture before we had got hold of the spirit which directed our mediæval forefathers, and I am inclined to think that, with the present position which the Catholic Church holds in England, we ought not to go in for architecture at all. Ecclesiastical architecture has always been the expression of the Church when she has been in a condition of triumph, and not when she is struggling on in a missionary state, and this is probably what lies at the root of the whole business. We are trying, by our architecture, to sing 'Alleluia' when we ought to be singing 'Miserere,' and so our buildings all have a false ring about them. We should do far better if we were to build large, solid unpretentious barns or chapels, and content ourselves with having good altars and fittings, and true ritual arrangements, however devoid they may be of ornament, and however humble.

"The first thing should be the ritualistic requirements of the building and style—detail and ornamentation should be afterthoughts. Now we put up buildings which are in every way unfit for Catholic worship, and cover them with elaborate and often pretentious detail.



"This is a jolly old English village. The church is quite unrestored, and I have persuaded the rector to keep it as it is, galleries, three-decker, and all. This is the plan. Nave and aisles, Decorated; chancel, Perpendicular; aisle, Late Perpendicular, with a good roof; tower, time of William III., with curious pinnacles, two sedilia, piscina, and Easter sepulchre in the chancel, tall pews, galleries, and high pulpit. There are several interesting churches in the neighbourhood, but ruined by restoration. — has been at work in this locality, and has left a mark upon the old buildings that nothing will ever remove."

The vestry of Paddington have authorised Messrs. Knipple and Morris to prepare drawings and estimates for the reconstruction of Westbourne-terrace-road-bridge, the Grand Junction Canal and Regent's Canal Companies having consented to the proposed improvement, including the giving up of additional land.

The committee of management of the Glasgow School of Art have resolved to open a branch in the East-end, at which special attention is to be paid to design in connection with manufactures. The free use has been granted the school of a large hall in the Buchanan Institution, and the trustees of Haldane's Academy have given pecuniary assistance in starting the extension.

A new Welsh Wesleyan chapel is shortly to be commenced in Aberystwith, from plans, &c., now in course of preparation by Mr. Walter W. Thomas, architect, Liverpool. The chapel is to hold about 800 persons, and will be built upon one of the most commanding sites in the town. The style of architecture suggested by the committee is Classic.

Four large London firms have been invited to tender for the supply of corrugated iron for huts to contain a hundred thousand Russian soldiers. The huts are to be of four sizes, for twenty-five, fifty, a hundred, and five hundred men. They are to be delivered at Antwerp, and sent direct to Bucharest across the Continent by rail. Orders have also been issued for eight railway stations for a strategic railway. These are to be complete in every way, and are to be provided with heating apparatus.

The new nave of Bristol Cathedral, which has been completed at a cost of upwards of £40,000, will, according to present arrangements, be opened on the 23rd prox.

Intercommunication.

QUESTIONS.

[5135].—Old Barn, Harmondsworth.—Can any of your readers favour us with particulars of this building? I think some allusion, if not a description, has appeared in the *BUILDING NEWS*, in a paper on "Timber Buildings," but cannot find it.—E. C.

[5136].—Measurement of Chimney Breast.—Will any kind reader explain the Yorkshire method of ascertaining the quantity of chimney breasts? And also say which are the best and most durable materials to adopt for tuck pointing?—W. A. K.

[5137].—Lowest Tenders.—I was solicited, with three or four others, to give a price for certain works for which specifications, plans, and quantities were supplied. Some time after the tenders were sent in, we received a letter stating "that all the prices so far exceeded the architect's estimate that none were accepted." About a month after that notice a paragraph appeared in the local papers announcing that the tender of Mr. — was accepted. Now, it appears the architect materially altered the plans, ignored all those who first had the trouble of tendering, and asked an entire stranger without competition for a price on the revised plans. Can any of your correspondents inform me if the lowest of the first tenders can claim compensation for such treatment, although the usual clause—"the lowest or any tender not necessarily accepted"—was in the conditions?—G. E. H.

[5138].—Quantities.—Will any of your numerous readers kindly advise me how to act under the following? My tender for the erection of some shops and warehouses was accepted, and the contract signed in February, 1876. The work was commenced, and shortly afterwards stopped, for reasons unknown to me. The work executed by me was valued and paid for; but the architect's fee for taking out the quantities, which I paid on signing the contract, was not included in that valuation. The architect refuses me any explanation, and won't grant me even an interview on the matter.—PROVINCIAL CONTRACTOR.

[5139].—Joiner's Work.—Excuse my again broaching this subject, as I am not satisfied with "G. H. G.'s" answer. While thanking him very much for his reply, I think he has quite missed the point of my inquiry. Apart altogether from the "untruthfulness" of the decoration, which has nothing whatever to do with the question, what I wish to know is merely—1st. Can the treatment of veneer in the way I indicated be satisfactorily executed? 2nd. If so, would it not be much cheaper or at least sufficiently so to warrant its adoption in preference to inlaying? And 3rd. If my idea is not good, as "G. H. G." appears to think, will he or some other reader please point out its practical defects? I think "G. H. G." attached too much importance to my using the expression "yellow pine"—I added "or other light wood." This, obviously, showed that the term I used was a general one, and might include the most valuable woods in the market. Further, I fail altogether to see in what sense of the word a well-designed ornament in maple or satin wood, or even yellow pine, relieved by a "rich rosewood veneer," would be "untruthful decoration."—VENEERING.

REPLIES.

[5132].—Compensation for Deficient Quantities.—In the trial *Coker v. Young* it was held that the builder could not recover as for extras, nor obtain compensation for an excess of work performed in consequence of an error in the quantities.—NICHOLI FILIUS.

[5132].—Compensation for Deficient Quantities.—If the quantities were calculated by the surveyor for, or in expectation of fee or reward from the builder, the surveyor is bound to bring to his work ordinary care and skill, and if by not doing so he causes loss and damage to the builder, he is bound in law to make good the loss. It does not follow, however, that because the actual work has consumed more material and labour than the surveyor estimated that he is therefore responsible for the difference. The builder may, as he sometimes does, cause himself greater expense by mismanagement and erroneous setting out. The inquiry must be limited to whether the surveyor exercised due ordinary care and skill in estimating the quantities from the plans, specifications, and other information provided him. Sometimes the causes of deficiencies are want of sufficient plans and general meagreness of particulars; but if this is so, it is no doubt the surveyor's duty either to obtain further information before committing himself to statements of quantity, or to refuse to go on. Probably it would be held that errors arising from these causes showed that the surveyor was negligent and unskillful in proceeding without the proper documents to enable him to understand the exact nature of the contract according to the usual custom of the trade.—L.

[5132].—Compensation for Deficient Quantities.—"A Builder" does not clearly state his case. It is impossible to know whether the quantities were paid for by him in the ordinary way or

* The accusation here referred to was, that if our ancient churches were now in the possession of the Catholic Church they would meet with even more ruthless destruction than they have met with during the last fifty years at the hands of the Protestant clergy and architects—that a large proportion of the Catholic clergy in England at the present time would, for certain reasons not necessary to explain, be less likely to love and reverence our ancient buildings as historical monuments of past ages than the majority of the Anglican clergy, and be even more "dead to the claims of poetry and history in the highest sense of the words."

paid by the employer direct. Errors in quantities are very unusual, and any small matter is generally arranged in settling up the accounts. I would not advise "A Builder" to proceed against a surveyor unless he could show a very good case.—SURVEYOR.

[5133.]—**Rolled and Built Girders.**—The formula is the same for rolled and built-up girders, but the constant varies between 6 for plate, 6.5 for box-girders, and 7 for rolled girders. "A Young Surveyor" should study the subject in any of the many books treating of it.—H. L.

[5134.]—**Charge for Taking out Quantities.**—"A Young Surveyor" must be very young indeed if he does not know something about the usual professional charges. Surely he must have seen bills of quantities in the office in which he learnt his business. The charge varies from 1½ per cent. for large and simple work, to 2½ per cent. on more elaborate. If a small house—say, under £1,000, 2½ per cent. might be charged. It is difficult to give an opinion without seeing the drawings. One word of advice to a beginner. Do not hand over the draft for another to get lithographed, but carefully examine the lithographed copies yourself.—H. L.

CHIPS.

Mr. Joseph Hamblet, of the Piercy Blue Brick, Tile, and Pipe Works, West Bromwich, Staffordshire, has just been favoured with a large order for blue bricks for the Great Eastern Railway Company, Liverpool-street Station.

A great gathering will take place at Chesterfield on the 17th of next month, when the Marquis of Hartington will lay the foundation stone of a hall to be erected in that town to the memory of George Stephenson. The hall, which is from the designs of Messrs. Smith and Woodhouse, of Manchester, will cost about £12,000. It will be used for purposes of higher education.

A stained-glass window has just been erected in the south aisle of the parish church, Chagford. The subject is Christ blessing little children. The artist is Mr. W. H. O'Connor.

An Exhibition of Fine Art is to be opened on the 16th of October, at Bideford, in connection with the local school of art.

A general meeting of the St. Albans Architectural and Archaeological Society will be held in the Court House, St. Albans, on Tuesday, October 11th, at three p.m., when the Earl of Verulam, president of the society, has consented to preside. A second meeting will be held at eight p.m. on the same day. Papers will be read at both meetings.

Cheltenham Town Council are about to expend £20,000 on street improvements.

The nave of Exeter Cathedral is to be reopened early in October after restoration from Sir Gilbert Scott's designs and plans.

At Tullamore Sessions, on Friday, William Ives Smith was committed for trial on a charge of having embezzled money and falsified account sheets belonging to his employer, Alfred Peter Sharpe, building contractor.

The Bridgewater rural sanitary authority have accepted plans for the drainage of Cossington, prepared by their surveyor, Mr. Down. They are to be carried out at once at a probable cost of £300.

A "rest" is being built at Porthcawl, near Bridgend, from plans by Mr. John Prichard, architect.

A gridiron dock is being constructed beside the new ballast wharf at Portmadoc, by Messrs. Lewis and Davies.

The foundation-stone of a new church in connection with the Establishment was laid at Sinclairtown, near Kirkcaldy, on Saturday. The new church is to be in the Old English style. Mr. Anderson, Dundee, is the architect.

Our Office Table.

AN exhibition of Industrial Art has just been held at Ghent. Among the objects connected with construction some inscriptions and ornaments in relief were shown by F. de Smet, Laacken. No indication is given of the method by which the letters are produced, but the ground is sunk about $\frac{1}{32}$ of an inch, so that the presumption is a process is like the sand-blast, or eating-in by acid, is employed. Some double doors, both for a *porte-cochère* and also for a saloon, are shown by Brunneau Frères, Ghent, and some balustrades, turned in oak by J. B. Dogny, Brussels. Many examples of ornamental wrought iron work, executed entirely by hand, were exhibited, amongst them a balcony in the style of the Flemish Renaissance, ornamented with leaves and flowers. The first prize in the competition was carried off by M. Wanters-Koeck, of Brussels, for an artistic grille, three metres square, with roses each of forty-four leaves, lilies, and ferns—a complicated piece of work executed with the hammer alone. There were several panels, painted to represent various woods and marbles, by P. A. Cluytens-Muls, the Institut des Beaux Arts, Mechlin, and others. The first prize for the design and execution of stove and chimney-piece combined, was awarded to M. Verhengen, of Ghent, and the second to M. de Lorge, of the same town. The prizes for the design of the decoration of a vestibule, with the execution of the principal details, were not awarded; but the first and second prizes for the design of a floor for the same, the cost price which was not to exceed 8 francs per square metre (6s. 6d. a square yard), were awarded respectively to M. Desmet, of Ghent, and M. Delvigne, of Liege. The first prize for a double door for a dining-room, executed in natural wood for subsequent painting, polishing, or varnishing, was granted to M. Spilthoorn, of Ghent, but the second was not awarded.

MR. E. B. ELLICE CLARK, C.E., as borough surveyor of Hove, near Brighton, has recently furnished a report to the council as to the lighting of the district, which will give many suggestions to other local bodies than the one to which it is addressed. He is of opinion that a considerable saving in cost can be effected without prejudicially affecting proper and sufficient lighting. The lamps are at shorter intervals than usual, are unequally distributed, and the gas is burnt a greater number of hours than in 30 other towns from which Mr. Ellice Clark has obtained returns. He recommends that the number of hours the lamps are burning should be reduced from 4020° 10' to 3776° 44', and that the consumption should be regulated at four cubic feet per hour for each lamp; the effect of this will be a reduction in consumption equal to about 7s. per lamp. The regulators should be regularly tested at the rate of 8 per cent. each month, and the meters, which are on the old dry system, should be tested by an inspector under the Sales of Gas Act at least once in each year, and if then are found to work incorrectly, wet meters, one to every 12 lamps, should be sub-

stituted. Into the question of reflectors the report goes at considerable length, it being shown that in nearly every kind the reflecting surface soon becomes blackened. Parabolic reflectors, back to back, answer best, but as two flames are needed in each lamp, are too expensive for adoption. He considers Skelton's catoptric reflector the only successful attempt to utilise the light now wasted. It is formed on the principle of reflecting the rays of light above the flame by placing strips of silvered glass at such angles as to disperse the light over the darker intervals between the lamps. Mr. Clark adds that at Ramsgate these became useless after a few months from the condensation of water and consequent peeling off and blurring of the silver, but that in some new patterns air is admitted by two holes at the bottom of the frame, and if they are made sufficiently large, will, no doubt, prevent condensation, the only point against this being that dust may be admitted which will obscure the silver. The amount of saving is estimated by Mr. Skelton at 50 per cent., but by Mr. Clark at 4 per cent., after deducting additional cost originally and for repairs, and he suggests that a trial of them be made on the Shoreham road and in Brunswick-terrace. In closing, it is urged that the old-fashioned ladder and hand-lantern mode of lighting be given up in favour of the more expeditious and less laborious pole-torch system, and that the town be divided into two districts, for the purpose of ascertaining the consumption in the east by average meter indication, and in the west by positive meter indication.

THE ninth course of forty lectures on the "Historical Development of Art," with general reference to Architecture, Sculpture, Painting, and the principles of Æsthetics, by Dr. G. G. Zerffi, F. R. Hist. S., will be commenced on Tuesday, October 9th, at eight o'clock, in the Lecture Theatre of the Science and Art Department, South Kensington. Students in training and national scholars are admitted free, whilst the public may attend on payment of nominal fees. The lectures will be richly illustrated by photographs, diagrams, maps, plans, and sketches, and are of general interest, directed more to a correct appreciation of the History of Art than to the technicalities of ornamentation. The syllabus issued by the Department is comprehensive, and the lectures promise to treat in sharp outlines the gradual development of Art from the period of savage down to that of our own times.

THE Congress of the Sanitary Institute at Leamington, will be opened on October 3rd, by Dr. Richardson, F.R.S. The Exhibition in connection with the Congress will be opened on the same day by the Worshipful, the Mayor of Leamington, when Councillor Lawson Tait, F.R.C.S., will give an account of the work of the Interception Sub-committee of the Birmingham Corporation, illustrated by working models of plan. The chairman and medical officer of the health committee, Manchester, and a large number of representatives of boroughs and local boards have sent in their names as intending to be present and to take part in the Congress.

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

THE BUILDING NEWS.

LONDON, FRIDAY, OCT. 5, 1877.

NEW BUILDINGS IN THE CITY.

HOLBORN is destined to become the finest and most architectural of the main arteries of the metropolis. Since the completion of the Viaduct, and the clearance of old buildings whose associations and picturesque squalor were their chief recommendations, frontages of palatial magnitude, if not architectural magnificence, have been erected. The new Holborn Viaduct Station and Railway Hotel, illustrated by us recently (see page 594, Vol. XXXI.), is, perhaps, the chief structure in size and architectural pretensions, and if it is wanting in some of the characteristics of interesting detail, we are compelled to admire the grand effect of its lengthened façade, and the majestic order of its pilasters, which dwarf by their comparative magnitude the diminutive and almost puny-like features of the adjoining buildings. Nothing can present a more remarkable contrast than the uninterrupted vertical lines of the fenestration of this great façade, as seen in perspective against the adjacent building on its eastern side, whose treatment is as bewilderingly confused and cut up as it is possible to be. Any one studying the two buildings may take a good lesson of the value of largeness and subordination of parts, and the littleness and distraction created by a multiplicity and diversity of features, devoid of a leading principle of design. But further westwards we note a new building in progress. It is at the corner of Brooke-street, presenting extensive frontages towards that street and Holborn. It is the Imperial Life Assurance Offices, from the design of Mr. Alfred Waterhouse. As far as it has gone, we notice a ground story of red terra-cotta, with three light windows, with pointed enriched arches of the same material. Red granite coupled shafts, with moulded terra-cotta caps, divide the windows, and the arch-mouldings are enriched by a cast ornament, while between the arches the courses of terra-cotta are relieved by a series of stamped patterns, at intervals. We observe that the terra-cotta is a thin facing in slabs varying from three to four courses of bricks in height, and presenting the appearance of a rich red sandstone. On the Brooke-street side we find a variation in the windows; some of these have square heads, formed by joggled bricks of the same material, with the angles simply moulded. The point we particularly notice is that the ornamentation is confined to flat or simple under-cut patterns of a conventional character, and free from naturalesque or very elaborate treatment. Messrs. Holland and Hannen are the contractors. Nearly opposite the Viaduct Hotel another building is being erected, in which red brick and stone are the materials employed. This building forms the superstructure over the the Snow-hill Station, and is intended, we believe, for shops and offices. The design, as far as we can yet discern the intention, will be of Queen Anne character, rather freely treated. Mr. Witherington, of Leadenhall-street, is the architect. At the end of the Poultry, nearly opposite the Mansion House, Mr. J. J. Cole, of Finsbury-circus, is engaged in the erection of extensive offices for the Gresham Life Assurance Company, St. Mildred's House. The structure is at present quite obscured by scaffolding, but from its position and proximity to many of the greatest buildings of this busy centre of City life, we may reasonably anticipate a work of some architectural pretension

Perhaps the greatest and most original work recently completed in the City is the City Liberal Club, by Mr. G. E. Grayson, of Liverpool. We scarcely remember seeing a building that has pleased us more by the freshness of its architecture. Most of our City buildings have been suffering from a stereotyped poverty, notwithstanding the importation of Queen Anne ideas. There is an *empressement* and *verve* in Mr. Grayson's new front that is refreshing. The three flat curves of the upper bays take off the monotonous effect of a straight façade, and give variety in the perspective. These bays do not meet each other, but a bold and projecting pier well marks the separation between them, and the bays spring from a square recess, without forming an angle. The three stories are well varied; the ground story has a Grecian solidity. The three-light windows, which are large, are of red moulded granite, set within the stone-work, and the door-way has similarly and boldly moulded antepagmentæ. A decided Greek feeling is displayed in the ornament which enriches the cymatium and other members, all of the flat Grecian sort. The anthemion and other Greek enrichments are freely used, and the pilasters between the bays are relieved on the face with lines of incised patterns in a similar spirit. Above the ground story the three bays, with their triple windows divided by shafts of red granite, with carved capitals, form a pleasing range of fenestration, the square form of the intervening pilasters contrasting happily with the curved lines of the entablature. Above, the third story has its three-light windows broken back in rectangular lines, the centre light of each standing out upon the lower carved bays, and following their outline. This variation of the square upon the circular lines is highly agreeable, and the mouldings and horizontal members are all of slight projection and flatly treated. The interior ceilings display a correct feeling for plaster, the surfaces being divided by moulded ribs of small section into panels of rectilinear forms. Altogether, the composition is very refined; the front reminds us of that free Greek feeling, without its literalness, which some of the works of the French revivalists and of Klenze and Schinkel afford, and a Classical elegance is stamped upon it, showing how readily even Greek forms may be applied to modern buildings of a certain kind. To the late Mr. Thompson, of Glasgow, we are perhaps indebted for indicating the mode of adapting the principle upon which the Greeks worked to modern purposes; and it appears to us Mr. Grayson has in some degree been working in the same spirit. The City Club is being built by Messrs. Trollope and Son.

In Cannon-street, near Bow-lane, and just opposite the Mansion-house Station of District Railway, some warehouses have been erected, the stone facade of which is designed in a Palladian style, having superposed orders of pilasters in four stories over shops. The columnar ordinances are effective, and the pediments pleasing, though we think the carver has overdone them, and the heavy festoons in the cornice have not added to the architectural dignity. Messrs. Taylor and Loeke, of Basinghall-street, are the architects. Close to it, Griffith and Co., the well-known safe manufacturers, are building new premises, the frontage of which will be narrow. We observe red granite is being used in the piers of the front, and the opportunity is a good one. By the way, we observe St. Mary's, Aldermary, has been entirely recased in its old Gothic dress, the detail of which appears to have been closely followed. We must not omit to notice some new shops and offices for Messrs. Tangye, Bros., and Co., on the site of Wren's interesting tower of St. Antholin's, ruthlessly taken down

lately. We cannot say the public have benefited by the change. There is a flat cast look about the windows and arches. The latter are stilted, and shafts adorn the openings. Mr. Ebenezer Saunders, we believe, of Finsbury-circus, is the architect. Returning to Cheapside we find that in Bread-street the old church of All Hallows, in which John Milton was baptised, has been completely demolished, its square tower only remaining. This church, relic of Wren's time, however, is already dismantled; its fine bell we saw had been lowered to the ground, and in a few days the site of All Hallows will know it no more. We have lately illustrated this interesting example of seventeenth-century Classic (see page 100); its pinnacled-carved festoons below the belfry, three-light windows, and circular lights are all characteristic details, and, we hope, may be spared destruction. In Bishopsgate-street-within, the Royal Bank of Scotland are erecting extensive premises, from the designs of Mr. Chatfield Clark, the elevation of which we may probably give. A bold Ionic arcade, surmounted by one order, and a bold cornice are the main features. We have already commented upon the design when it was exhibited at the Royal Academy, and we have no doubt that it will be a conspicuous structure.

Messrs. Maw, Son, and Thompson's new premises close to St. Martin's-le Grand is a double-gabled structure with Elizabethan features. The front is mainly composed of mullioned windows in each bay of the front, and the two bays are divided by red-brick piers, which are prominent. The carved circular tympana over the first-floor windows are cleverly introduced, and give freshness to an otherwise ordinary treatment. For the display of china the open fenestration adopted is well suited, though the horizontal members are particularly flat, and unnecessarily deep. The ornamental gables, their terminals, and the red brick and stonework form, on the whole, a pleasing ensemble. We cannot omit to note in this brief sketch of new buildings, a new picturesque building in Devonshire-street, Bishopsgate-street, known as "Ye Bull," with the sign made a feature in the front (illustrated by us, page 618). The structure is a very substantial and pleasing attempt at Queen Anne, though without its grotesque elements.

ENGLISH AND FOREIGN WORKMEN AND THEIR WORK.

A VERY noteworthy paper, printed in full on the outer sheet of the *Times*, by Mr. Thomas Brassey, on "Trades' Unions," was a paper, as we think, well deserving the attention of all working-men readers of this journal, not for its immediate interest alone, though that is not a little important, but for its lasting and ever-abiding interest. But very few workmen, at least, are likely to have read from first to last this important paper, for it is full of dry statistics, and of difficult and unexciting details. We cannot, therefore, but think, considering the real importance of the subject-matter of the paper, that some account of it, and a comment or two here and there, may be of interest, and most certainly it ought to be so. The subject of "strikes" alone is one which ought to engage the earnest attention of our working men, for, generally speaking, they would seem to come off but poorly, even after what may be termed a successful one, judging from what we hear of the results finally, and when all returns to its original quietness, to say nought of the then position of the men themselves, and what they have had to bear with while the strike lasted. And even now—for these necessities and differences never rest, and are, indeed, always present—the competition of

German workmen (masons) on a public building must needs exercise no small influence. It is in an artistic point of view that we here would look at the matter, for were but our workmen English artists as well as workmen, how difficult would it be to fill their places?

We will first give a few of Mr. Brassey's statistics and figures, both somewhat hard and dry, but very convincing, and impossible of refutation. Every head, he says, of our population produces and manufactures to the value of £6 3s. 2d., while France exports to the value of but £2 18s. 8d., and Italy only to that of £1 4s. 8d.—a not little remarkable statement when we come to think of it. Mr. Leoni Levi, from whom Mr. Brassey gets these interesting figures, explains that what gives so open a market to British merchandise all the world over is its universal adaptation to the wants of the populations of every climate. "Luxuries" are, he says, useless to the great mass of mankind, but "calico, iron, and hardwares" are necessities, even to the most uncivilised of peoples. And it is in such that we mainly work and deal. The French, it would seem, go a little further than the bare material, and "taste" enters more or less into the account, and so it must do with the Italians. Hence, to some extent, at least, the difference. France has but one-half, speaking roughly—and it is useful to remember this—the "producing," or trading, or exporting power of England, while Italy has but about one-fifth this power of supplying the rest of the world with what are called manufactured goods and simply useful things. But surely it will not be said that the "taste" of the French workman, or the classic "feeling" of the Italian, hinders their work, or destroys its value in the world's market? There must needs be a something else to account for it all other than those causes which Mr. Brassey has given.

It is useful to note here, by way of making the matter as clear as may be, that, as Mr. Brassey tells us, in those cases wherein the raw material is the largest factor in the total cost—as, for example, in the timber in a wooden ship—it may be readily understood that we, who have no primeval forests to draw upon for timber, should have been unable to compete with the United States, or Canada, or New England, who have them. But here there is another element in the account which is not a little startling, and well worth the notice of the English workman. It is that men with much higher wages, and while using materials as costly as they are here, and with this extra cost of production it is actually, as Mr. Brassey told his audience, neutralised by "superior organisation, by superior industry in the worker, and by the substitution of mechanical for manual labour." A very remarkable statement this, and might well afford a text for almost any amount of talk by those who, like Mr. Gladstone and Mr. Ruskin, profess to guide public opinion, and to explain all puzzling things. Mr. Brassey, in his able paper, gives no details, so that we do not know how it is that the Englishman of America is able to beat the Englishman of old England so thoroughly as here indicated. Is it indeed the impetus which high wages produces? for we have in this paper a comparative statement of the wages of the two sets of workmen, or mechanics. In the Eastern States, and in the large cities of America generally, it has been calculated that the wages of mechanics are not less than 100 per cent. higher than in England. Thus, in the principal trades in the United States the following table of daily wages is the result of many and careful inquiries in 1874:—

	United States.			North of England.	
	Highest.	Lowest.	Average.	Good men.	
	s. d.	s. d.	s. d.	s. d.	s. d.
Carpenters ...	12 3	5 7	9 0	5 0	5 0
Smiths ...	13 2	6 2	9 5	6 0	6 0
Bricklayers ...	18 10	7 6	12 3	5 6	5 6
Mechanists ...	11 3	7 6	8 3	5 10	5 10
Enginemen ...	—	—	6 6	5 6	5 6

In America, as in England, the "building trades" are, it is affirmed, disproportionately paid, and the reason, it is urged, is the same in both cases. The demand is essentially local, and wages are given which could not be sustained if the balance of supply and demand were distributed over a wider area. But we may well ask, will this altogether explain it? We think not, for Mr. Brassey goes on to say that he does not shrink from telling the representatives of English labour that any rules and regulations whereby the native vigour of British workmen is "restrained" must in the end prove fatal in their consequences, and that, consequent on the influence of foreign competition, the American workmen are conscious of the necessity of working "hard and well," in order to keep up the high wages which they are now earning. No doubt of it, but who can possibly go into an English workshop or factory of any kind without noting the activity and untiring energy of work displayed in it? Surely there must be a something else than want of "hard work" in the account.

And now we would call but a moment's attention to a somewhat startling fact in this difficult inquiry, which Mr. Brassey has so opportunely offered for the consideration of the Social Science Congress. It may interest a reader here and there. We never had the happiness, or privilege, of a personal talk with the late Mr. Cobden, to whom the world, and certainly Englishmen, owe so much; but we had a short correspondence with him on a somewhat difficult problem in modern political economy. It was this. We asked the great free-trader whether he thought it an unmixed advantage for such a small island as this to employ so many thousands and thousands of its population in "manufacturing"—even with the aid of the most effective machinery—goods, especially calicoes and printed stuffs, for the whole of the continent of India? We cited India merely for example. And whether even the "miserable Hindoo," with but a hand-loom to work with, must not lose a something by it, looking to the fact of our workmen, or manufacturers, or draughtsmen, or whoever is responsible, importing the very pattern, as worked by the native weaver, from which to impress a pattern at all on the stuff he is about to export, and without the knowledge of the native workman of what such pattern means and is, and which is so special to himself and to the country he is a native of? We sent him at the same time a piece of printed calico, a professed copy of the Hindoo work, and a bit of the genuine stuff as well. Mr. Cobden's reply was as might have been expected. He said that he did consider it an infinite advantage to the world at large everywhere that any one country which could do it should make and supply to all others what they could not do as cheaply and effectively for themselves, but that he had never considered the subject at all in an artistic point of view. But most surely this must be, and certainly ought to be, an important, not to say a vital, element in such work as involves form; and we might well ask whether any considerations on it are at all complete without taking "art" into the account. It is all but a new subject, for is it not a curious fact, when we come to think of it, that it should be indeed necessary for us, with all our infinite means and high civilisation, to go to such a country as India at all for a pattern, or a design, for

a printed cotton stuff, and that not for India alone, but for our own use and eye? It is not a little curious to look at the patterns and designs on the cottons and silks as seen in the shop windows, and to note where, in some cases, they indeed do come from. The Classic Greek no one needs to be more than reminded of—from the ornamentation to be found on the vases of Etruria to the scrolls cut in the marble of the Athenian temples. Old Egypt has not been forgotten, as all know, and we shall not be surprised to see the hieroglyphics on the obelisk now on its way here copied on a necktie or a handkerchief. The flowers on the stately robes of the King of Assyria, and the ornaments from the walls of his palace, were liberally drawn upon at one time for patterns and ideas in our schools of design, and thus became familiar to the public in the shop windows. Of China who needs to be informed, for what would or could have been done without the willow pattern? We might go further, and all round the world, and back to all dates in the world's history for the origin of the art we see all about us.

Most truly, indeed, may it be said that there is in this "labour question" a good deal yet to account for and to make plainer than it now is; and the artistic and designing phases of it, and the true vocation of the workman himself in it, are not the least puzzling of its many difficulties. But what a very singular fact it is that in these modern and advanced days—in this country at least there cannot be said to exist in reality any truly and individualised modern art at all; nothing, indeed, that can be considered for a moment as peculiar to the generation itself—unless, indeed, we may call modern engineering art a fine art. The modern English workman of to-day must surely be as good a man as he of the thirteenth, or fourteenth, or fifteenth centuries; and why, then, should not the work done in it be as good and as original and individualised as theirs? We can but hope that Mr. Brassey will glance at the matter artistically, and try to solve some of these complicated and very difficult problems. What, we may ask in conclusion, does he think of the fact of our sending all the way to Germany for masons and stone-carvers to work on an English Gothic building touching Temple Bar? This would have startled even Mr. Cobden had he been asked about it. But it is in these things, which happen every now and then so strangely and unexpectedly, that the power of any theory to explain phenomena is truly to be tested.

A new Wesleyan chapel is being erected at Bladon, Oxfordshire, from plans by Mr. Ranger, of Pinsbury-pavement, and will be opened on Tuesday, the 30th Oct. The cost will be about £500.

The quickest example of railroad-building on record is said to have taken place in the construction of the Philadelphia and Atlantic City (New Jersey) line. The distance is 55 miles, the gauge 3½ft. Among the excavations there is one of 40,000 cubic yards, among the embankments one of 1,800ft. long, requiring 23,000 cubic yards of earth, which was built in a week. Of bridges and culverts there are more than 100. The whole road was constructed in sixty-seven days, and in time for a large summer travel.

With a view to promote intercourse amongst the artists of Liverpool, a club is in formation to consist of painters in oil and water colours, sculptors and architects, and to include, as far as possible, all the artists of this town and neighbourhood. One of the objects of the club will be a conversazione, immediately before the exhibitions with which the Liverpool artists are most concerned, for the exhibition for one evening of works which members intend to send.

The death is announced of Mr. William Gue, an alderman for Andover, and one of the largest builders in North Hampshire. Mr. Gue was a generous supporter of the local school of art and other educational institutions, and had energetically promoted public improvements in the town of Andover.

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XIV.

A Village School.

THIS subject has elicited a large number of designs from our correspondents. The instructions proposed a mixed school to accommodate 100 children, with a master's house attached, the cost not to exceed £1,000. In looking over the designs, which we have arranged in three classes, we meet with many displaying ingenuity and artistic skill, though economy has not been studied with that care we should have liked to have seen. The design which appears to us to meet the requirements in the simplest and most efficient manner is "B." in a circle. The author shows a mixed school 36ft. × 18ft., with an infants' room 16ft. × 15ft., opening by folding doors into it, and placed as a projection. The girls' and infants' entrance forms a porch with space for hats and cloaks, placed at the angle between school and class-rooms, while the boys' entrance is at the other end, and forms a through passage 7ft. wide between the school and master's house. The desks, arranged in two groups for 18 each, with a gallery for 36 in a slight recess, are well placed on one side, the entrances not interfering; the windows are mainly behind the groups of desks; there is also an end window, and the class-room has a gallery lighted at both sides. Working out the area we find a superficial of over 8ft. provided for each child. The stoves of school-room and class-room are back to back, and the folding doors between enable both rooms to be brought into use. The master's house adjoins the end of school, with its entrance at extreme side; a parlour 15ft. × 12ft., kitchen 10ft. 6in. × 10ft. 6in., scullery and pantry, and three bedrooms being provided. Externally the treatment is simple but effective; the windows are placed high, and the gables are timbered. The section shows a double-collar roof, ceiled above an upper collar. We do not like the curve-braced principals. "B." in two circles, comes next in merit. The mixed school is placed crosswise, between the house and class-room, and is lighted chiefly at the ends. The school-room is about 37ft. × 18ft., and has the seats well massed against a blank wall, in three groups, for 76 children, while one end of it is canted, and forms a bay window, which is made a pleasing external feature. The class-room (for 24) is of good size, and well lighted, and the stoves are placed together. The entrances for boys and girls are placed on either side of class-room, and are provided with lavatories and cloak-rooms. The house is compact, with parlour, kitchen, scullery, and two bedrooms; but we think the entrance lobby expensive; the skewed lobby between parlour and scullery is wasteful, and there is a crowded look about the scullery. This design is by far the most artistic work we have received, and the drawings are clear and feelingly executed; but the canted work of gable, the bay end of house, and the timbering and roofing would be expensive, and the estimate of 6d. per cube foot (26,984ft.) allowed by the author inadequate; his total is £924. The windows are casements pivoted in the upper part. We object to the heavy timbering of principals. Why the tie-beam, and collar, and such heavy-curved brackets? It is positively wasteful. "Crowquill" shows a school-room 41ft. × 18ft., to hold 64 boys and girls, with an infant school or class-room, 18ft. square, projecting at one end, allowing for 36 at 9ft. superficial to each child. There are four groups of desks in school, the windows being chiefly behind the children. We rather object to the girls' and boys' entrances being at the same end, and the cloak and lavatory-rooms would have been better provided in the respective lobbies. The house is cramped in the entrance, and the breaks in the gable of parlour expensive. The plan of school, however, is less expensive than the last. A Queen Anne style has been adopted, and the gables are pleasing features, though we do not like the circular tops to the school windows, which are rather low. Cubic contents are worked out at 40,676ft. at 6d. = £1,000—a figure rather low for the style chosen, in which there is a great deal of moulded brickwork. "Ilampton" has not been fortunate in his planning. The class-room is,

for a not very apparent reason, placed end on to the school, the dimensions of the latter being 38ft. × 18ft., and the former 18ft. × 16ft. The boys' and girls' lobbies are at either end, and the house is quite detached from school, except by a passage leading from the girls' lobby. The author has four large windows behind the four groups of desks, and four smaller windows in front—an excess of light that is not desirable. Two stoves are provided—not too many for a school-room with so much glass. The house is tolerably planned, and the treatment is of brick, in a sensible style, and village-like, though the grouping is not very successful. The estimate is £975 14s., the school being worked out 4½d., and the house at 5½d., prices much too low. "Sketches by Boz" fail from providing only one entrance, which is made a lean-to, abutting against a projecting class-room. The school-room has desk accommodation for 72 children, and is 39ft. 6in. × 18ft., divided into four groups. The lighting is entirely from the gable windows, and the class-room is lighted from an end window, but on the wrong side. Iron casements are shown. On one side of the school is the master's house, made to occupy with its outbuildings the whole length of school; the planning is necessarily scattered, and uneconomical for the household of a schoolmaster. Cube contents equal 39,685ft. at 6d. = £992. In the elevations there is too much diversity of forms. Why put a square-headed window to the cloak-room, and a pointed triplet to the class-room? "A." in a circle, has arranged his buildings in a line—a plan that is not the most desirable in our opinion. The school, 35ft. × 18ft., shows four groups of desks, with a curtain dividing the boys from girls in the centre; the windows are in front facing the desks—a plan not recommended, as the light is admitted directly into the eyes of the pupils. The entrances are separated, with porch and lavatory behind, leading from which are the respective yards. The class-room is also lighted on the wrong side. A warm air-chamber with air-flues is provided behind the fireplace of school-room. The house is compact. In the elevations, which are rather commonplace, we may observe that it would have been better to have framed the doors and fanlights in one, to have omitted the second arch over each of the windows in class-room and master's house, and to have kept the gables plain. The cubing amounts to 47,040ft., and is worked out at 4½d. Similar in plan is "Triangle in Circle," the girls' entrance being placed behind class-room. The school is 45ft. × 20ft., lighted on both sides, the boys' and girls' yards being behind. The master's house is very like that of the last described, though the passage to kitchen is undesirable. The section shows a weak collar and brace-roof, with foul-air trunk in the ceiled space above collar. Of the elevations we cannot say much—they present a style of Gothic of a mild type, at least free from whimsicalities, though we do not approve of the springing pieces at the eaves. Cubical contents, 24,000ft. at 5d. equal £1,000. In a second order of merit we place "Toxophilite," a design in a more highly-flavoured style, but too domestic in appearance. The school-room, 27ft. × 17ft. 6in., is too small, and there is only one lobby entrance. The class-room is deficient in size. The small lobby for boys and girls would be a fruitful cause of conflicts between the two sexes and the rougher boys and infants. We cannot understand the drop-down of the master's house; why should it be placed on a lower level ground? "Discipulus" is not without merit in the plan. The school and class-room are at right angles, and open into each other, a curtain being placed to divide the rooms; the windows and desks are well placed, and the entrances are separated. On one side of girls' entrance is a small infants' school. We cannot say much for the master's house, which is awkward in the arrangement of entrance passage, and uneconomical in disposition. The elevation is in a species of Gothic, the house half-timbered, suitable, but heavy in detail. The school is put at £500, at £5 a child, the house being worked out at £133 15s., at 5d. per foot. "Nil Desperandum" shows a school-room, 43ft. 6in. × 25ft., with three groups of desks, with curtain between, the class-room

opening from it at the end, and divided by curtain. We find the general arrangements fairly worked out, but the entrances, with lavatories, are rather awkward. The windows are well placed, and pivot-hung at top, and the walls are 16in. hollow. The master's house is compact. The school is cubed out at 5d. = £737, and the house at 5d., £283 6s. 8d.; total, £1,020. Externally the author proposes to execute the work in white brick, with red-brick dressings, not a pleasing mixture; the treatment of gables is too fanciful. The drawings are, if anything, too neatly lined, and the plan should have been blacked or etched in; it is confusing to look at. We commend, however, the details and dimensions shown and described. The design of "Sirius" shows a school-room, only 30ft. × 18ft., with class-rooms, 14ft. × 13ft., at the extreme corners, but the benches are not shown, and the boys' and girls' entrances sacrifice the space of the school. We prefer the front elevation to the plan. "Unicorn" has the school and class-room planned so that the latter and the two side entrances form a triple arrangement of gables, which abut against the school-room. No desks are shown, and the house does not combine well with the school building. The cubing is worked out as 35,320ft. at 7d. = £956 11s. 8d. The sketch of bell-cote, forming a notch in the class-room gable, is far-fetched, and wanting in simplicity. "Capio Lumen" is the motto of a design in which the author shows a school-room 41ft. 6in. × 22ft., with only one entrance, and the desks arranged on the dual system, with a central and two narrower gangways, but no room for forming classes. There is no class-room, and the arrangement of master's house is faulty. Externally, the west elevation is not objectionable, but the pointed three-lights at end are out of keeping. The cubing is put at 7½d. In another design—"Senlac"—the fault is that the lobbies of entrance are placed together, and the infants' school or class-room is placed at the end without any apparent advantage. In both the latter designs there is a doorway from the master's house into the schoolroom. The exterior design of "Senlac" is a mixture of Gothic and Queen Anne, and the gable treatment is curious and excessively heavy. We cannot understand the singular diversity in the school dormers, nor their object. The heavy tie-beam queen truss is also unnecessary for a village school. "Student" displays some good points in the planning; the school and class-room are well disposed, and the area given to each child is 10ft., but they are over-lighted and the elevations are expensively treated. The external buttresses are unnecessary and objectionable features. In a third class we place in something like their order of merit, "En Avant," not economical in the master's house, and school ill-lighted; "Slingsby," too scattered in plan and expensive in treatment; "Felix" (economical, and with a little more care might have been better; author plans the infants a separate entrance); "Addisco," imperfect; "Trefoil," extravagant, and displaying vulgarity of style; "Discere Volo," desks imperfectly arranged; Finem Respice," desks on the Lancastrian plan, porches small, and elevations coarse; "Tuscan," wanting in study; "Egbert," plan not without merit, but elevations displaying ignorance of detail.

Design for Staircase.

In this competition, the conditions of which were simple, "B." in circle, has sent what appears to be the most judicious design for a wooden staircase. The detail may be denominated Old English or Stuart. The stairs are in three flights, with square carved newels, the balustrade being of turned pillars, supporting pierced tracery of step-like form below the hand-rail. The details of string or notch-board, handrail, and pendants are in keeping and thoroughly domestic. Second in merit we place "Another for Hector," a very sensible though plainer treatment in three flights, with two quarter spaces, the balusters being alternately turned and square, the lower part above string being filled in with perforated boarding. The detail of newels, balusters, &c., is correct, though the panelling under stairs and the door to cupboard are in questionable harmony. "Fleur-de-lis" sends a highly florid design, with a centre and two side

flights—a far too crowded arrangement for a hall of 15ft. 6in. x 14ft. 8in. The drawing is cleverly done, but the design is too like one we have recently given. "St. Lucy" sends a sketch in a Jacobean taste—a trifle too fresh for English taste, but with a thorough wooden, almost Japanese, feeling about the detail. "Quatrefoil," in circle, shows the stairs in two flights. The newel and details have an unmeaning character, unsuited for a rectory staircase. "Torpedo," with a little more study of detail and care in drawing, might have been better. "Tempus Fugit" is an extraordinary attempt. We cannot see the motive for the three first steps being placed angularly in the corner. The peculiarity of the arcading below stairs, and the singular treatment of the string-board, is unmeaningly strange, and the acorn-headed newels and mouldings are indicative of a want of purpose. "L. S. D." is more common-sense, but the detail is of a poor order.

An Escritoire.

For this subject we have received only two designs. The first in merit is that of "Début," a cleverly-designed piece of furniture, of a cottage piano type, with flap working on brass segments, which opens and forms a writing-desk, with pigeon-holes, shelves below, and cupboard above. The wood is ground in green, thin enough to show the grain, the side turned and carved pillars and panels are gilt with bright colour decorations. There is an elegance in the details. The next, with motto "Bee," in circle, shows an escritoire in pitch pine, the ground to be the natural wood, the mouldings picked out in colour and gold, and the whole varnished. A folding flap, with brass suspenders, enclosing a nest of drawers, cupboard below, and shelves above the desk comprise the main features of a piece of furniture resembling the old-fashioned writing-desk. The upper portion, containing the shelves, is enclosed by sliding doors with stained-glass panels set in silvered lead; but the ornament is rather mixed in character.

LIST OF SUBJECTS.—XVI.

A. A street front, four stories high, 18ft. frontage, including a mezzanine. The ground floor to be occupied as a shop suitable for a wine merchant's business. A private entrance to be provided. Material, brick and terra cotta. Plan of frontage wall of each floor, section and details. Scale $\frac{1}{4}$ in., and details $\frac{1}{2}$ full size.

B. A lych gate to a country church-yard. Material, oak, having a rest for coffins. Plan, section, and elevation, $\frac{1}{2}$ in. scale; details $\frac{1}{2}$ full size.

C. Two designs for bedroom wall paper, scale $\frac{1}{2}$ full size.

RECEIVED.—Wrapper to hand bearing post-mark, "Dublin," stamped—"Found in w.c. without contents."

DRAWINGS RECEIVED.—Leizlad (too late), Practical (too late), J'espere.

THE NEW COVERED MARKET FOR SOUTHPORT.

TWENTY-FIVE sets of designs have been sent in in response to the invitation of the Corporation of Southport for plans for a new covered market. At the beginning of July the Town Council offered premiums of £100, £50, and £25, for the best, second best, and third best sets of plans respectively. The conditions of the competition provided that the cost of the building should not be above £15,000, and also laid down certain requisites in the new market which the committee thought necessary. In other respects, as to style of architecture, mode of internal arrangement, &c., the competitors were left entirely free to put forward their own ideas. It is stated that six designs have been already selected, and that the final choice of three will shortly be made. The *Southport News* criticises some of the principal designs as follows:—

"In the Market" is a very good specimen of the group that covers the whole area with one large room. The hall in this case is 153ft. square, and is surrounded on three sides with enclosed shops, which have frontages both to the streets and to the interior of the market

hall. The centre of the hall is represented as occupied with flat stalls, arranged in the usual manner. The style of architecture is the Pointed, and a small clock-tower at the corner of Eastbank-street and Upper King-street is a prominent feature in the building as seen from Lord-street. The cost is put down at £15,026. The plans bearing the motto 'Haut et Bon' present a building of an imposing appearance, though the style of architecture is rather heavy. In this instance the several departments of trade are separated from each other by broad avenues 13ft. wide. The cost is estimated at £20,770. In 'Practical's' building, again, we have a massive-looking structure in the free Classic style. In this case, too, shops to the streets are provided. The main entrance in Eastbank-street is a fine feature in the architectural treatment of that front. The cost is put down at £14,970. 'Tenez' presents a very fine external elevation in the Classic style; the internal arrangement provides for enclosed stalls round three sides, with ordinary stalls in the centre; cost, £14,500. The building depicted under the motto 'Victorian' proceeds to greater lengths than any other in dividing the market into departments, as it makes the hall contain no less than five separate markets—butter, eggs, and cheese; retail meat; wholesale meat; retail fish, and wholesale fish. The frontages to Eastbank-street and Upper King-street in this design are rather peculiar, and the one to Eastbank-street especially is of a striking character. It consists of a series of eight arches, each constituting a shop front, and over each pair of arches rises a gable, while over the centre rises a clock-tower. The cost is said to be within the £15,000, exclusive of the statuary. 'Bona Fides' presents a building in the Italian style, and treated rather more elaborately than many of the others. This competitor furnishes an estimate as to the probable rental that would be yielded by his proposed building, the total being £3,760 yearly—a tolerably good return on the £15,000 which he says the building will cost. The peculiar feature of the plans marked 'Hope' is the mode of treatment of the frontage to Eastbank-street. The body of the building is set back 30ft. from the street, but the main entrance is formed of a large semicircular pavilion which comes forward to the street line, while two other entrances, one at each end of the front, are formed in a similar manner, only on a smaller scale. The space between these pavilions seems to be railed off as a sort of area, but it would be questionable whether so much ground could be wasted for such a purpose. This design has the recommendation of cheapness, the total cost being estimated at £12,855 7s. 10d. The author of the designs marked with the motto 'Palmam qui Meruit ferat' has adopted the plan of dividing his interior into four departments—general, butchers, fish, and wholesale. Another feature of this design which will recommend itself to many people is that in the basement provision is made for dining-rooms, with cooking kitchens, &c. The exterior elevation is treated in the modified Classic style, the details being in good proportion but plain, except in the case of the three entrances in the main front to Eastbank-street, which are richly ornamented, and which make that frontage a very effective one. The large entrance from Upper King-street is also a fine feature of the architectural treatment. At the corner of these two frontages is a real octagon, with a small bell turret rising from it. The cost of this design is estimated at £14,853, which, considering the fine appearance of the building as exhibited in the elevation, is certainly moderate as compared with some of the others. The design of 'Regardez Moi' is also a rather pretentious one, so far as regards the main front to Eastbank-street. The chief entrance is elaborately treated, being surmounted by a gable supported by Corinthian pillars, while the rest of the frontage has a neat entablature upheld by pilasters in harmony with the entrance. The author of the design with the motto 'Mark-it' has presented a building in the Palazzo-Italian style, freely treated. The architecture seems well suited for a market building, and it would certainly be a novelty in this part of the country. The one marked 'Début' may have a very commodious interior, but the exterior, as presented in the eleva-

tion, strikes an observer as positively ugly. The author may well say that the limit of cost will not allow of much elaboration of external treatment. Another striking design is that with the motto, 'Rouge et Noir,' which presents a very picturesque building in the Queen Anne style, the numerous gables of different sizes and shapes, for which this style of architecture is known, being well grouped, especially in the principal front to Eastbank-street. At the first glance the picturesque effect produced by this front is somewhat marred by a tower, suspiciously like a factory chimney, with an ornamental top, which rises a considerable height above the roof of the building. It appears, however, that this tower is useful as well as ornamental, as by an ingenious arrangement the architect conducts the smoke from all the fireplaces of the building into this one shaft. The cost of this design is put down at £14,800."

IMPROVEMENT IN MANUFACTURE OF BETON.*

IN the method now employed of making béton or concrete, cement and sand are used without previously preparing the cement. In the Coignet methods sufficient water only is added to make a plastic pulverulent paste. This does not contain sufficient water to form hydrates, unless lime enters largely into the composition, in which case the moisture held by the lime is taken up by the cement during its crystallisation, the lime absorbing its moisture from the air; but lime in a large quantity weakens the béton, from having but a low adhesive power in comparison with cement. Neither is it able to withstand the action of water or fit for underground work, as it does not become hard when kept constantly damp nor does it become hard in the interior of large monoliths when it is removed from the effects caused by the atmosphere. In the other and ordinary methods a larger quantity of water is used, sufficient to make a semi-liquid mass that will flow. This excess of water is forced out of the concrete by the contraction of the cement during its crystallisation, and leaves the stone porous. It also prevents the proper ramming of the béton, and gives rise to the difficulty known as "laitance," hereinafter described. On the other hand, a béton containing too little water becomes friable.

My process is as follows: When, in the construction of large monoliths or structures, largely underground, the checks and efflorescence which usually appear are not a serious objection, sand and cement may be mixed in the proportion of from three to six parts of sand to one of cement. This may be done by means of machinery or by hoes, shovels, and rakes. During this process water is added by means of a hose or watering-pot having a rose jet. The water is added gradually until the sand and cement contains so much that a handful of béton will, if tightly squeezed, allow a little water to exude, but will, when laid down, still retain the impression of the hand. The béton so mixed will have about the consistency of melting snow. It can be compacted in the same way, and pressure will force the moisture out of it. This condition, though difficult to describe, is learned at sight by the workmen, and the correct amount of water is more accurately gauged by trying the béton from time to time in the hand during its mixture (as it varies in different cements), than can be done by any rule of measurement. The béton is then placed in position and rammed, as described below.

The quantity of water thus gauged will be enough to form hydrates, in combination with the components of the cement, leaving no excess to be forced out during crystallisation, and does not prevent the proper ramming of the béton, while there is not sufficient to cause "laitance." But to obtain a perfect result where a finished surface is requisite, and to make a béton free from the deleterious ingredients that are found in all cements, and to insure the use of a proper quantity of water, I proceed as follows: Having obtained the heaviest slow-setting cement, the first step in this process is to separate from it the light

* By JOHN C. GOODRICH, JUN., of New York, in the *Scientific American*.

earthy impurities—the uncombined lime and clay and the soluble salts. This can be done to a considerable extent by a regulated current of air being driven against the cement while falling from a height, and in a proper inclosure; or it can be done by revolving screens, or by means of a centrifugal mill; and I claim these methods to be equivalents of the following. But the method which I prefer, and recommend as much more perfect, is to allow the cement to fall slowly into a box filled and constantly fed by a stream of water, the entrance of which is preferably near the bottom of the box. One side of the box is lower than the others, for the overflow of the water. Where a constant stream of water cannot be had the result may be obtained by agitating the cement with water in a swinging box or other convenient way, pouring off the water and supplying its place with fresh water from time to time. A box may be placed in and on the bottom of the larger box, to collect the cement as it settles. The portion thus preserved consists of the heavy, gritty, and inactive part of the cement, which is without adhesive power, and which acts simply as so much sand. This equals about ten per cent. of the whole mass of cement. Cements containing a larger amount than usual of this gritty portion may, when mixed pure, stand a high test, but will not bear a large admixture of sand. With this gritty part settles the true cement, which we call the "matrix." This is that portion which is capable of crystallisation or hydro-silicatisation called "setting." This portion of the cement is the only one of value, and is about 80 per cent. of it.

The third or lighter portion, which is washed away with the overflowing water, consists of impurities, light earthy matter, uncombined lime and clay, and soluble salts. This portion of the cement is entirely without adhesive power, and, when separated from the other portions of the cement, acts in all respects like the impure and dirty clays. When dry it shrivels and contracts, and when wet expands and becomes slippery. This portion of the cement is the cause of the unsightly checks, and what appear to be cracks, but which are simply projections of this earthy portion, which, by its own action in contracting and expanding, and the crystallisation of the cement, has become separated from it. With this earthy portion the alkaline salts, consisting mainly of soda and potash, escape. This is the portion that causes the efflorescence or white appearance on the stone as heretofore made, and also what is known as "laitance" on concrete laid in water. The light, earthy, and soluble portions having been removed from the cement, the supply of water is turned off, and it is allowed to escape from the wash-box. The cement, freed from its deleterious portions, and being thus saturated or supplied with the proper amount of water, is thoroughly mixed by machinery, or by means of shovels, hoes, or rakes, with clean, dry, sharp sand, in the proportions of from three to six parts of sand to one of cement, according to the strength desired. The *béton* thus mixed is rammed into position, layer by layer, with a pounder, having knobs or projections to make an irregular face. The irregularities made by the pounder on the top of the layer leave it much the better bonding of the succeeding layers. During the process of ramming and compacting, large stones of suitable shape to form a good bond may be put into the mould or mass, and the *béton* rammed around and between them, the stones not being allowed to come in direct contact with each other. This gives stronger work, and allows more thorough ramming and the use of larger stones than where in the usual way broken stone is mixed with the sand and cement before being put into the mold or mass.

The phenomenon of "laitance" is one of the gravest difficulties besetting the laying of concrete under water. It is caused by the impurities hereinbefore set forth. When the concrete is mixed in the ordinary manner, so as to form a semi-liquid mass, these impurities rise to the top of the layer in position, gradually subside, and deposit an unctuous stratum. Thus between each layer of the concrete is interposed a slippery layer, utterly preventing any union or bond between the layers of concrete, and very seriously impairing the solidity and strength of the structure. The former of my processes

prevents this, since the *béton* is sufficiently dry to prohibit any movement of its component parts. The second modification of the process prevents it for the same reason, and because the impurities forming the "laitance" are themselves eliminated.

STALLS FOR COSTERMONGERS, COLUMBIA MARKET.

ANOTHER of those acts of magnificence with which the name of Baroness Burdett Coutts is best associated is the erection of stalls for the accommodation of costermongers in the densely-crowded and poverty-stricken neighbourhood of Bethnal-green. Perhaps this last exercise of that lady's reputed generosity has as much to commend itself in our eyes as the costlier gift she presented in 1863. Columbia Market has been a costly failure. Commercially as well as architecturally the scheme was ill-advised. Established with the laudable object of supplying the poor of the neighbourhood with food at a reasonable price, this market has, from all accounts, failed to realise the expectations formed of it, and we understand the business done has degenerated considerably, and foreign meat is now chiefly sold. Its original object was to bring together that large class of traders who hawk their wares in the streets, and to afford them less costly facilities of plying their trade, by enabling them to sell their goods in the market, and of hiring their barrows and carts upon reasonable terms. Those of our readers who do not know Columbia Market will find a visit interesting. The plan consists of a quadrangle comprised of four blocks enclosing an area or market space of 14,000 square feet, and surrounded by a Gothic arcade of pointed arches of the kind best known at the infancy of the Gothic revival. These arcades are, to our mind, of that bizarre kind which was so much in fashion during the earlier days of Gothic art. We almost imagine that we are looking at some model—the parts are so toy-like, and the detail so elaborate. The florid Gothic hall at the back reminds one of a church with its triple-gabled ends, traceried windows, and superfluous carving in pinnacles and ornament, while the tower, with its profusely-carved termination, is the finish of a structure that recalls some Italian palace or Belgian hotel-de-ville rather than a market amid such surroundings as Bethnal-green. The detail and crowded effect of the wings and arcaded shops appear ludicrously out of place and keeping with the squalor of the surrounding tenements, and we are obliged to confess a sum of money has been expended that might have been far better spent in providing for the social wants of a large and exceedingly poor population. But this lavish and almost wasteful expenditure of money has been somewhat redeemed by the erection of a range of costermongers' stalls for the use of hawkers in the neighbourhood, which may be said to be as appropriate in their character as the market is out of place. The experiment of providing such accommodation on a sufficiently extensive scale in this locality is one of importance enough to call for a general description. One of the greatest wants in the poor districts of London and in large towns generally is the provision of cheap stabling, stores, and sheds for those who are too poor to rent such places in crowded districts. The consequence of this want of storage is that costermongers store their fish, vegetables, and other produce where they can in their own small and squalid rooms, under their beds and tables, to the manifest detriment of their own comfort, cleanliness, and sanitary rules. We have visited the new erections at Bethnal-green, and may give our readers some particulars of a species of construction as yet little known. The new stalls occupy a site opposite the Columbia Market, facing the dwellings known as Angela-gardens, flanking the shops of the market. We here find an area of about a quarter of an acre has been laid out. The ground is oblong, about 51ft. wide, and the sides and end are surrounded by open sheds, stalls, and other conveniences. The stalls, which occupy one side and a portion of the ends of the enclosure, are constructed of galvanised corrugated iron on the south sides, with boarded partitions. Each donkey stall is

9ft. by 4ft., on one side of which is a loose box for vegetables, &c., that have not been sold during the day, the division between the stall and box being a wooden partition not carried up to the roof, but kept low, the top being intended as a hayloft. These boxes have no doors. A corner iron rack is provided, and also a wooden manger in each stall. Externally these stalls form a lean-to of corrugated sheet iron, the roof being of the same material, and sloped inwards towards the enclosure, the pitch being slight. In front the doors are made to slide on an iron bar at the top, running along the entire range, and about a foot below the eaves, so that an open space above the doors is allowed to each stall for ventilation. Half the sliding front to each stall is hung to open as a door, and the other half attached to it slides. By this arrangement the donkey can be taken in or out of the stall without inconvenience, and the half that slides enables the costermonger to open which part he likes without trouble, to get either his donkey or his barrow out. There are 17 of these stalls, and they are all very simply constructed, the frames of the doors being of angle iron, upon which the corrugated sheets are riveted. Each door is cross-braced with flat bar iron, while the plates at the back, the partitions, and roof are fixed in a similar manner upon upright, horizontal, and inclined angle iron. On the other side of the space is an open shed, framed with T-iron standards in front, supporting the slanting roof, and this shed will be used for carts. The quadrangular enclosure in the centre is occupied by a double row of barrow stalls, each 9ft. deep by 4ft. wide, placed back to back, so that the roofs form together a span roof. These stalls are divided by rough board partitions. On one side there are 25 and the other 24 of these stalls: A copper for hot water, a few pony stalls, a dung-pit, and other conveniences occupy the ends, so that between the outer row of stalls and sheds and the inner double range of barrow stalls there is a wide path, which is paved. We understand that Mr. Hutchinson, of Westminster, prepared the plans; Messrs. Whitford and Co., of Limehouse, executed the iron work; and Mr. Andrew Mitchel has been the foreman. These structures are constructed thus in the simplest manner possible, so as to be easily taken down or re-erected should it be required. One drawback in the employment of corrugated iron is the noise created by idle and mischievous boys on the outside striking or stoning the corrugated iron at the back of the stalls, thereby frightening the animals, and for this reason we should have placed the barrows on the outside, and reserved the centre block for the stalls.

A *reredo* erected as a memorial to the late rector was unveiled in St. John's Church, Ballinasloe, on Sunday. The base is of grey Moate marble, surmounted by Caen stone. It is divided by columns of red cork and green Connemara marble into seven compartments, the central panel being carved with a vine and wheat intertwined with a ribbon. The *reredo* has been erected by Messrs. Sibthorpe, of Cork-hill, Dublin, under the supervision of Mr. John Kempster.

Mr. R. P. de Redder, M.A.A., architect, of 16, Saville-street, South Shields, has been unanimously appointed architect by the committee of management of East-street Presbyterian Church, South Shields, for the new church which they intend erecting early in the spring at a cost of about £4,000. It is intended to accommodate over 600 persons, and will probably be in the Decorated style of Gothic architecture.

A dinner took place at the Green Man, St. Martin's-lane, on Friday, September 28th, to celebrate the fifth anniversary of the establishment of the Stone Carvers' Society. This society, established in September, 1872, has met with continued success from its formation.

The Poplar Board of Works has accepted the tender of the Patent Victoria Stone Company for surfacing and paving Guerin-street and Trellis-street.

On Wednesday week Dartford parish church was re-opened, after having undergone extensive alterations. These consist mainly in the removal of the flat roof, and the substitution of an angular one, both over the nave and north aisle; the removal of the galleries, and the abolition of the old high pews. The work has been executed by Mr. J. G. Naylor, of Rochester, from the plans of Mr. Blomfield, and have occupied about four months in accomplishment, at a cost of £3,000.

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ILLUSTRATIONS.

HOUSE AT NOTTINGHAM PARK—CHAIR, FONT, SHRINE, AND TOMBS IN HEREFORD CATHEDRAL—HURSTMONCEAUX CASTLE, SUSSEX—OCKHOLT MANOR, BERKS.—CHURCH OF ST. MODOC, DOUNE—METHODIST CHAPEL AT CARDIFF.

OUR LITHOGRAPHIC ILLUSTRATIONS.

OCKHOLT MANOR-HOUSE, BERKSHIRE.

The ancient manor-house of Ockholt—now more usually called Ockwells—is situated in the parish of Bray, about one mile from Maidenhead. It was built about the year 1455 by Lord Norreys, of Ockwells and Yattendon, master of the wardrobe of Henry VI., and Lord Warden of Windsor Forest, and was originally of great extent, but only a portion of the ancient building now remains. The house appears to have formed three sides of a quadrangle, the buildings on the west side being the only ones now left, those which stood on the north having been taken down, and the chapel, which was situated on the south side, having been destroyed by fire about thirty years ago. The outside wood-work is very beautiful, but is in a deplorable state of decay. The proportions of the great hall—which is now used as a carpenter's shop—are very good, but the effect of the whole is marred by a modern flat plaster ceiling, obscuring the once beautiful open roof. The walls are covered with dado panelling to the height of 11ft., and the mouldings of the wood-work are rich and good. At one end of the hall—over the corridor leading from the porch—is an elevated gallery, probably used as an orchestra. The large bay window was formerly filled with beautiful painted glass panels, amongst which were the arms of Henry VI., with antelopes as supporters—he being the only English monarch who had them. This glass, which was falling to pieces in consequence of the lead being very rotten, was removed some years ago, and is preserved at Taplow Court. At the back of the hall is a small quadrangle, which formerly had an open corridor on three sides, but the proportions were greatly reduced about the time of James I., the grand staircase which leads to the principal rooms being built into it.—G. R. WEBSTER.

BISHOP'S CHAIR, FONT, AND TOMBS IN HEREFORD CATHEDRAL.

Our illustrations are taken (by permission) from a volume of considerable local interest, "Frasti Herefordenses, and other Antiquarian Memorials," 4to., published in 1869, by the Rev. F. T. Havergal, Minor Canon, with illustrations by Mr. G. Haddon, architect. I. The episcopal chair is preserved in the sacarium of the cathedral; it is used by the bishop at his visitations and ordinations, &c. A very great antiquity is claimed for this chair. No exact date can be assigned to it, as chairs of this character were made from the Anglo-Saxon period to the 15th century. It is of oak, in a fairly sound state, with slight traces of ancient colour—vermilion and gold. Full particulars are given of this and other ancient examples in the above-mentioned volume. II. The font consists of a solid block of stone, 32in. in diameter, curiously carved with figures of the Twelve Apostles, which, with one exception, have all been mutilated. Considerable variety has been displayed in the treatment of

the spandrels and pilasters. Beneath are four demi-griffins, with bold features and tusks. There are many fonts in the diocese of Hereford remarkable for extreme antiquity, those in the churches of Castle Frome, Erdisbury, and Old Radnor being specially remarkable. III. In this illustration three tombs are shown of the highest architectural merit, and the base of the shrine of Bishop Thomas de Cantilupe, ob. 1282. This is a very rich and remarkable specimen of early art, in an excellent state of preservation, although it has been moved three or four times. For full particulars see "Frasti Heref." p. 175, also BUILDING NEWS, pp. 138 and 146, and Proceedings of the late visit of the Royal Archaeological Institute. 2. Recumbent effigy of Dean Aquablanca, ob. 1320. 3. Tomb and rich canopy of Bishop Aquablanca, ob. 1268. This beautiful monument is one of the largest and most interesting in the cathedral. The whole of its details are most refined and delicate; with the exception of a few pieces of tracery, it is in an excellent state of preservation. The effigy of this bishop is perfect, and must have been originally gorgeous, as there are traces of minute patterns on the rich vestments. Slender Purbeck shafts support a rich and sharply-pointed canopy in three divisions.

HOUSE, NOTTINGHAM-PARK, FOR ALFRED CLEAVER, ESQ.

The house, which is now in course of erection, is situated in a pleasant part of the park belonging to the Duke of Newcastle, and which is being now let upon building leases. The house is built of the very excellent red dressed bricks which are made to such a large extent in the neighbourhood of Nottingham. The dressings of doors and windows are of fine Hollington stone. Red terra cotta, manufactured by the Whitwick Colliery Company, of Coalville, near Leicester, is used freely in various parts of the frontages, especially in the hexagon bay window, and in the ornamental panels above the windows. The principal woodwork of the interior is of pitch pine, lightly stained and varnished. The designs have been prepared by Mr. S. Dutton Walker, F.S.A., of Albert-chambers, Nottingham, architect, and Mr. D. E. Lynam is the contractor for the whole of the works. The following are the references to plans given:—

GROUND PLAN.

- | | |
|---------------------------------|--|
| 1. Pan closet. | 14. Grocery stores. |
| 2. Scullery. | 15. Staircase. |
| 3. Steps to cellar. | 16. Entrance-hall. |
| 4. Butler's pantry. | 17. Covered passages, leading to tradesmen's entrance. |
| 5. Kitchen. | 18. Coals. |
| 6. Game larder. | 19. Boots, knives, &c. |
| 7. Lavatory, coats, gloves, &c. | 20. Passage. |
| 8. Dining-room. | 21. Servants' w.c. |
| 9. Drawing-room. | 22. Ashes. |
| 10. Open or outer porch. | 23. Lobby. |
| 11. Vestibule. | 24. Door shutting off culinary department. |
| 12. Morning-room. | |
| 13. Conservatory. | |

SECOND STORY.

- | | |
|--|-------------------------|
| 25. Bedrooms. | 29. Passage. |
| 26. Dressing-rooms. | 30. Housemaid's closet. |
| 27. Landings of staircase and of bedrooms. | 31. w.c. |
| 28. Stairs to second floor. | 32. Bath-room. |
| | 33. Nursery. |

SECOND FLOOR.

Three bedrooms for servants.

BASEMENT.

Larder, dairy, beer cellar, wine cellar, potato and other stores, and rain cistern.

HURSTMONCEAUX CASTLE.

HURSTMONCEAUX CASTLE, in Sussex, was built of brick and stone, by Sir Roger de Fienes, about the year 1440, and, as bricks did not come into general use until 1500, it is probably one of the earliest brick buildings of importance, and one of the latest castles erected, as in the fifteenth century manor-houses became more suited to the customs of the time. It was in the possession of the descendants of Monceau of the Wood until 1708, when it changed hands, and shortly afterwards was again sold, and was partly dismantled, the best materials being used in the erection of a neighbouring mansion. Its style is Perpendicular or Tudor, and but little remains except the principal gateway and the outer walls, still there is enough to attest feudal magnificence. It is situated in a finely-wooded district, as the name implies, about 5 miles from Pevsey Castle. Our illustration is taken from a pen-and-ink drawing, which was exhibited in this year's Academy by Mr. F. W. Richardson.

CHAPEL, PEMBROKE TERRACE, CARDIFF.

This building is being erected for the Welsh Calvinistic Methodist connection at Cardiff, in lieu of an older building in another part of the town, about to be removed by the corporation in execution of their street improvement scheme. The chapel, which will cost about £5,000, is designed to seat 500, but will have in addition on a lower floor a large schoolroom, with two class-rooms capable of accommodating 300 children. There are galleries in each of the transepts, and one at the end facing the pulpit; these are approached by broad circular stone staircases with spacious landings, affording free communication between the front and transept galleries. The interior is lined with brickwork in bands, and diaper work with moulded brick cornices and stone strings. The large piers, with the four surmounting arches at the crossing, are to be built wholly of stone, the caps of the piers being carved. Both the transepts are ceiled with boarding in the form of a barrel vault, and the nave with a flat-panelled ceiling of wood, with the beams moulded on under-side. The contractors for the works are Messrs. W. and I. Webb, of Birmingham; and the architect Mr. Henry C. Harris, A.I.B.A., 76, St. Mary-street, Cardiff.

CHURCH OF ST. MODOC, DOUNE, SCOTLAND.

We give to-day an illustration of the interior of the chancel of this church, which is now in course of erection from the designs of Mr. Jas. Brooks. A plain style has necessarily been adopted, both on account of the hardness of the stone, which is from the Polmaise quarries, near Stirling, and also as being more in accordance with the requirements of a small country church than more elaborate work. A pleasing variety is, however, obtained by the contrast of the two kinds of stone in use—viz., red and white rock. The foundation stone was laid on the 22nd of September last by Lady Anne Moray. A general view of this church appeared in the BUILDING NEWS of the 30th June, 1876, when in the accompanying description a few mistakes were made.

COMPETITIONS.

GLASGOW.—The building committee of the Glasgow Trades House having solicited three of the city architects to prepare plans for a new trades' house, it was stated at a meeting of that body last week that the plans were then ready for inspection. The chairman said the highest estimate for the proposed new building was £42,000.

PROPOSED LODGE, SYDENHAM RECREATION GROUND.—At the meeting of Lewisham Board of Works on Wednesday week a report was received from a committee who had revised the thirty-four designs sent in, and had selected those marked, "Respice Finem," "Spes," "XXX," "Rusticus," and one of the two designs bearing motto, "Pro Bono Publico," as the best five. The members struck out "XXX," as disqualified, not being accompanied by specifications. The Board considered the other four selected, and chose that of "Respice Finem," which proved to be by Mr. Robert Walker, of Moorgate-street, E.C.

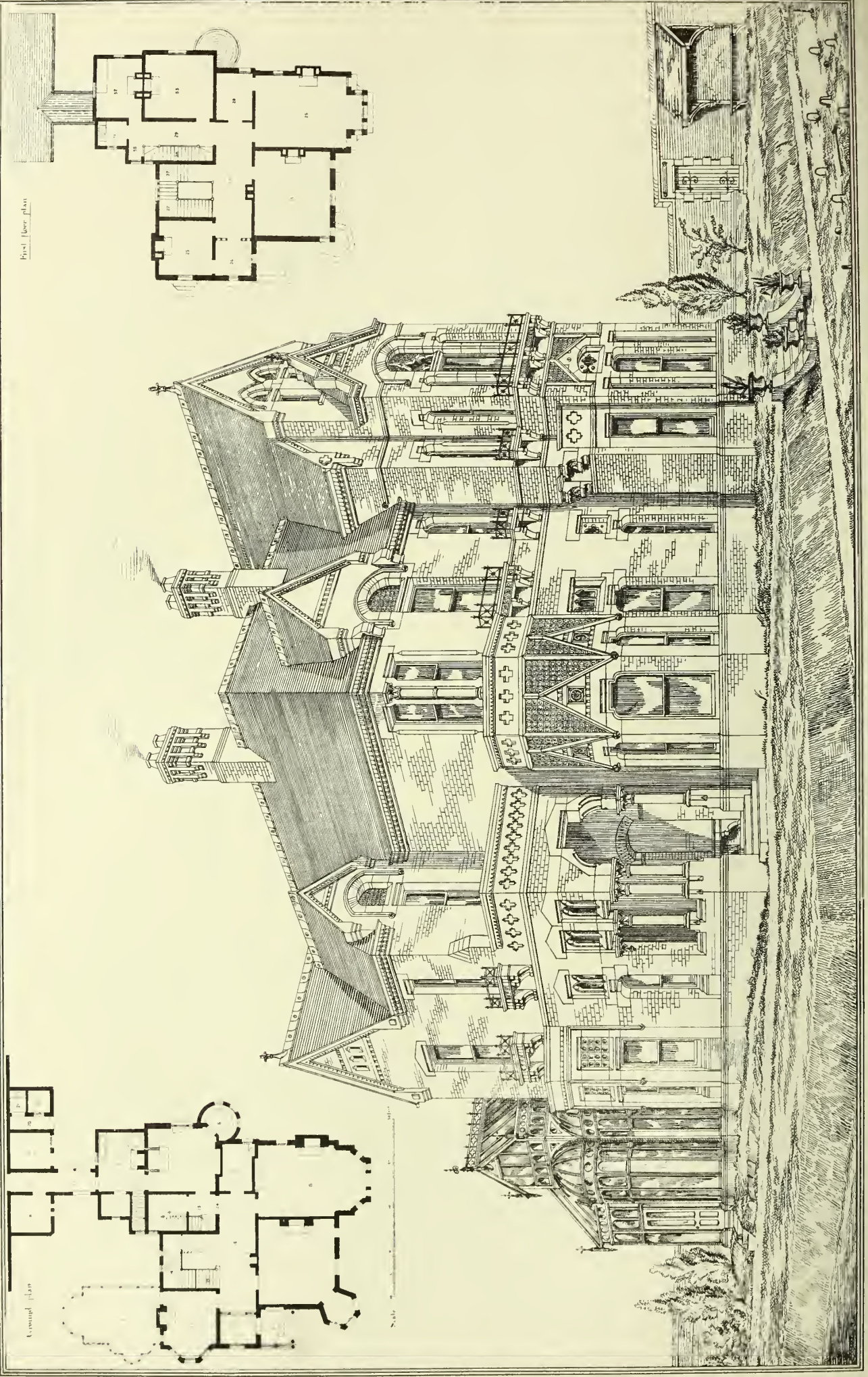
PROPOSED NEW HOTEL, COVENTRY.—Seventeen architects have submitted designs for this competition. One hundred and twenty-two applications for instructions were received.

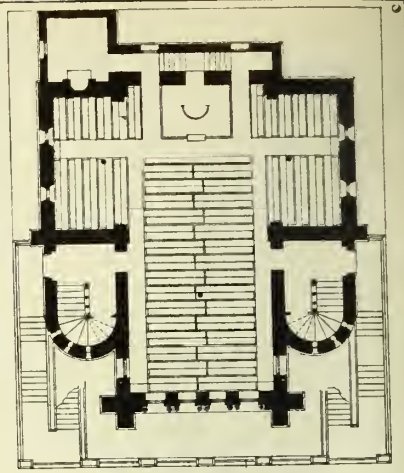
The second anniversary of the re-opening of St. Nicholas' parish church, Skerbeck, Lincolnshire, has been marked by the presentation of a carved oak lectern and altar rails, both made from the designs of the architect (Sir Gilbert Scott), the former being the work of Mr. Robinson, carver, of London, and the latter that of Mr. Kenington, of Boston.

On Monday a new Congregational chapel was opened at Leigh. The chapel is of Gothic design, by Mr. Geo. Woodhouse, architect, Bolton. The estimated cost is £4,500, and sittings are provided for 550 persons.

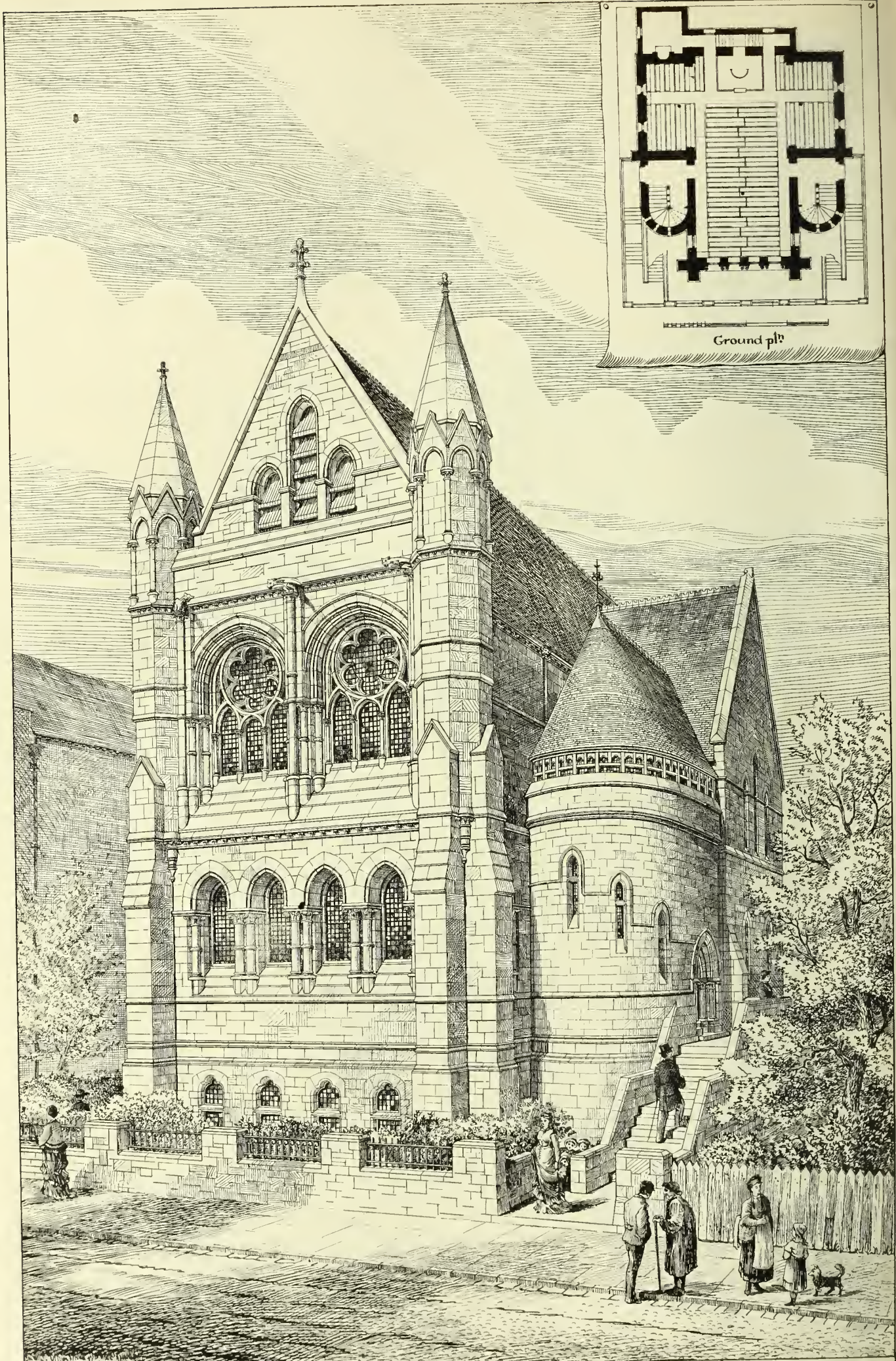
The foundation stone of Pollokshields Free Church was laid on Saturday. The edifice is being built from the designs of Messrs. M'Kissock and Rowan, of Glasgow. It is Greek in style, will seat 1,000 worshippers, and cost £12,550; but that sum includes the provision of a hall, committee room, and other accommodation on the ground floor of the church proper.

THE BUILDING NEWS, OCT. 5. 1877.





Ground plan

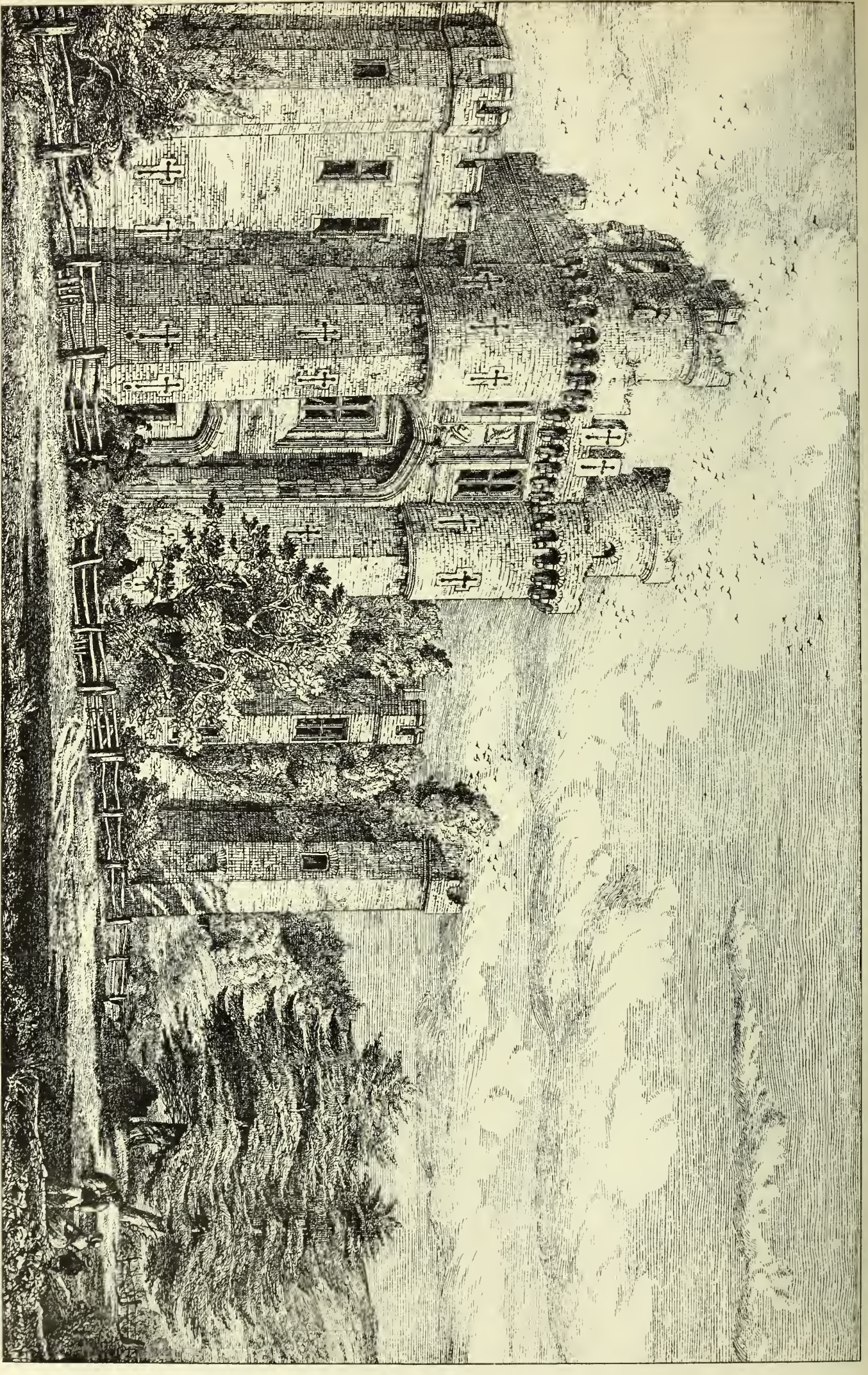


WELSH CALVINISTIC METHODIST CHAPEL PEMBROKE TERRACE CARDIFF.

Henry C. Harris ARCHT

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W. U.

THE BUILDING REWS, OCT. 5, 1877.



HURSTMONCEAUX CASTLE SUSSEX F.W. RICHARDSON DEL.

Photolithographed & Printed by James Harrison 6 Queen's Square W.C.

THE BUILDING PEWS, OCT. 5. 1877.

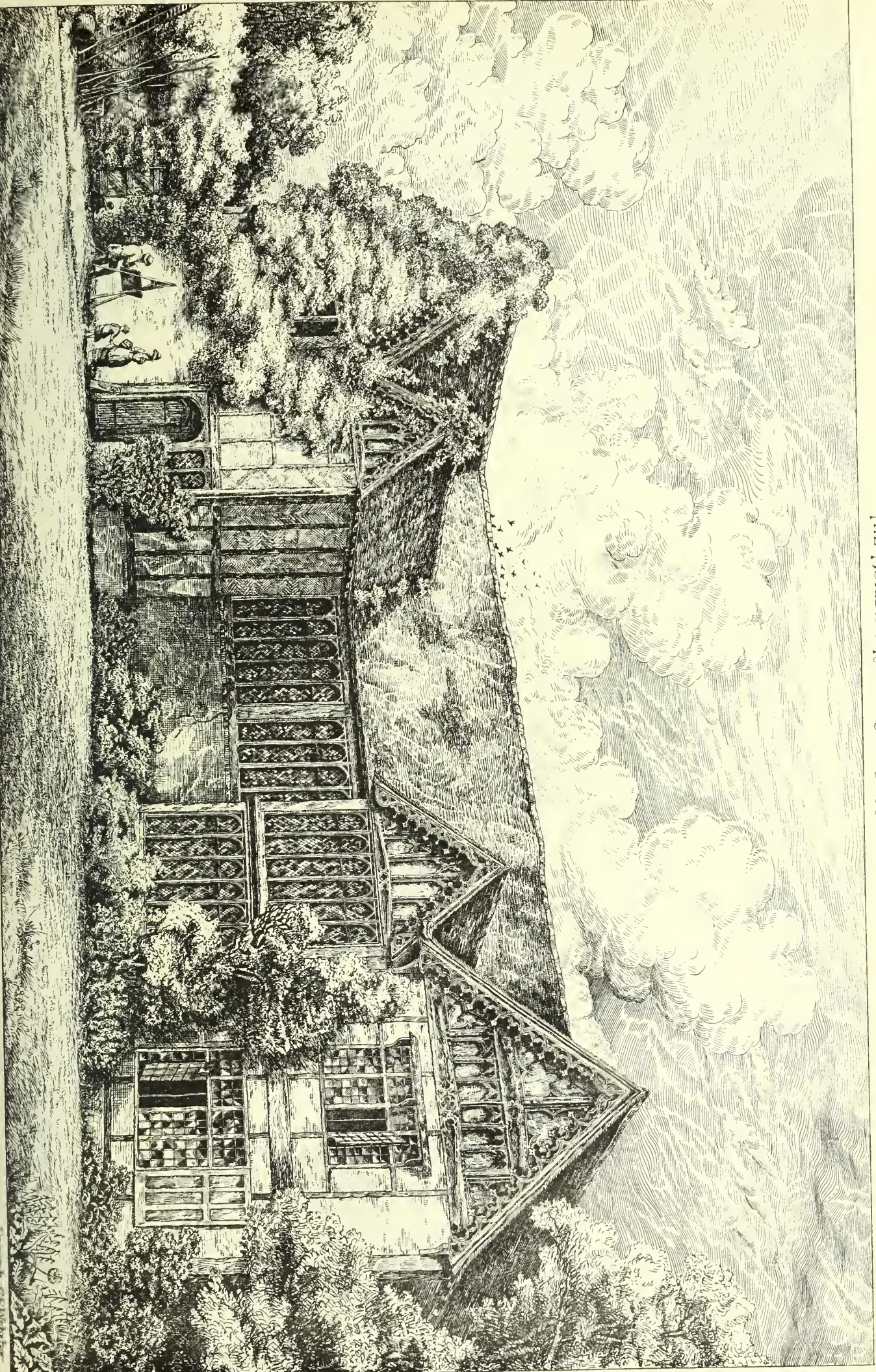
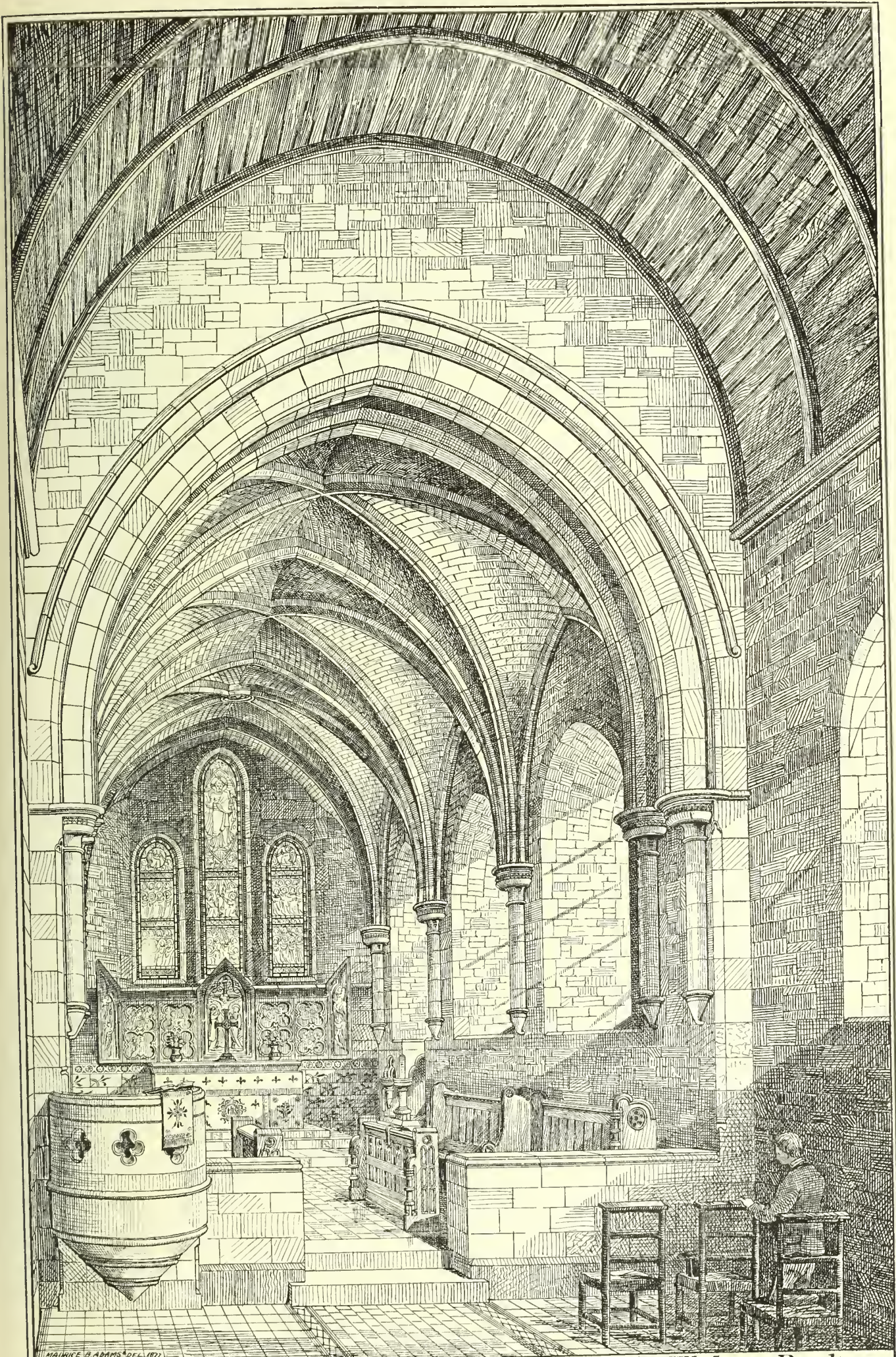


Photo Lithographed & Printed by James Almon 6, Queen Square, W.C.

OCKHOLT MANOR, BERKSHIRE

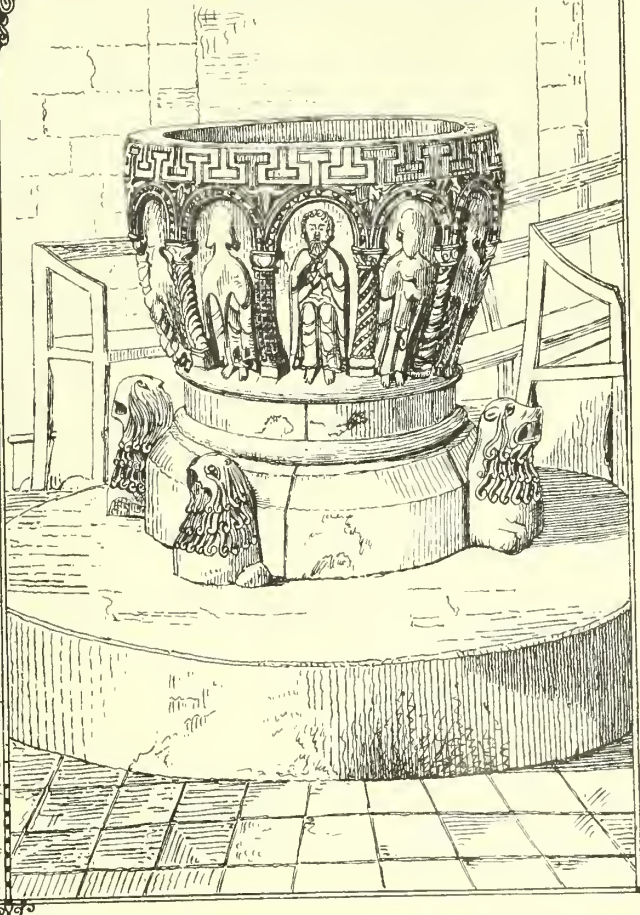
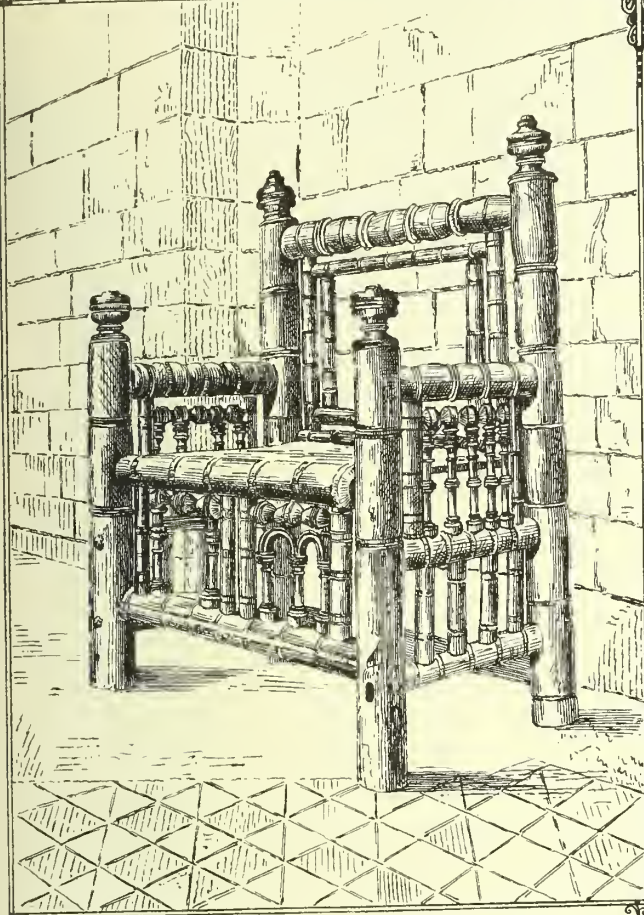
Drawn by G. H. Wallcut



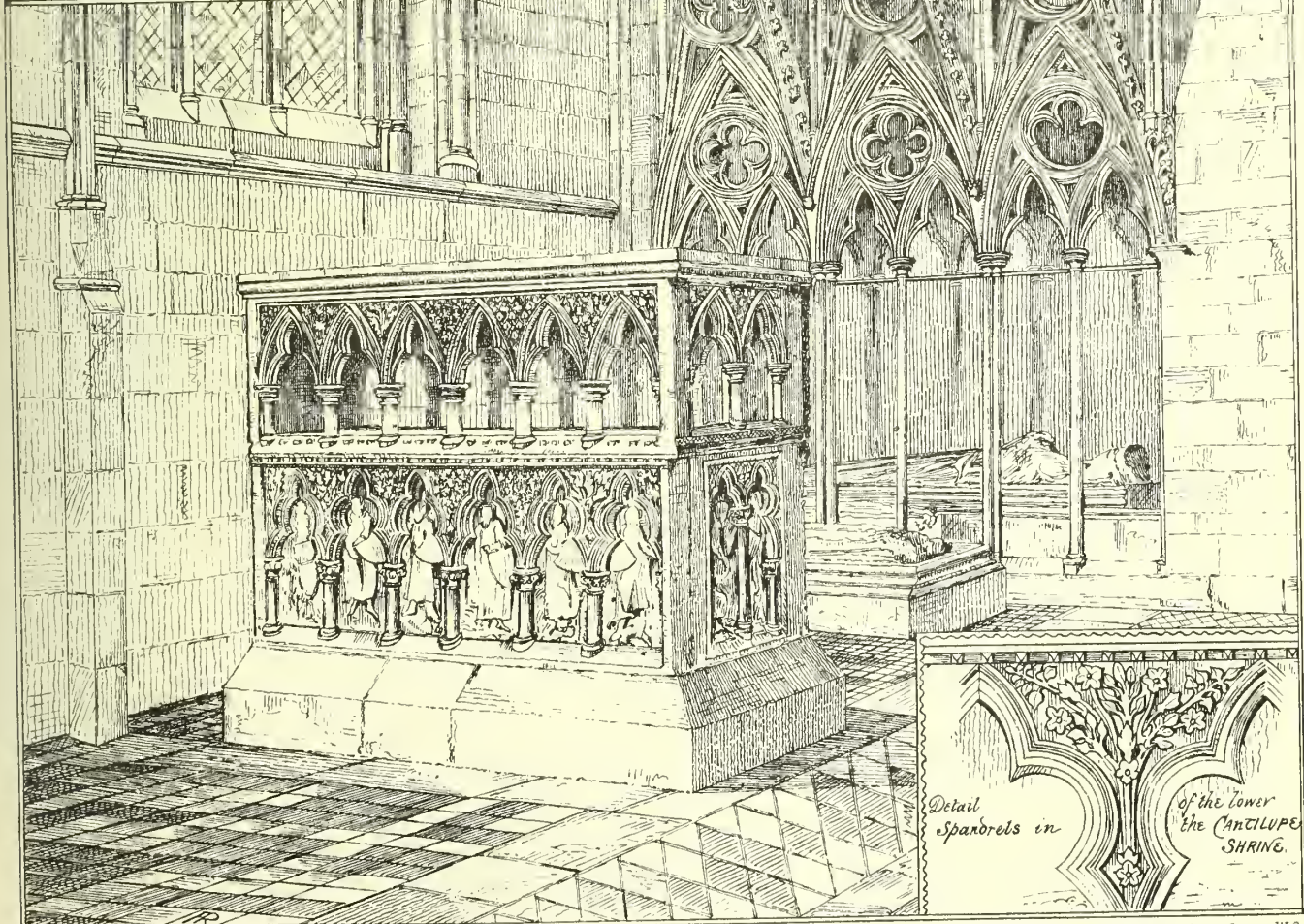
MAURICE B. ADAMS DEL. 1877

Church of St. Modoc, Doune, Scotland. view of CHANCEL. James Brooks. ARG.

HEREFORD CATHEDRAL. ANCIENT BISHOPS' CHAIR AND FONT.



HEREFORD CATHEDRAL. View of the Cantilupe Shrine, and the Tomb of Bishop Aquabianca



Detail of the lower Spandrels in the Cantilupe Shrine.

PROPOSED PUBLIC OFFICES, SOUTHAMPTON.

IT is strange with what perversity Town Councils manage their local affairs. It would, indeed, appear that some outside and independent authority is often required to make a corporation do that which would be the real interest of a town. Southampton has one or two excellent sites for a town-hall and public offices in the centre of the town, which the corporation may easily acquire, and upon either of which a united structure could be raised in every way worthy of the town and its public convenience. Yet, in spite of these facilities, the Town Council have been carping over the expenditure of a few hundred pounds, and have at last come to the decision to throw away their opportunities, to squander their resources, and spend in an objectless manner a sum estimated by their own surveyor at from £4,000 to £5,000 in patching up, and making an old and totally different building answer their present purpose. That there has been a great deal of personal and local interests involved we are obliged to admit before we can seriously think of a Town Council spending £5,000 in a makeshift while the great need of a town-hall and offices still remains, and is becoming daily more necessary—at least, if the town desires to keep pace with much smaller boroughs. From the report of the public offices committee it appears a most eligible and suitable site can be obtained in Bar-street—now the skating-rink site—for about £6,000, but that this proposition was outvoted by some members for the adoption of the audit house or fish market site, now used for public offices, though thoroughly inadequate, and quite out of the centre of the town. This idea has been acted upon, and Mr. Lemon, the borough surveyor, was instructed to prepare plans for two schemes—one showing an entirely new building, and the other an arrangement retaining the present council-chamber. Plans have been prepared. The first scheme is estimated at £15,000, the latter at £14,000, and last Wednesday week these plans and Mr. Lemon's report were laid before the Town Council, with the committee's recommendation to adopt the first plan. After a lengthened discussion an amendment was proposed by Mr. Rolles Driver to carry out a temporary alteration of the present old building, at a cost of about £3,000. This was ultimately carried by a majority of the council. While we congratulate the town that the committee's report was not adopted, and the blunder committed of laying out £15,000 on a site that the public could never approve of, we cannot but express our surprise that an imperfect patchwork of the old building is contemplated, and we hope public opinion will be taken before such a frittering-away of the ratepayers' money is carried into effect. Mr. Lemon's report proposes the following offices on the old site:—On the ground-floor, office of health's, sanitary inspector's, borough surveyor's, and pay offices, with a hack entrance, rooms for the waterworks engineer, inspector of weights and measures, gas-meter, and other offices; on the first-floor a reception-room, 54ft. x 24ft., occupying the whole front, mayor's parlour, committee-room, 31ft. x 17ft., arranged so that they may be used *en suite*; a grand staircase in the centre of building, 31ft. 6in. x 19ft. 3in., lighted by a domical lantern; a council-chamber, 44ft. 6in. x 30ft., lighted from the roof partly, and also from the north end above a gallery, the present fittings being utilised. On the second floor the harbour board, school board, borough treasurer, and accountant will be provided for. The alternative scheme is to retain the present council-chamber in the front, which measures 38ft. 6in. x 24ft. 9in., and is lighted by four windows towards the High-street, and to make the other offices conform thereto, though the surveyor points out the error of this arrangement, and the architectural defect of preserving the old council-room, which will not be symmetrically placed. Besides this, the old façade will have to be remodelled. We certainly consider a council-chamber should be arranged, if possible, with top light, and be placed centrally, to avoid the glare of window light and street noise. These are the main features of the plan, but we

think, with Mr. Alderman Passenger, that as the post-office authorities require a new building, and as the audit-house would be well adapted for that purpose, the town would do wisely to sell their old building and purchase the upper site. At any rate, it would be better to postpone a scheme that would be but a temporary solution of the difficulty, till the council can purchase a central situation and combine the public offices with a town-hall, which is an important adjunct in any municipal structure. Let the corporation pause before committing another blunder, obtain one of those sites either as suggested, or in the public grounds, and then, if need be, invite the architectural profession to compete upon a basis laid down by their surveyor—a plan that has been found successful at Nottingham, Wakefield, and Leeds.

THE SANITARY CONGRESS AT LEAMINGTON.

THE Congress promoted by the Sanitary Institute of Great Britain opened on Wednesday under favourable auspices. For days before exhibitors and inventors of sanitary and domestic appliances had been hard at work in preparing an exhibition at Drill-hall, to be opened by his worship the mayor on Wednesday afternoon. It was somewhat incomplete when the time had arrived for the opening, but this fact did not materially detract from the interest of the whole collection. The Drill-hall, where the exhibition is held, is situated on the banks of the river Leam, and it has been necessary to supplement the capacity of the hall by adding a large marquee. The whole available space is occupied by manufacturers of labour-saving machinery, water, gas, and other purifying appliances, exhibitors of model hospitals, model cremators, model sewer works and processes, and most of the exhibits suggest the shortcomings of many dwellings and other buildings in the essentials of healthful living places. Messrs. Shillito and Shorland, the Sanitary Engineering and Ventilation Company, and others present working models of their inventions in the shape of cistern filters, gas meters and gas purifiers, and house ventilators. Mr. James Howorth, of Farnworth, Lancashire, exhibits appliances for securing effective ventilation in mills and work-places where the generation of impure air is very rapid; and Dr. Hinckes Bird, of Lytham, Lancashire, demonstrates by models his well-known means of securing ventilation in dwelling-houses. Messrs. Doulton, of Lambeth, exhibit some of their "Faience Ware," some sanitary pottery, and also present in tiles on the wall a handsome picture in pottery of the Pilgrim Fathers starting for America. These tiles form a permanent decoration for the insides or the outsides of buildings. The loan collection includes several models of systems of cremation and of the Burdett Pavilion Cottage Hospital. In all there are 300 stands.

The evening meeting was held in the Pump-room of the famous Leamington Spa. Dr. Richardson delivered an address, entitled "A Theory as to the Natural or Glandular Origin of the Contagious Diseases," a report of which will be found in *Public Health*.

AN ART FAN EXHIBITION, LIVERPOOL.

AN exhibition of fans is at least a novelty in these utilitarian days, but our art brethren at Liverpool have actually formed a loan collection of this graceful appendage to the lady's toilet, and we understand there is soon to be one in London. A catalogue before us of an exhibition of fans at the Liverpool Art Club House describes a collection of over 200 fans, beginning with ancient Egyptian and Oriental to the latest French and English examples of this elegant article of attire. The list of contributors to this interesting and unique exhibition includes a number of names well known in art circles, and we find Mr. G. Ashdown Audsley and Mrs. Audsley, Mr. James L. Bowes, Mr. Julius Franks, Mr. Frederick Holder, Mr. J. A. Pieton, Mr. and Miss Phené Spiers, large exhibitors. A succinctly-written historical sketch is given as

an introduction from the pen of Mr. G. A. Audsley, which furnishes the reader with a general idea of the history of the fan. Its patent and expressive movements in the hands of the fair adept are well known, and we quite believe, with the French poet quoted, that the fan has played a no unimportant part in the art of coquetry. The different and expressive movements and flutterings of the fan is a language akin to that of flowers, and Mr. Mason mentions the well-known dexterity of Spanish ladies in what he terms "fan-flirtation" or "fan-telegraphy." A Spanish maiden with dark eyes is seldom ever depicted without the accompaniment of this magic sceptre, and that it has in every age become a powerful auxiliary in the hands of the belle few will doubt. Like other articles of dress the fan seems to have been an object of great antiquity, especially among the people of tropical climates. Upon ancient Egyptian tombs painted representations of it are often seen, and the bas-reliefs of the hall of the Rhamesion contain the figures of the twenty-three sons of Rhameses the Great, each holding a fan in the shape of a long ostrich plume fixed to a handle, and the title "Fan-bearer of the King" is written over each. In Egyptian iconography the fan symbolised happiness. One of these ancient feather fans is described in the catalogue No. 1 as an "ancient Egyptian fan handle," the feather of which is missing. This form appears to have been the nucleus or earliest form of the fan. In Assyrian sculptures fans, composed of these palm leaves, are to be met with; and in India leaves of the palm, feathers, and reeds were employed. Various exhibits of Indian fans of these kinds are to be seen in the collection, and we may mention No. 5, sent by Mr. Fred. Holder, formed of fibre, radiating from a centre disc, in the circumference of which is a loop-handle. This fan was used by dipping it into perfumed water before setting it in motion. The handle and disc are ornamented with floral patterns in colour and gold. Another Indian fan is called the "tchaounry." Nos. 7 and 8 are examples. The former of these is formed of the tail of the yak or ox, of Thibet, mounted on a silver handle, and the latter is composed of delicate filaments of wood, mounted on a sandal-wood handle, elaborately carved. It is this kind of fan that is used over the heads of Indian princes to disperse insects. Various specimens of Japanese and Chinese fans are exhibited; some of these are fabricated in leaves, feathers, stout paper painted on one side, textile fabrics, &c. Mr. James L. Bowes exhibits several; one (9), of paper, has painted on one side a red orb on a gold ground, and on the other side a gold orb on a scarlet ground. The brins and panaches are of plain lacquered wood in this case, though in several they are of bamboo and pierced ivory. In China the fan is regarded as an attribute of rank, and the invitation to fan oneself is considered an act of politeness. It has been asserted that the folding fan is a Japanese invention, and was introduced into China by them; and, perhaps, no country has devoted so much artistic skill and taste to this article as Japan. It is certain those imported into this country are chiefly Japanese; and, in 1875, it is stated by Consul Annesley that three millions of fans were exported, and Mr. Audsley mentions that a million fans were ordered for the Philadelphia Exhibition. Paper leaves, decorated by block or hand-painted designs, are usually employed; the brins, or radiating pieces, and the panaches, or outside parts, being generally of bamboo. Mr. Audsley describes the folding and pressing of the leaf after it has been radially divided. We must not forget to note a series of war and ceremonial fans, contributed by M. Ph. Burty, of Paris, with metal panaches inlaid with silver. Passing various exquisite examples of Japanese and Chinese manufacture, some of tortoise-shell and ivory, pierced or carved, filagree and enamel brins, with variously painted and perforated leaves, many of the latter composed of radiants of ivory, sandal-wood, or metal filagree, perforated in a fashion that contravenes the intention of air wafters, some interesting specimens of English and French manufacture, Mr. Audsley tells us the fan became a fashionable article of costume in France during the reign of Henry VII., and in England during that of

Henry VIII. Mr. Redgrave describes various fans of this and a later period, and artists of celebrity, like Paul Ruhens, devoted themselves to fan-painting. The fans of the reigns of Louis XIV. and XV. were exquisite examples of the most consummate art. Many of these have panaches and brins pierced, inlaid with pearl, decorated with jewels, relieved with colour and gold. In works of the latter epoch the Liverpool collection is rich. No. 59, with a vellum-painted leaf with Arcadian subject, from a design by Watteau, the brins being of pearl, decorated in the Louis Quatorze style, may be noticed; also No. 60, of paper, beautifully painted in fine tempora—subject, betrothal of Louis XV. with Marie Leczinska, the work of Boucher. The brins, &c., are of white pearl, with carved medallions, and figures, and scrollwork in coloured gold foils, and the fan belonged to the Queen of Louis XV.; exhibited by Mr. Julius Franks. Nos. 68 and 69 are of silk tissue, painted with classical subjects; No. 73 is a work of Boucher, with harmonious colouring—all lent by Dr. Pioget. No. 79 is another finely-painted fan, by Boucher, lent by Mr. Julius Franks. 75, on painted vellum, with allegorical design, and refined colouring, and spangled with coloured metals—period, Louis XV.—is a rich specimen of art workmanship. We note other exquisite works of the Parisian artists. The paper fans of the 18th century are exceedingly suggestive, and, as Mr. Audsley says, they have been used as a vehicle for conveying political events, caricatures of great personages, and other information. Artists in metal, ivory, and wood, jewellers and enamellers, are engaged in this manufacture, and our French neighbours still take the lead in fan manufacture. We must not omit to mention No. 147—a Chinese fan with paper leaf, and with 14 brins composed of ivory pierced and carved, silver filagree and enamel, scarlet ivory, tortoise-shells, white pearl, &c., placed alternately, exhibited by Mr. R.W. Edis, F.S.A.; and especially the fine series of fans of the period of the French Revolution, lent by M. A. de Liesville, of Paris, variously representing the taking of the Bastille, the Fête of the Federation, portraits of Louis XVI. and La Fayette, Robespierre burning Atheism and Fanaticism, and unveiling Truth, and portraits of La Pelletier and Murat.

DRYING PLASTERING IN DENMARK.

ACCORDING to the *Grossherzoglich Hessisches Gewerbeblatt*, a Danish architect, Mr. Kruse, of Copenhagen, has recently erected a building, and prepared it for occupancy, in forty days; the walls being dried in three days. A calculation showed that from each story there was a minimum of four thousand gallons of water to be evaporated. To do this, a great increase of temperature was necessary, and coke-stoves were placed in the cellar at the base of every chimney. One flue, probably, served for all stories. The chimneys were then closed above the roof, and a passage allowed the dense smoke by cutting openings into the flues six inches underneath the ceiling of the first story. An escape was then allowed on the level of the floor; and the rooms thus filled with currents of smoke and gases were quickly dried. This process was repeated floor by floor, the openings being successively broken out and walled up. The temperature varied from ninety-five to one hundred and twenty degrees Fahrenheit, and was, of course, lowest at the floor-level. The ventilation was so great that the air, or rather the smoke, in the rooms, was totally changed from five to six times an hour. Something less than nineteen tons of coke were needed for a story, though we are not informed for how many rooms. A single workman was alone employed to attend the firing. It is also stated that the wood-work remained unharmed, there being no shrinkage noticeable in the doors, windows, etc. When dry, it appeared that the wall-plaster had attained an exceptional hardness, owing, no doubt, to the great quantity of carbonic-acid gas, produced by the imperfect combustion, which had changed the caustic lime into carbonate of lime. So says the report. It is quite customary to burn charcoal in newly-plastered houses for the sake of the gas; but there are few attempts of so great a magnitude as this on record. It seems strange,

remarks the *American Architect*, that three days of such heat, and the evaporation of such quantities of water, should not have caused the wood-work to shrink or check, as it might reasonably have been expected to crack the walls. Plaster thus rapidly dried, and capable of absorbing little or no water, must have increased the labour of the kalsominer, paper-hanger, or frescoer: the carbonic-acid gas which filled the house naturally rendered superintendence impossible; and it is to be supposed that walls, ceilings, and floors were blackened by the smoke. But these are minor considerations; the great objection is, that the plaster was probably only hardened on the surface. It is a well-known fact that mortar in any form does not reach its usual firmness when dried in the heat of summer even. It seems as though the presence of water were necessary to aid the combination of lime and carbon. One of the best authorities on the subject, Vicat (*Recherches sur la Chaux*) goes so far as to assert that mortars lose four-fifths of their strength if dried too rapidly. He commends the custom of the masons of Northern Italy, who, in constructions of importance, water the masonry during the summer months to guard against this danger. It is an old saying, that lime at a hundred years is but a child; and such precocious forcing at birth does not appear conducive to long life.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.—On Saturday morning the members of the Yorkshire branch of this association met at Sheffield, and visited Messrs. Cammell's works and the new tramways, under the guidance of Mr. P. B. Coghlan, borough surveyor of Sheffield. In the afternoon a meeting was held in the mayor's parlour, Mr. Ashmead, borough engineer of Bristol, in the chair, when a paper was read by Mr. J. H. Smedhurst, surveyor, of Sowerby Bridge, on "The sinking of cylinders for bridge piers at Sowerby Bridge, across the river Calder." The method adopted was, instead of exhausting the air from the cylinders, to compress the air within them. As they were closed at the top and open at the bottom, this plan forced the foul air through the interior, which not only allowed the men to work inside and excavate the soil, but the condensation of the air infused so much energy into the men that they did more work in the cylinders in a given time than above ground under similar circumstances. The paper was followed by a discussion, and in the evening the members dined together.

DURHAM AND NORTHUMBERLAND ARCHÆOLOGICAL SOCIETY.—The members of this society visited Thirsk Church—re-opened next day after restoration from Mr. Street's designs—on Monday, and afterwards descended to the crypt, where an address was delivered by Mr. Longstaffe, of Yateshead, who spoke of the church as a very fine Perpendicular work, depending entirely for its beauty upon its proportions. Canon Greenwell said that the ancient glass removed during the restoration ought to be restored, because, however good the repository, the church was the most fitting place for it. The last of the series of charters of Thirsk, which belonged to the vicar's choral at York, had disappeared, and he wished to know how it was that that body had been so careless of documents of the greatest interest. In the afternoon the members left for Multon, and visited the Priory there. On Tuesday a carriage excursion was made from Multon to Castle Howard and Sheriff Hutton Castle, and in the afternoon they left Flaxton Station for York.

GLASGOW ARCHÆOLOGICAL SOCIETY.—On Thursday the members of this society took their annual excursion, visiting the ruins of Inchmurrin Castle, on an island in Loch Lomond. After an examination of the ruins of the principal buildings and tracing the subsidiary structures, a paper was read in the Earl's Hall, by Mr. Galloway, on the castle and its owners, who, from 1170 to 1470, were of the old Lennox line; Mr. Irving described, with the aid of maps, photographs, and drawings,

the principal ancient and modern castles round the Loch; and Mr. Kirksop showed a collection of seals and cameos. After ascending the hill in the centre of the island, the members sailed across the Loch to Auchindennan, the seat of Mr. Martin, and from thence proceeded in boats to Balloch, where they dined together before returning to Glasgow.

CHIPS.

A new Board School at Somers Town was opened on Friday last. It is a single block, three stories high, in the usual Queen Anne style. The area of the site is 13,320 square feet. The total cost has been £9,570 8s. 6d., equal to £11 5s. 5d. per head. The school is to accommodate 349 children. The building has been carried out from designs by the architect of the London School Board by Messrs. Wall Brothers, builders, of Kentish Town.

Some of the vacant niches in Winchester Cathedral are about to be filled with statues of the Apostles to replace others which have been removed.

The erection of the new Middle Class College at Hereford is to be commenced forthwith from the designs of Mr. F. R. Kempson, of that city. The cost will be £11,000.

A new Primitive Methodist chapel at Halesworth was opened on Thursday week. It has been erected by Mr. Woodyard, of Halesworth, from designs by Mr. Pells, of Beccles.

The Lyceum Theatre at Stafford has been renovated and redecorated at a cost of £521, under the superintendence of Mr. G. Wormal, architect, of Stafford.

A new reredos of oak, 27ft. in width and 15ft. high to cornice, is being erected in the parish church of Bolton, Lancashire. In the centre will be a painted representation of the "Last Supper," but there is to be no representation of a cross upon the structure. The cost will be about £1,200.

In connection with extensive works in South-west Norfolk, the Great Eastern Railway Company are about to build a railway bridge across the river Waveney at Brandon. The plans of Mr. Tyler show an iron girder bridge on brick piers 69ft. span, and with 6ft. halting way.

Considerable alterations and additions have been made within the last twelve months to Fairhill, near Tunbridge, a mansion in Italian style purchased for residential purposes by the Earl of Derby a few years since. Mr. David Brandon has been the architect, and Mr. Dove, of Tunbridge, the builder.

The Local Board of Southborough, between Tunbridge and Tunbridge Wells, is experimenting with Dietz's patent lamps for burning paraffin oil, as a substitute for gas. The pecuniary saving is estimated at £1 per lamp per annum.

The members of the Somersetshire Archæological and Mutual History Society visited Old Cleeve Alhey on Wednesday week, and made a careful inspection of the premises and site, returning to Taunton in the evening.

The church of All Saints, at Branksome Park, near Bournemouth, was consecrated on the 20th ult. It is Early English in style, and consists of nave and chancel, so planned that nave and transepts may be added at a future day. The materials are Purbeck stone with Bere stone dressings, and the cost has been between £3,000 and £4,000. Messrs. H. M. Burton and T. Stevens are the architects and Messrs. H. J. Saunders the builders.

The new church of St. Michael and All Angels, at Dalton, near Wigan, was consecrated on Saturday. The church has been built at the sole expense of Lord Skelmersdale, at a cost of between £5,000 and £6,000. Mr. T. H. Wyatt, of London, was the architect, and Mr. Winnard, of Wigan, the builder.

Mr. Worth, of Willesden, has been appointed deputy surveyor and inspector of nuisances of Gravesend, at a salary of £100 a year for the former and £50 for the latter office.

Extensive alterations in the National Bank premises at Waterford are nearly completed. The new front is in red brick, with bands and dressings of polished marble of various colours, and a large amount of carved stone. The contractors are Messrs. John Ryan and Sons, of Limerick and Waterford.

Brompton Church, Huntingdonshire, is undergoing restoration, Mr. Williams being the contractor. On Friday week one of the carpenters, John Byfield, while engaged in chopping out some rotting rafters, fell from the roof in an epileptic fit, and was killed. At the inquest a verdict of accidental death was returned, the jury holding that no blame attached to the contractor.

A new iron railway bridge is being erected at Rutherglen to carry the Farnham-road over the Caledonian line. It is in four spans, the widest being 38ft. Mr. Watson is the contractor. A new station is about to be built close to this bridge.

Building Intelligence.

BURTON LEONARD.—The foundation stone was laid on Saturday of a new church at Burton Leonard, near Ripon, in place of a small oblong building erected in the last century, and now falling into decay. The new building will be Decorated Gothic, in style, and will consist of a nave 53ft. by 21ft.; chancel, 28ft. by 18ft., with organ chamber and vestry on the north side, and a south porch and western bell gable. The east window will be of five lights. The roofs are to be open-timbered internally, and covered with red tiles. The nave seats will all be open, and provision will be made for a choir in the chancel. Accommodation will be given to 200 worshippers, at an estimated cost of £2,500. The architect is Mr. C. H. Fowler, of Durham, and the builder Mr. Wood, of Pickering.

CLIFTON (YORKS).—The foundation stone of a new school and parish-room, at Clifton, was laid on Tuesday week. Mr. J. L. Pearson, of Harley-street, is the architect of the structure, which will be Gothic in style. The material used is red brick with stone dressings, and the sole contractors are Messrs. Shilto and Morgan, builders, Campsall, near Doncaster. The building will be 40ft. in length × 20ft. wide measurement, and there will be a playground at the back, about 30ft. long and upwards of 20ft. broad. A bell-turret is to be built upon the north side of the school, and its height will be 40ft. Associated with the school there will be a class-room 16ft. × 14ft., and various out-offices.

COUNTY OF DURHAM.—SEDFIELD NEW AUXILIARY ASYLUM.—In response to advertisements, asking tenders for the superstructure of these buildings, no less than 130 tenders were received, containing 411 distinct offers; of these 22 were sole tenders for the main buildings, and 23 for the lodges and entrance gates, while 85 were for the separate trade sections in each contract. The competition seems to have been very keen, and shows that builders in the district are anxious to secure work, if not to realise profits, to keep their establishments together till better times are forthcoming. £40,000 was the amount voted by Quarter Sessions for the work, but it will be completed considerably under that sum. The work is of a plain yet neat and substantial character. Every improvement has been adopted that could in any way add to the comfort and convenience of the patients. The administrative block contains assistant-surgeon's house, committee-rooms, large dining and amusement hall, kitchens, sculleries, &c. Mr. William Crozier, M.I.C.E., engineer and architect for the county of Durham, has designed and will superintend the carrying out of the works.

LICKEY END.—Newschools, erected at Lickey End by the Bromsgrove School Board, will be opened shortly. The buildings provide accommodation for upwards of 250 children. The premises are substantially brick-built, and tiled with red Black Country tiles. The external walls are faced with very durable red pressed bricks, and are all 14in. thick. The whole of the benches and desks have been made by Messrs. Colman and Glendenning, of Norwich. The elevations are in the Gothic style. The architect's estimate was £2,430, including fittings, being within £70 of the contract sum of £2,500 for which the work has been executed by Messrs. Brazier and Weaver. Mr. John Cotton, of Birmingham and Bromsgrove, is the architect.

LIVERPOOL.—The memorial stone of St. Peter's new Wesleyan Church, Toxteth-park, Liverpool, was laid last week. The new church, it is estimated, will cost, including the site, £9,000. It is arranged to seat 945 persons. A large school-room, six class-rooms, five vestries, chapel-keeper's house, &c., are provided at the back of the church. The school-room will accommodate 425 children for class purposes, or 525 for simple meetings or addresses. The style is Gothic, but made subservient to the requirements of the congregation. The front will consist of a principal gable, with large central window, and large entrance doorway underneath, and a turret of

good design and proportions will rise to a height of about 100ft. The entire front and sides, where seen, will be faced with grey stocks and bands of red and black bricks, with Stourton stone dressings. The architect, whose designs were selected in competition with several others, is C. O. Ellison, Esq., F.R.I.B.A., of Liverpool; and Mr. Alexander Bleakley, of Birkenhead, has taken the contract.

LONDON SCHOOL BOARD.—At Wednesday's meeting of this Board the tender of Mr. J. S. Jerrard, of Loampit Vale, Lewisham, amounting to £8,974, was accepted for the erection of a school for 645 children in Collingwood-street, Ratcliff, and that of Messrs. Kirk and Randall, of Woolwich, amounting to £7,296, was accepted for a school for 572 children, in Sheperton-road, Islington. A recent resolution of the Board, accepting the tender of Messrs. Wall Brothers, of Kentish-town, amounting to £8,026, for the erection of a school for 599 children, at Tanner's-hill, Deptford, was confirmed. A resolution of the 18th July last, accepting the tender of Mr. T. Boyce, amounting to £679, for the erection of a separate cookery school on the Stephen-street, Lisson-grove site, was rescinded, it being agreed that the additional rooms necessary for the purpose be erected in connection with the school on the contract schedule of prices. The works committee was authorised to incur the following expenditure for furniture and fittings for the undermentioned new or enlarged schools:—Enlargement: Saunders-road, Notting-hill (352 school places) £285 8s. 3d. New buildings: Boundary-lane, Camberwell (810 do.), £614 19s. 11d.; Medburn-street, St. Pancras (849 do.), £672 19s.; Hatfield-street, Southwark (1,104 do.), £791 13s. 5d.; and Wright's-road, North Bow (1,083 do.), £779 1s. 8d.

MANCHESTER.—The foundation stone of the new gas-works, which the Manchester City Council, about eighteen months ago, resolved to erect near Philips-park, will be laid on Wednesday next. The work was commenced by the late Mr. Edward Johnson, to whom the contract was let about twelve months ago, and it will be carried through by his executors. The four tanks—each 153ft. in diameter and 36ft. deep—are intended to receive four three-lift telescopic gasholders, to contain together about 7,000,000 cubic feet. The retort-houses will hold 536 single retorts, 10ft. long, which will be fixed in double lengths and charged at each end, and so arranged that hydraulic charging machinery may be used. The other works in progress consist of a canal basin in connection with the Ashton Canal. The works will be erected in four sections, each independent of the rest, and each, when in full operation, will yield a maximum supply of 5,000,000 cubic feet of gas every 24 hours.

METROPOLITAN BOARD OF WORKS.—On Friday the tender of Messrs. Ford and Norris, amounting to £1,350, was accepted for the reconstruction of 750ft. of brick sewer between Thomas and Weaver-streets, Bethnal-green; that of Mr. Charles Prout, amounting to £3,917, for the construction of 2,000ft. of brick sewer between Gray's-inn-road and Vernon-place; and Mr. Prout's tender (£3,710) was also accepted for the construction of 2,400ft. of brick and concrete sewers for the covering in and diversion of a portion of Stamford-brook sewer, near the New-road, Hammersmith. A contract was sealed with Messrs. Laing for cleansing and painting the offices of the board. A letter was received from Mr. W. J. Pearce, submitting for approval plans showing proposed interference with sewer and subway in Queen Victoria-street, by the works of the Metropolitan Inner Circle Completion Railway. As this was the last day for opposing the proposal, it was determined to give notice to that effect to Mr. Pearce. Correspondence was read respecting certain sewer works now being carried out by the National Dwellings' Society at the back of intended houses in Peel-street, Kensington, which the Middlesex Waterworks Company apprehend may affect the stability of their reservoir embankment. The engineer to the board was instructed to inspect and report upon the works and embankment. A notice was received from the New River Company, stating that they intend to provide a constant supply of water in

the parish of Shoreditch from December 10th next, and the works committee was instructed to report where hydrants will be required to be placed in the parish in order to give the public the benefit of a constant supply. Dr. Liddle, medical officer of health for Whitechapel, forwarded an official representation as to the unhealthiness of an area in the district. The matter was referred to the works committee, to whom was also relegated a letter from Mr. T. Woolner, who, on behalf of the John Stuart Mill Memorial Committee, requested permission to erect a statue upon the site agreed upon, facing the School Board offices.

NOTTINGHAM.—Last week Mr. Gladstone was present at the laying of the foundation stone of the new University College at Nottingham. The project for erecting what will now be known locally as "University College" has been materially assisted by a gift of no less than £10,000 by an anonymous donor. The building itself will cost about £45,000. The greater part of the outlay will, however, be met by the Corporation. Designs for the proposed building were obtained by public competition, in which Messrs. Lockwood and Mawson, architects, London and Bradford, gained the first premium, and, therefore, received the commission. The college will be Gothic in style, and is to consist of three sections—the central portion devoted to University Extension purposes. Its accommodation will include a lecture-hall, capable of accommodating 600 persons; two smaller lecture-rooms, and a number of class-rooms, laboratories, &c. The Free Library and Museum are to form the two wings, right and left, of the main building.

PRESTON.—New head-quarters for the county constabulary have just been erected at Preston from the designs of Mr. Littler, architect. The premises will comprise offices for the chief constable, residences for the chief clerk, a sergeant of police, and two married constables, with sleeping accommodation for 24 unmarried policemen or recruits. The frontage of the building will be 120ft., and the depth in rear will be about 200ft. The style will be Elizabethan, of simple character, in red brick, with window dressings and string-course of stone. Over the principal offices in front are to be a room for magistrates' meetings, an ante-room, waiting-room, &c., the remainder of this floor being taken up by the dormitories and stores.

SWANSEA HARBOUR WORKS.—The Swansea Harbour Trust and Town Council are just completing the extension of the west pier into the roads by 1,000ft., and the increase of dock accommodation, commenced 15 months since, and contemplate further works of the same character. The piles for the pier numbered 506, with a cubical capacity of 95,000ft., the timbers varying in length from 23 to 54ft. These were fixed by Mr. Thomas, of Newport, after having been erecoted by Mr. Railton, of the same town. The stone required for filling in the space between this framework was obtained from quarries near Swansea, and in all, block and loose rubble, 30,000 tons were thrown in. The ironwork, of which 72 tons was wrought and 22 tons cast, has been supplied by the Swansea Waggon Company. A lighthouse is yet to be added twice the height of the old one. The resident engineer is Mr. Schenk. The work, it is believed, will be completed at considerably below estimated cost.

SUTTON-ON-THE-FOREST.—Last week the church of Sutton-on-the-Forest was re-opened after restoration. Sutton is about eight miles from York, and its church is dedicated to All Saints. Its foundation dates back nearly to the Conquest, and though it possessed few relics of that time, those which are left are decided, and consist mainly of the half of a walled-up window and a few bases on the north side. The remains of an early Norman church also stand out clearly at the west corner, and there are various wooden piers and stone bases which are also indicative of early work. There are various other styles of architecture which indicate the hands of frequent after-restorers. The font is of about the year 1300. The capacity of the church was perhaps equal to the demand upon it, there being sittings for some 400 worshippers, and the object of the restoration has not been so much to increase this as to preserve the edifice and its characteristics to the parish and

the country, for amongst its vicars in years gone by was the author of "Tristram Shandy." It is now in the Perpendicular style, but the ancient Decorated east window has been preserved in the chancel end. In place of the unique arcade between the nave and large north aisle of massive but decaying oak timbers, rudely fashioned into pillars and arches, one of 15th century character has been erected in Ancaster stone. The roofs are open timbered, and the seats are of pitch pine, but at present no provision has been made for lighting the church. The restoration has been carried out under the architectural superintendence of Mr. Atkinson, of York, and the builder has been Mr. Keswick, of the same place.

THIRSK.—The ancient parish church of Thirsk, after alteration and restoration, was re-opened on Tuesday. The restoration up to the present time has been confined to the interior of the church. The walls, which before were coated with plaster, have been laid bare, and, by the way, whilst this was being done, several paintings of figures of the Apostles were discovered on the spaces of the wall between the windows of the nave. These have been carefully preserved. The chancel arch has been entirely restored, and the roofs have been repaired and re-leaded. The cost of the work already done is about £4,500. The architect is Mr. Street, and the contractor Mr. Brown, of York.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published October 5 contains articles on The Penge Tragedy and its Lesson in Connection with Public Health, The Sanitary Housing of our Population, The Birmingham United Drainage Scheme, The Hospital Schools, Compulsory Registration and Infectious Diseases, The Parkes Museum of Hygiene, Smoke-Laden Air, Fruit Bread, The Meat of Cattle Afflicted with Pleuro-Pneumonia, Patent Medicines and Secret Remedies, The Water we Drink, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c., &c. Price Twopence. Annual Subscription, Post-free, Eleven Shillings. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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W. H. W. (You had better consult topographical works on every county, as no single work will give you a list of "all the old buildings of interest in England.")—P., J. M., X., B. R., C. S., X. (Habershon's "Half-Timber Building," and Dollman's "Domestic Architecture" may give you what you want. The BUILDING NEWS has contained some of the best illustrations of timber work.)—J. DUTTON WALKER, F.S.A. (Next work)

Correspondence.

THE QUEEN ANNE MANIA.

To the Editor of the BUILDING NEWS.

SIR,—Has the Queen Anne mania any *raison d'être* in this phase of the nineteenth century? Is it more representative of the art feeling of our age than the Gothic, or was, or as much? or are they not both exotics, so to speak, though derivatively English, foreign alike to the feelings and sentiments of the bulk of the population, and fostered only by an eccentric few, understood not by, and caviare to, the many?

These thoughts have been suggested by a contemplation of Mr. Brydon's design for the Kensington Vestry Hall. The question has been asked before, and will be asked again, are we to ignore such windows, and all modern improvements and inventions, because they were not co-existent with, and consequently have no sympathy with, Queen Anne and her architecture? And is the return to what was considered, less than 10 years ago, as, perhaps, a picturesque, albeit debased, period of our English architecture, to which a certain amount of admiration might be conceded, *sub rosam*; but to be sketched, or reproduced, by the aspiring young architect—never: Is this a healthy sign, or is it merely one of the many eccentric garbs which our modern buildings have to put on at the bidding of the designer or compiler—this or that article of apparel from this or that age—a fashion not more desirable than, and having no deeper sentiment or foundation than the Dolly Varden costume, and other ultra fashions in feminine attire, and as soon to be discarded?

For it has come to this, the artist in coats and the artist in houses about keep pace with one another, and no more, and as the fashioner of our garments trumpets forth by woodcuts and advertisements the latest fashions in coats or trousers, so does the other and no less potent snip exhibit in the weekly journals "the latest modes" in town-halls or mansions.

There is, according to my mind, in this eclecticism in building, another and a serious danger to be apprehended in the future other than the sufficient one of having no style which is representative of the feelings and sentiments of the age.

Having run through the gamut of all styles; having at pleasure varied the fascinating painter's Gothic of the Venetians by the bold, massive, and simple work of the French; having exhausted the interest of our own 13th and 14th century work, and returned for the second time during the so-called Gothic revival to the latest, and until lately what was considered the most debased of the Gothic periods—viz., the Perpendicular and Tudor styles; having also had a go at the heavy portico or windowless style, dubbing the attempted imitation Greek; having built also with some success in the Italian, and having had final recourse to the Queen Anne; having built in every style under the sun, though, through having no knowledge of the style the Tower of Babel was erected in, have not imitated that, though we should much like to have had a few details and reproduced it; having done all this, and incurred the danger to which I allude, in years to come—viz., running the risk of adding all the brains of all the antiquarians that were not added already—for unless the varied assortments are labelled now, or at a later period whilst we have ample record, who shall decide which is the antique and which the spurious imitation, so that it may be necessary, if things are allowed to take their present course, to label every building as "Resuscitated Queen Anne, temp. 1877;" "Rejuvenated Gothic, 14 cent., temp. 1864;" "Rehabilitated Greek, temp. 1830," and so on. This rage for imitating the old is not confined to architecture only, as we have seen lately a prosecution instituted in the matter of imitating old silver plate, dishonest artificers having found it worth their while to manufacture it, and tradesmen dishonest enough to sell it—selling it, however, as veritable old plate, therein the dishonesty. The Arundel, and other societies also, that devote their time and money to the reproduction of old manuscripts,

engravings, &c., and the reprint of old and scarce works, exactly according to the old editions; not only so, there are some modern writers who delight to clothe their ideas in language ambiguous and peculiar to themselves. If this fashion is not taken from ancient models, it is hard to say whence it is derived, as it is not a modern one.

I don't know whether I am quite in order in making these remarks; they have suggested themselves to me, and I have jotted them down.—I am, &c., ASBURY JACKSON.

ARCHITECTS' COMMISSIONS.

SIR,—I do not often receive such circulars as enclosed, but I think it right they should be made public when I do; so, if you agree with me, perhaps you will note the "kindly" offer as to commission.—I am, &c.,

ROBT. W. EDIS.

14, Fitzroy-square, W., Sept. 29, 1877.

[Copy.]

To R. W. Edis, Esq., London.

Dear Sir,—We have the pleasure to submit our pattern-book and price-list, and shall be glad to be favoured with a share of your patronage. We shall be happy to allow you 7½ per cent. commission on all orders obtained through your influence, and can execute your own designs if required.—Yours truly,

Hanley, September, 1877.

The Wesleyan chapel at Portadown was re-opened on Thursday evening, after the completion of improvements and decorations, and the erection of a new organ, built by Messrs. Conacher and Co., of Huddersfield.

The section of railway between Bradford and Great Horton was opened for passenger traffic on Monday. The station buildings and other works are in the hands of Messrs. Crabtree Brothers and Sugden, of Keighley; Mr. H. Wilson, of Leeds, clerk of works. The tunnel on the Queenbury section of the line is progressing but slowly, owing to the quantity of water the contractors, Messrs. Benton and Woodruss, have met with.

The tenants of the Duke of Sutherland have presented his grace with his portrait, painted by Mr. Herdman, R.S.A.

The West Hartlepool town commissioners are being urged in the local press to purchase the works of the Hartlepool Gas and Water Company.

A new wing is being added to the West of Scotland convalescent seaside houses at Dunoon, at a cost of £4,000.

The new Roman Catholic church of St. Patrick, Newtownards, which has been built from the designs of Messrs. Hanson and Son, of London, at a cost of £10,000, is to be dedicated on the 24th inst.

Contracts have been signed and exchanged between the local board of health and the gas company of Penrith for the purchase of the gas-works, and undertaking by the former body on terms to be settled by arbitration.

New schools and teachers' residence are being erected for the Pevensey School Board at Hancomb, by Mr. Charles Banks, contractor, from the plans and designs of Mr. Elworthy.

The Darlington School Board have supported Mr. R. R. Robinson as their clerk of works to superintend repairs and alterations to their schools.

The town commissioners of Bray have obtained the sanction of the Local Government Board for Ireland, for contracting a loan for £14,000 for general improvements proposed to be carried in the township.

A new Wesleyan Methodist chapel was opened on the 19th ult. at Nursling, near Southampton, Hants. Mr. Ranger, of Finsbury-pavement, was the architect, and Mr. Ware, of Nursling, the builder.

Memorial stones of a new Primitive Methodist chapel and schools, to be erected in Dover-street, Folkestone, were laid on the 19th ult. The entire cost will be about £2,000. The contractor is Mr. Unwin, of Folkestone. Mr. Ranger, of Finsbury-pavement, is the architect.

Messrs. Camin Brothers, of Southwark and Birmingham, have recently erected a memorial window in the parish church of Yardley, Warwickshire, to the late Mrs. Simcox, of Hall-green, representing "Christians entering the valley and river of Death."

The parish church of Northop was reopened on Tuesday, after internal renovation, the cost being £2,000. The church possesses one of the three largest and finest towers in the Principality, all evidently designed by the same hand, and executed about the same period, the 15th century. The other two are at Wrexham and Gresford.

Intercommunication.

QUESTIONS.

[5140].—**Bath Stone.**—I am interested in a large building, erected within the last two years, in which Bath stone has been used for all the dressed and carved portions of the work. The Bath stone is already rapidly decaying. Can you recommend any measures to arrest the decay?—S. C.

[5141].—**Painting Iron Baths.**—Can any reader inform me what is the best kind of painting for a cast-iron bath that has been some years in use? Several kinds have been tried, but all have peeled off after a short time. Is any preparatory process necessary before applying the paint?—A. J.

[5142].—**Covering a Semicircular Roof with Tiles.**—Can any one tell me how a semicircular roof—an apse—can be covered with Roman tiles, all of one size, and where those tiles can be procured?—P.

[5143].—**Barfreyston Church, Kent.**—Will any of your numerous readers kindly inform me if there has been published any general drawings or details of Barfreyston Church, Kent?—C. F. A. V.

[5144].—**Rough Cast Work.**—What are the best and most economical materials for executing rough cast work on the face of a brick wall, and what is the process? Also, may the angles of the building and reveals of the windows, &c., be finished in rough cast, or must quoins of other materials be used?—J. M.

REPLIES.

[5126].—**Chemical Tests for Impurities from Wells.**—Add to a portion of the suspected water a solution of starch, slightly acidulated with acetic acid, containing a little iodide of potassium. If the water be perfectly pure, the colour will remain unchanged, but if there be nitrites present they will immediately strike a blue colour, which is the usual chemical test for the presence of nitrous acid. Another, though not so good a test, is the addition of permanganate of potash, which, if acted on by the nitrites, will part with a portion of its oxygen, and form a brown precipitate. A third test for the presence of sewage in water is to add a piece of loaf sugar to the suspected water, and expose to light, when development of minute infusoria and animalculæ will immediately follow, so as to render the water apparently turbid, and the presence of the animalculæ can be easily detected by means of a microscope.—R. L.

[5130].—**Breaking Weight of Trussed Girder.**—The material of which this girder is made is not stated, nor the mode of loading. Assuming that fir timber is intended, and that the load, W, is uniformly distributed along the top piece from A to A, we have $\frac{W}{3}$ supported at B and $\frac{W}{6}$ at A. The strut, A B, conveys the load, $\frac{W}{3}$ to the point A, so that the total vertical load above A is $\frac{W}{2}$, which produces compressive and transverse strains upon the outer strut; the latter strain will be found equal to $\frac{4}{5} \cdot \frac{W}{2}$ or $\frac{2}{5} W$. The load $\frac{W}{3}$ at B produces a transverse strain on strut A B equal to $\frac{19}{20} \cdot \frac{W}{3}$. The load on horizontal piece, A B, will be $\frac{W}{3}$. All these transverse strains are uniformly distributed over the length of each piece. Consequently, we may represent the breaking weight in cwt. by—

$$80 \times \frac{b \cdot d^2}{l}$$

all dimensions being in inches. For transverse strain on the outer strut we have—

$$\frac{2}{5} W = 80 \times \frac{5 \times 36}{60}, W = 600\text{cwt.}$$

For transverse strain on strut A B—

$$\frac{19}{20} \cdot \frac{W}{3} = 80 \times \frac{4 \times 36}{108}, W = 337\text{cwt.}$$

For transverse strain on top piece between A and B—

$$\frac{W}{3} = 80 \times \frac{5 \times 36}{120}, W = 360\text{cwt.}$$

Now, since the strength of the whole girder is only that of its weakest part, we must take the second of these values of W as representing the breaking weight distributed over the whole length of the top piece—namely, 337cwt. The compressive and tensile strains need not be calculated in this case.—E. W. T.

[5136].—**Measurement of Chimney Breasts.**—There are different methods of measuring chimney breasts in Yorkshire:—1st. By the lineal yard, each flue measured. 2nd. By taking the girth of breasts—face and projections only—by the height up to roof, girth round above roof, calling it all 9" work, if built 4". 3rd. Width of breasts by height by projection, brought into cube yards, as high as roof, above roof girth round, and charge whatever thickness it is, 5' or 9". Take 5" midfeathers to separate flues above roof, yards superficial. The latter I consider to be best. If the breast is in a 9" wall, the wall is measured behind the breast as 9".—J. H.

[5137].—**Lowest Tenders.**—"G. E. H." cannot recover compensation, as the owner expressly stipulated that he would not warrant the acceptance of the lowest or any tender.—L.

[5137].—**Lowest Tenders.**—"G. E. H." must first be sure of the fact that the architect "materially altered his plans" after the first tenders were received and rejected. If he can prove this he might certainly have a fair claim for compensation, the treatment being despicably mean, notwithstanding the protecting clause. The architect should, in fairness, have invited the first competitors to compete after he had reduced the plans.—ARCHITECTUS.

[5138].—**Quantities.**—According to "Provincial Contractor," his tender for work was accepted, and he commenced it, but was soon afterwards stopped; the work was valued and paid for, but the fee for quantities paid to the architect was not returned. He can certainly sue the architect for the amount under the circumstances related.—G. H. G.

[5138].—**Quantities.**—The fee for quantities should have been included in the valuation of work done. "Provincial Contractor" should have ascertained at the time if this course had been taken, and if not should have challenged the omission. If by accepting the amount of the valuation he has given a receipt discharging the owner from all liability he cannot now recover from the owner, nor can he, by law, compel the architect to repay him.—L.

[5139].—**Joiners' Work.**—"Veneering" thinks I have missed the point of his inquiry, and he puts some more specific questions. The first is: Can the treatment he proposes be satisfactorily executed? It can be executed, but I do not think satisfactorily, inasmuch as the foundation or ground has to be sunk instead of the pattern itself. In reply to the second question, I do not consider it would be any cheaper than inlaying, if so cheap, simply because the labour in sinking the lighter wood, added to the cutting or perforating of the veneer, would be as great as simply incising and inlaying. As to the third point, it is true I attached importance to the lighter wood, being the less costly; if it were not so, why should you partly cover it up with less valuable veneer. It appears to me any method to be economical or artistic should insert the decoration or more valuable wood upon the commoner, not cover up the valuable with the commoner. These are my reasons, but "Veneering," if a practical man himself, will be able to estimate them. I admire his speculative turn of mind.—G. H. G.

[5139].—**Joiners' Work.**—The idea of laying ornamentally perforated veneer, as suggested by "Veneering," is impracticable, because, in the process of laying the veneer, the glue would be pressed out, and to pick out the glue without injuring the outline of the ornament would require great time and skill—if the ornament were intricate, utterly impossible. The method adopted generally is to lay a whole veneer in the usual way, then to let the carver have it, who incises the ornament, cutting a little below the veneer, so as to be clear of the glue. "Veneering's" idea would neither be cheaper nor so satisfactory as the usual method.—CABINET MAKER.

LEGAL INTELLIGENCE.

DEVIATION FROM DEPOSITED PLANS.—At Luton, on the 22nd ult., Ambrose W. Ball, builder, of Bedford-road, was charged with violating a bye-law by erecting in Collingdon-street certain cottages contrary to a plan deposited with the Luton Town Council, on July 23rd, and H. B. Rosson, manufacturer, owner of the premises, was charged with permitting the offence. Mr. W. H. Leete, the borough surveyor, proved the case, showing that Ball put the heights of the bedrooms into the plans at his request—namely, 8ft. high, as over half the area, the minimum allowed by the bye-laws. As erected, one of the rooms was 7ft. 3in. in one place, and 5ft. 6in. in another. Rosson, one of the defendants, was called, and stated that Ball prepared the plans, and that he had not authorised the deviations, by which he had lost. Ball, on the other hand, swore that he was ordered to make the alterations in the upper room to get more space in the workshops below. A fine of £1 and costs, 11s. 6d., was inflicted on each defendant.

ANCIENT LIGHTS—UNITY OF SEISIN.—Evans v. Moss.—This was a motion for an injunction to restrain the defendant from building any wall upon the site of the defendants' premises, 135, Curtain-road, Shoreditch, so as to interfere with the plaintiff's ancient lights in the adjoining house, 133, Curtain-road, and for a mandatory injunction and damages. His lordship, on a previous occasion, had in effect decided the question of the injury in favour of the plaintiff, and the case had only stood over for the purpose of a point of law being argued whether the easement had not been extinguished by unity of seisin in 1869. It appeared that both the houses had been sold by auction in July, 1869, by the executors of a Mr. Thomas James, and No. 135 was, on the 3rd December, 1869, conveyed to Mr. Sanl Moss, the father of some of the defendants, and that the vendors continued to be the owners of No. 133 until the 3rd February, 1870, when that house was conveyed to a Mr. James Samuel Spence. It was alleged that there had always been different tenants of the two houses, but the defendants took the point that the easement had been extinguished. Mr. Martin, Q.C., and Mr. Oswald, for the plaintiff, argued that there

had been no unity of ownership sufficient to extinguish the easement. The tender of proof was on the other side, and they had failed to show any such thing. At all events, in the particulars of sale the appurtenances were sold subject to easements. The estate must be exactly of the same denomination, and the possession of the tenant would not be that of the landlord. It was very hard that tenants should be prejudiced by the acts of their landlords. If not entitled by prescription, the plaintiff is entitled by his contract. Mr. Fischer, Q.C., and Mr. Hatfield Greene, for defendant: First we say the case is not ripe for present decision, and should go to the hearing. We are ready to give an undertaking to alter the building, if so ordered. On the point of law we are right; the buildings prior to 1869 belonged to one man, so as to constitute unity of seisin. Mr. Justice Lopes was of opinion that he could not decide the question on the present occasion. He did not desire to express any opinion on the point of law, which was one of some difficulty. He would not grant the injunction, but the defendants must give an undertaking to pull down or deal with their building as the court might direct at the hearing, and the motion would stand to that time.

ROMFORD LOCAL BOARD AND THEIR SURVEYOR.—On Thursday, the 13th ult., William Hood was summoned to the Romford Police-court, charged under the 196th section of the Public Health Act, with failing to render an account in writing, and to deliver up a statement in writing of such moneys as he had received or disposed of on behalf of the Romford Local Board of Health as their surveyor and inspector of nuisances. It was stated that defendant resigned his office, and that his term expired on the night of the 3rd inst. On that evening the Local Board met, but defendant, who was in his office, declined to see the members, or give up his books. Investigation of these had shown that no entry had been made during the past month, and that certain cheques had been issued without vouchers. Defendant set the board at defiance. An order of committal was made by the bench, to be suspended until the following Monday evening, to give him an opportunity of producing the books and accounts.

BREACH OF CONTRACT.—At Cambridge Police-court, on Friday, eight labourers, in the employ of Mr. Glasscock, builder, of Bishop's Stortford, were summoned for a breach of contract. In the first case taken, that against William Reynolds Warren, prosecutor's foreman said defendant was engaged at the Cock and Magpie premises in Bridge-street. He came to witness and asked for work at 4d. per hour. Witness replied that he could have the 4d., and defendant commenced work on the 17th inst., and agreed to stay on the job as long as wanted. A day or two afterwards the men in a body asked a rise of a halfpenny an hour, and he promised to consider the matter, and give them an answer in a short while. The men were mixing concrete at the time, and it needed to be used at once. Eight of them, including defendant, left work, and witness had to take off bricklayers and put them to the concrete work. Prosecutor was under a bond to complete the contract in a given time, and the loss had been 5s. a day. Defendant contended that as he applied for work by the hour he could leave at an hour's notice; but the bench considered there was a breach of contract, and ordered him to pay 5s. damages, together with the costs. A like decision was arrived at in the other seven cases.

WORSBOROUGH WATER SUPPLY.—This village, together with the adjacent ones of Berdwell and Blacker, have been supplied with water by an extension of the mains of the Barnsley Waterworks Company. The work was brought to a successful issue last week, the water being furnished to every house. The contract has been carried out by Mr. Skelton, of Sheffield, and the pipes were supplied by the Staveley Iron and Coke Company. The total cost has been about £3,000.

WATER SUPPLY AND SANITARY MATTERS.

CARLUKE, N.B.—This town, hitherto supplied with water by deep wells into the limestone, which has become totally inadequate to the increasing requirements, is being furnished with a supply of much softer and better water to be brought from springs in the old red sandstone on Springfield-farm, four miles distant. A 7in. pipe is being laid in an open cutting to near the centre of the intervening ridge, through which a tunnel, 660 yards long, is being bored. About half way between the spring and town, on the Lee estate, water is to be led into a tank, with adjacent reservoir, having a capacity of 85,000 gallons. The tank will be enclosed in a house built of square dressed rubble, with slated roof, supported on malleable iron truss roof. The total cost of the works, inclusive of land and wayleave, will be £5,500. Mr. James Tait, C.E., of Wishaw, is the engineer, and Mr. John Scott, of Hamilton, is the contractor.

KILWINNING WATER SUPPLY.—Negotiations have been opened between the Irving and Halfway Joint Local Authority and that for Kilwinning for the supply of the latter borough with water from

the new works in course of formation at Greenwood Messrs. Leslie, of Edinburgh, the engineers, report that 60,000 gallons per day could be furnished, and that a charge of 6d. per 1,000 gallons would be fairly remunerative to the joint authority.

OXFORD WATER WORKS.—The new reservoir on Headington-hill which will provide the inhabitants of Oxford with a continuous supply of water night and day, having been completed, it was opened by the mayor and corporation on Wednesday week. The reservoir has been constructed in a very substantial manner, and is 126ft. square inside and 14ft. deep, and will hold 1,250,000 gallons of water. It is built on a bed of concrete 15in. thick, over which is 15in. of clay-puddle and a thick flooring. The relieving walls are of great thickness, and are backed with clay-puddle. The reservoir is covered in with a roof supported on 64 massive brick piers. The top water line of the reservoir is 120ft. above the level of the High-street at Carfax, and 143ft. above the floor of the engine-house at New Hinksey. The supply of the city dates from 1694, when some plumbers made a cistern at Grandpoint; it has hitherto been furnished by direct pumping from the lake at Hinksey, but this proved inadequate for the public requirements. The works have been carried out from the plans of Mr. John Hawkesley, C.E., under the supervision of Mr. R. Downing, resident engineer, by Mr. Charles Dickinson, of London, who has also completed the drainage works of the city. The expense has been above £9,000, exclusive of land.

OPENING OF TAUNTON SEWERAGE WORKS.—The mayor and corporation of Taunton visited the sewerage works at Target-field on Tuesday week, and after an inspection under the guidance of Mr. J. Smith, the surveyor, formally declared them "open." Hillé's system of deodorisation has been adopted, the solid being afterwards screened off into a sludge depôt for treatment as an agricultural manure, and the effluent water being passed over weirs into the river. The cost of carrying out the scheme has been about £15,000.

SPRINGBURN AND HOGGANFIELD (GLASGOW).—Works of water supply for these high-lying suburbs of Glasgow were inaugurated a fortnight since. The schemes have been designed by Mr. J. M. Gale, and carried out by Mr. Peter Quin, Springburn, as contractor, and Mr. John M'Auslane, clerk and inspector to the local authority; the execution of the Springburn scheme being superintended by Mr. George Romanis, C.E., of Edinburgh; and that for Hogganfield by Mr. A. A. Haddin, C.E., of West Regent-street, Glasgow. Both are designed on the basis of a supply of 30 gallons per head per day of the Loch Katrine water, received in low-lying tanks, raised by force pumps to the requisite level, whence it is distributed by pipes to the houses. At Springburn and Balgray there is a population of 3,000; but houses are in course of erection to give additional accommodation for twice that number. These works are therefore planned for 9,000 persons' supply. The pumping station is situated at Eastfield, where a tank, holding 300,000 gallons, has been constructed. A pair of powerful engines, made at the Canal Basin Foundry, forces the water from this tank through a 12in. pipe to an elevated reservoir at Cockmuir, a distance of 1,590 yards, holding 800,000 gallons. The distributing pipes are 5in. in diameter, and 5,359 yards in length. The pipes have a total length exceeding 4 miles, and have cost £3,700. The total outlay on the scheme has been upwards of £13,000. The Hogganfield undertaking is for the supply of a more scattered population of but 3,000, and has cost £8,000. The pumping station for this scheme is at Riddie, about 2½ miles from the centre of Glasgow. The receiving tank is built of brick, and has a capacity of 41,000 gallons. The engines, constructed by Messrs. Rait and Lindsay, are of 20 horse-power, pumping 17,000 gallons an hour. The water is raised to the second reservoir, a vertical height of 167ft., in an 8in. pipe, 1,670 yards in length. This reservoir is situated behind Letham-hill House, is lined with concrete and brick, and contains 330,100 gallons, or 3½ days' supply. Distributing pipes convey the water thence to the houses; the total length of piping being 11,534 yards, and its cost £4,300. Sufficient ground has been acquired to allow of the duplication of the works should it be found necessary.

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DEALS—BATTENS—FLOORING.

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Our Office Table.

THE decoration of St. Paul's Cathedral, which was stopped by the recent outcry against the undue use of colour in an edifice remarkable for the severity of its noble proportions, is, according to the London Correspondent of the *Liverpool Mercury*, now being taken up and carried on very vigorously and quietly. At present a number of windows are being introduced. The crypt, for instance, is at once to be provided with stained glass. Next the morning chapel will be similarly decorated. Different artists are to be employed—Mr. Westlake for the crypt, and Messrs. Hardman, of Birmingham, for the chapel. It will not, therefore, be said that the artistic tastes of the restoration committee are not "catholic."

MR. WATERHOUSE reported last week to the Manchester City Council that, owing to the opening ceremonies, and the needful preparations for them, but little progress had been made during the past month with what remains unfinished of Messrs. Clay's work. This has now been taken in hand, and there is no reason why everything under their care should not be speedily completed. It was with considerable satisfaction that Mr. Waterhouse marked the absence of any serious defects in the building during the days of opening, and he is glad to report that the ringing of the bells produced a scarcely perceptible oscillation of the tower, such trifling vibration as was noticeable being confined entirely to the lantern. The bells themselves are remarkably fine in the quality of their tone, and so nearly is the hanging of the whole of them completed that Messrs. Gillett and Bland will probably be in a position to commence fixing the clock and carillon machinery this week.

THAT the present is an age of development is evident, and the results are seen on every hand. For one thing, we have seen how the tailor has passed from his original trade through that of ecclesiastical furnisher to church decorator-in-general, dealing largely in works of iron, glass, wood, and stone, and even executing some of the most important castings in bronze that the time affords. And, again, one has seen how the dealer in paper-hangings has developed into professional decorator, charging fees and taking a leading part in a demonstration against the architectural profession, his original employers. These we have seen, and more, but nothing probably is more strikingly novel than the fact now before us in the matter of the Congress Hall at present building at Croydon for the church meeting in that town next week. The work is proceeding in the usual way under the direction of an architect (Mr. Salter, of London), but, strange to relate, although tenders were offered by eminent builders, the contract has been taken by a fashionable West-end draper, who not only is building the hall, but has undertaken to supply the finishings and furnishings, besides the refreshments which will be required for the congress. If these details are correct, we can only remark that the character of the procedure is novel, and we were not surprised to observe the dilatory manner in which the men were working as we passed the building a day or two since. For the sake of the church people it is perhaps a good thing they have got the supervision of an architect. The hall, we understand, is costing about £4,000.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenhire.—[ADVT.]

Trade News.

WAGES MOVEMENT.

LONDON.—The attempt to solve the difficulty with the masons on strike by importing a German contingent having entirely failed, things now are precisely what they were prior to the arrival of the foreign masons. The usual weekly meeting of the strike committee took place on Saturday at the Sun, Westminster-bridge-road. The subscriptions continue to come in, and the levies are paid with regularity, so that the men out on strike are receiving a certain amount of wage. Telegrams are passing between the masons in London and the Berlin society with a view to stopping any fresh relays being sent off in ignorance of the state of affairs in London.

MANCHESTER AND SALFORD.—Last week was the 22nd of the joiners' strike. The number of men now answering the roll-call is 630. The strike pay has again been increased by 1s. per week, and the committee express a hope to be able to announce a further advance when they make their next report. The average weekly contributions from the London society amount to £70, those from Birmingham between £10 and £50, and proportionately from elsewhere. From the aggregate returns of the several associations it appears that, out of 28,000 enrolled members, only 200 are reported as unemployed.

TENDERS.

BETHNAL-GREEN.—For the reconstruction of 735ft. of brick sewer between Thomas-street and Weaver-street, Bethnal-green, for the Metropolitan Board of Works. Sir J. W. Bazalgette, engineer:—

Williams, Son, and Wallington	£2,800
Webster, W.	2,300
Pearson, C.	1,998
Young, H., and Co.	1,790
Dunmore, Thos.	1,758
Stevens, W. and Co.	1,630
Nowell and Robson	1,550
Batch, Jacob	1,410
Mowlem and Co.	1,407
Ford and Norris (accepted)	1,350

BLOOMSBURY.—For the construction of 2,000ft. of brick sewer between Gray's-inn-road and Vernon-place, Bloomsbury, for the Metropolitan Board of Works. Sir J. W. Bazalgette, engineer:—

Neave, Gohn, and Son	£6,725
Williams, Son, and Wallington	6,390
Pearson, G.	5,997
Mowlem and Co.	5,797
Bloomfield, J.	5,445
Dunmore, T.	5,426
Killingback, C.	4,578
Stevens, W. and Co.	4,550
Webster, W.	4,493
Ford and Norris	4,450
Young, H., and Co.	4,450
Prout, Chas. (accepted)	3,917

BROMLEY, KENT.—For alterations and additions to Baptist chapel. Mr. James Bennett, architect:—

Staines and Son (accepted)	£540
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CARLISLE.—For the erection of power-loom sheds, warehouse, offices, &c., in Denton Holm, Carlisle. Messrs. Hetherington and Oliver, architects; quantities supplied:—

Armstrong, C. and J. (accepted)	£7,000
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CARLISLE.—For alterations to premises in King-street, Botchergate. Messrs. Hetherington and Oliver, architects; quantities supplied:—

Batey and Forster	£341
Hewitt, Jas. (accepted)	330
McGuinness and Lister	315
Hill and Beatty	301

CHELSEA.—For additions to St. Mark's College for the Rev. Canon Cromwell. Mr. E. H. Lingen Barker, architect:—

Bradley, W. (accepted)	£407
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DEPTFORD.—For the erection of a school for 599 children in Tanner's-hill, Deptford, for the London School Board. Mr. E. R. Robson, architect to the Board:—

Perry and Co.	£9,320
Sewell, J., and Son	9,215
Downs, W.	8,985
Linn, G.	8,810
Thompson, J.	8,775
Johnson, F.	8,750
Atherton and Latta	8,610
Tongue, W.	8,545
Jerrard, S. J.	8,473
Kirk and Randall	8,092
Wall Bros.	8,026

[Accommodation on the old 9 sq. ft. basis for 642 children. Cost of site so far as purchased (area, 24,795 sq. ft.), £2,846 15s.; cost of school buildings, including teachers' rooms and closets, £7,281; cost of tar-pavement, &c., £217; cost of boundary walls and gates, £347; cost of covered playground, £181; cost per head of school buildings only, £12 3s. 1d.; total cost per head of buildings, including boundary walls, tar pavement, &c., £13 7s. 11d.]

FOLKESTONE.—For residence, stores, and stable for Mr. Tite. Mr. Burgess J. Koeve, architect; quantities supplied (residence to be measured and valued):—

For stores only.	
Saunders	£985 0 0
Payne	912 0 0
Butler	777 0 0
Holdom	754 10 0
Webster	735 0 0
Baker, R. and D.	709 0 0
Hoad	698 0 0
Slado (accepted)	612 17 0

THE BUILDING NEWS.

LONDON, FRIDAY, OCT. 12, 1877.

ECCLESIASTICAL ART EXHIBITION, CROYDON.

CROYDON presents, this week, quite a gala appearance. The Church Congress has attracted multitudes to its usually quiet streets. Those interested in ecclesiastical art may spend a few hours profitably in the improvised exhibition of church-furniture and decoration now on view at the skating rink, which has been fitted-up with stalls, and adorned with bunting. We find several eminent ecclesiastical art-firms are represented, the staple of the exhibits being confined to metal-work and church decoration generally. Messrs. Keith and Co., of Denmark-street, W.C., exhibit some choice specimens of church plate and metal work, many of the designs displaying a more than ordinary perception of appropriate forms. The altar plate we saw is certainly in advance of the taste for metal work observed some years ago. We noticed designs for chalices, flagons, and patens, that recall the old types, and it is evident the manufacturers have studied the best models, while the execution is all that can be desired. Mr. George M. Hammer, of 370, Strand, sends some excellent school furniture; and one form of school desk, called Moss's, we have before noticed; it consists of open cast-iron standards for seat and desk, the latter having a movable portion in front, which is hinged, and can be placed to form a widened desk, or turned up for books, as desired. We believe they are largely used by the School Board for London. The slope of desk is from 7 to 15 degrees, and there is a foot-rail, book-ledge, grooves for pens, and slots for slates. Another form we noticed combines the sloped desk and seat, with a flat table for festivals, or a back for lectures. The desk can be turned down, when a capital sloped back with arms is made, allowing the school furniture to be reduced in space, and made available for lectures or services. For small country schools these convertible forms of desks are certainly well adapted. The prices are: for stained deal, 27s. for 6ft. length, or 28s. 6d. in pitch pine. This length has two standards. One of the most novel departments of the exhibition is that devoted to improved funeral furniture. The largest exhibitors in this branch are the Messrs. Dottridge Bros., of the City-road. Their funeral cars are improvements; they display an agreeable and artistic reform of that hideous and forbidding square black van and plumes we call a hearse. If reformation be wanted it is surely in the accessories and trappings of the English funeral. Messrs. Dottridge's covered or polished walnut casket is also an obvious improvement upon the ordinary coffin. One exhibit is a handsome-moulded case or casket, with parallel sides and octagon ends, with opening lid, and decorated with furniture of a far more artistic kind than the Brummagem stamped-tin mountings with which the English eye has been so long satiated. A "mourning armet," to take the place of the old-fashioned band, is another *spécialité*; and a burial robe trimmed with violet upon white merino, designed by Mrs. Anastasia Dalby, attracted attention. In this connection we must mention Mr. Lyne's combined hand-hearse and bier; and Hatchard and Co.'s "Duplex funeral cars." Messrs. Jones and Willis display some admirable metal work and altar plate. We noticed particularly an eagle lectern, in brass, of the Reformation type, made for the Duke of Bedford; another with handsomely-designed foliated

brackets on a tripod stand; a gas standard; pendent for paraffin lamps, painted in low colours; a design for an oak reredos, by W. Scott Champion, architect, now being executed for the French Exposition of 1878, in Late Florid Gothic, with curved tracery as the leading decorative treatment. The centre is pronounced by a curvilinear gable, and there is a Flemish character in the work. The same firm show some choice embroidery for frontals, &c. A fine brass eagle lectern, designed by J. W. Rogers in a Late Gothic style, with a circular base supported by four detached colonettes, may also be noticed. The stall of Hart, Son, and Peard, as usual, sustains the excellence of that firm's manufacture. We noticed a well-designed altar-rail, with well-treated metal standards, painted in colours; a pastoral staff of silver, jewelled from a design supplied by the late Bishop Wilberforce; a brass enamelled cross of Early French character, a reliquary by Pugin, and an alms' dish in *répoussée* silver. Some admirably-finished artistic silver-work, enriched with engraved figure work, pierced, enamelled, and adorned with jewels, in which all the excellences of good design and workmanship are noticeable, call for remark. John Harduan and Co., of King William-street, Strand, have also an interesting collection of metal-work, altar-cloths, embroidery, and stained glass. Their nickel-plated candlesticks are especially remarkable. This process of plating has the advantage, we are informed, of durability: it does not tarnish, and the cost is a very little more than that of brass, while the appearance is equal to silver. We saw a plain but well-designed candlestick in this material. The process can be applied to all metal goods and brass, which latter is known to become seriously tarnished by the atmosphere of towns. We noticed an unique silver chalice from a design by Mr. G. E. Street, R.A., in which yellow work and medallions are introduced in the stem, knob, and base, the bowl being richly engraved. Messrs. Cox and Sons, of Southampton-street, the well-known decorators, contribute a few exceedingly well-executed specimens of their manufacture. We notice especially a fine brass lectern, with octagonal base and lights, designed in a massive style for the Philadelphia Exhibition; a silver-enamelled alms' dish, &c. But their speciality consists in their recently-introduced straw tissue decoration. This appears to us to be a very facile material for cheap and effective wall decoration, and the reredos now on view is deserving of the attention of decorative artists. A plainer description of church plate is exhibited by Messrs. Pratt and Sons. The altar decoration, embroidery, and tapestry, displayed by Messrs. Frank Smith and Co., are exquisite specimens of textile art. We note a beautifully-worked chalice-veil, and some frontals and dossals. Messrs. Bevington and Sons, the well-known organ-builders, contribute a fine organ, the notes of which are very soft and melodious. We see also some capital painted glass, lent by Mr. A. L. Moore, the well-known glass painter. S. Belham and Co. show an east window, designed for Sunningwell Church, Berks, by Mr. J. P. Seddon, and executed by Mr. A. Kennedy in rich dark-blue ground with figure subjects. Mr. Taylor and others also send specimens; we must especially note Messrs. Powell Bros.' cartoons for the Moody memorial window, Newcastle-on-Tyne, in which the figures are admirably drawn, exhibited by Messrs. Chubb and Son, the art metal-workers, who send also some excellent tile subjects, suitable for wall decoration. Messrs. Mayer and Co., of Munich, show in the roof of an annexe some painted-glass subjects, which are too much like pictures to please our taste in ecclesiastical work. We must not omit to men-

tion Mr. Platt's ecclesiastical embroidery and needlework; a well-designed wrought-iron gate, by Hart, Son, and Peard, with gilt foliations; two standards from St. George's Chapel, Windsor, sent by Messrs. Keith, in a florid style of Gothic about George III.'s age; Mr. J. P. Seddon's restoration of Lambeth Palace Chapel, and the screen of Ingham Church, both of which subjects in colour decoration we have referred to on a former occasion; some choice embroidered curtains 200 years old, lent by Miss Lucas, and an old manuscript assessment of Coulsden, in Surrey, dated 1664, signed by Nicholas Carew, of Beddington, sent by Mr. A. Lucas.

Taking the collection as a whole, we may pronounce it to be above the ordinary displays on these occasions. If we regard the exhibition as representative of modern workmanship and design, we are obliged to admit that the last quarter of a century has accomplished quite a revolution in ecclesiastical art. The exhibits by many of the firms we have noticed, made at the Exhibition of 1851, are still fresh in our memory, and comparing the art of that time with the present, we must admit that the efforts of the revivalists and the Cambridge Camden Society have yielded fruits. Both in artistic conception, purity, and excellence of workmanship, the metal-workers and decorative artists of the present time have made as great a progress as church architecture itself. Principles have been felt and combined with the imitation of the old types, and the artist and art-workmen seem to be doing now with intelligence and purpose what they did a quarter of a century ago in a mere transcriptive spirit.

We must not omit to say a word about the Congress Hall. This large wooden structure forms a great hall, with a surrounding gallery, about 120ft. in length by 96ft. between the walls, and has been speedily improvised to house the monster meetings of the congress. As a typical building, we may describe it as an elongated octagon-ended structure, with a projecting platform at one end. It is roofed in one span, though divided into a wide nave and side aisles by two rows of posts, which assist the long bearing of the rafters, which are 56ft. in length.

Entering the building, we find the roof to be composed of principals, formed in three thicknesses, cross-braced at the apex, and strutted from the uprights. The aisles are cross-braced, so that each pair of principals and the two supports of the aisles form one frame, there being 11 of them. The rafters are covered with lin. boarding and asphalted roofing felt, the inside lined with striped paper. Round the ground-floor of hall runs a stepped aisle, following that of the gallery over, and occupying the space up to the range of supports. The gallery over is supported by slanting lattice-work principals. At the back of the platform are retiring room, ladies' room, lavatories, &c., and we understand a dining-room, 88ft. x 32ft., is provided with all necessary fittings. The walls are of stout quartering, with sills, heads, and braces covered with rich boarding, with openings for light, and having three entrances on each side. These are lined with French grey calico, while the gallery fronts are decorated with crimson, and the interior, as we saw it illuminated, looked quite gay. The seating is convenient, and steel springs in the backs enable them to yield to pressure. Mr. E. Salter, of Queen-street, Cheapside, is the architect, and Mr. Whiteley, a well-known draper, took the contract, the price being £4,000.

ARCHITECTURAL CRITICISM.

ARCHITECTURAL critics may be broadly divided into two classes—those who look at a design or a work of art as an expression of an ideal, and those who

look upon it as an inseparable embodiment of a purpose or a plan. It has been said that the "poet sees things as they look," and so the artist, pure and simple, sees things too often in the same way without fathoming the purpose or motive of the design. Critics in art ought to be like those judges of literature who can see through the hollow superficiality of an author, penetrate the brilliancy and gloss, the witticism and humour, and gossip of the expert writer. It is almost a general concomitant of a popular writer that he is shallow; and in proportion to his facetia and wit, he may be generally estimated. He likes to dwell on men and heroes, plots and passions, personal attributes, and has scarcely any taste for generalities, principles, or abstractions. So in art we find precisely the same order of artists. They have a large public, but they must be exceedingly popular or they are nothing. Many manufacturers tell us it is of no advantage to them in discarding articles that were once popular, but are now considered by the cognoscenti to be below the taste of the day; they find that designs to pay must be popular, and so the work of the cultivated artist is left to be appreciated by the *habitués* of Regent and Bond-streets. But as there is a large demand for art that is popular, and what we may call "pretty," so there is a large number of critics and amateurs who judge of art, and estimate its quality by this attribute. There is another sign of popular taste; the objects of its admiration are nearly always *easy* discerned. That is to say, any involved idea or sentiment, any deep underlying truth or principle, anything, in short, that requires mental discrimination that cannot be immediately seen, is voted dull, heavy, or stupid. It was a long time before the inherent beauty of Oriental china was appreciated; and even now the vulgar or the ordinary taste cannot see anything to admire in the nice blending of colour or the exquisite variety, plot, and conventionality discovered in some blue and white china and Japanese ceramics. We have only to go to the popular markets of the day, where art products are found, to estimate at its true importance the almost immeasurable gulf there seems to exist between the common and the refined tastes of the age. In furniture, too, we find as great a disparity. In spite of our revivals in domestic art-furniture, and the principles of constructive truth and colour-harmony inculcated at our art-schools and museums, the vulgar, bizarre, and flimsy piece of furniture still maintains its supremacy in our cheap bazaars. The public buys what pleases them, and the manufacturer, of course, caters accordingly. A great deal of this ill-taste is due to the want of those refining influences which Social Science Congresses are fond of discussing; but perhaps a still more potent cause is the lack of what we may term scientific criticism. Critics are not always very discerning; they are fond of exaggerating a peculiarity, or making some capital out of a very unimportant feature. What we have said of art generally applies with great force to architecture. Architectural criticism is of two kinds, as we have said; but these two kinds represent exactly the pleasing or popular and the refined styles of design. What we mean by the popular style of architecture is that which deals largely in the extravaganza of feature—qualities displaying magnitude or massiveness, minuteness of detail, elaboration of ornament, grotesques, or anything that is strikingly bold, wonderfully delicate, skilful, or ingenious. The columnar or arcaded front is always more admired than a façade devoid of those features, and the popularity of any building will be found to be in proportion to the amount of familiar ornament it displays. Of course even popular taste varies with the

individual bias—one person will like a building full of quaint bits, stories in stone, or in colour, carving, and what may be called individual interest, and another may prefer something grand or massive, and devoid of such detail. Thus the two great classes of architecture appeal to two very different orders of mind. The popular mind is generally pleased with something striking—caryatides, sculpture, painted glass, allegorical decorations, and coloured interiors have far more interest than Doric colonnades, architectural mouldings, or fine proportions, while these latter qualities possess more importance in the eyes of the architecturally educated. In short the refined piece of architecture stands in a similar relation to the work of the common designer as one of Bach's fugues to a music-hall melody. To nicely distinguish between this puerile sentiment and the highest class of beauties in a building is not a common gift, or easily acquired. The critic has to learn how to cast off the rhetorical display, the *persona* of the artist, how to feel susceptible of the fine taste and the *savoir vivre* of the artist, without losing his judgment in matters of utilitarian concern; he must thoroughly understand and duly estimate the two kinds of taste we have described, to estimate the limits of the arts of sculpture and painting when applied to architecture. In a complex work like a design for a public building the difficulty is to duly take into account all the elements which controlled the designer's mind. Unless the plan and its purposes is clearly before one it is futile to attempt to estimate the design of an elevation. A gable, an external break, or a series of large windows juxtaposed with small ones, may appear whimsical to the external observer, unskilled in geometrical drawings; but directly the mind discovers any reason for the anomaly he views it with another eye; we may even perceive a beauty where none was evident before. This expression of a plan, however, may be, and often is, carried too far. There is a want of that quality which has been justly termed "politeness in building," which seeks to express a purpose in the least offensive manner—that is to say, by controlling the general features, and bringing them into something like harmony and rhythmical proportion. The "muscular" Gothicists often offend the public eye in this way; we see every internal peculiarity externalised, and pronounced offensively, and the façade gives one the appearance of an *olla podrida*. On the other hand, the popular Gothicist, who seeks only to gratify the passer-by, often loses sight of his plan altogether, or so bedecks his work with buttresses, parapets, traceried windows, carving, and ornament, that its internal arrangement is completely contravened. Classicists of the same feather employ porticoes and meaningless columns to enthal. Our competitions abound with instances of this *captando vulgum* sort of design; and criticism, if it aims higher than a weak impressive sentiment or opinion, should sternly cast aside such complaisant art. Architecture, while it may be polite, can never descend to the clap-trap of subsidiary arts, without appearing supremely ridiculous and contemptible. One sees numerous illustrations of this sort of architectural burlesque in any of our new streets in large towns. Every kind of device has been pressed into service, from a diminutive portico of the Corinthian order to an Italian cupola. It has been well observed that the ideas of the Germans produce abstractions, the order of the Romans rules, and the profoundest thoughts of the French are *bon mots*. In the architectural expressions of these different peoples we find these remarks wonderfully verified. The English are essentially practical—they are not given much to abstractions, nor to French politeness and epigram,

but they seize on some features, and use them in a hundred different ways. American architecture seems to have borrowed this habit of appropriation to a large degree. These singularities of individual nations are intensified by the ignorant artist; popular taste revels in them, and we must look to sound criticism to educate it in rejecting the extrinsic and incidental qualities of design. To do this the critic must learn to view a design as the embodiment of structural conditions; his judgment must be based upon actual facts, such as site, material, climate, &c.; it must proceed by a synthetic mode, and then it may be looked at by the method of analysis, or *à priori*. Unfortunately, a pre-conceived ideal is at once formed in the critic's mind, and the nearer the design approaches to it the better estimate is formed. We fear much originality and independence of design is sacrificed to this mode of examination.

ENGRAVING, LITHOGRAPHY, AND THE FINE ARTS.

THE PRINT ROOM OF THE BRITISH MUSEUM.

THE British Museum contains probably the finest collection of prints and engravings in Europe. Even the private cabinets which have been bequeathed to it, such as the Dyce and Slade, would, apart from the general repertory, constitute such a gallery of reflected art as neither Paris nor Vienna could parallel. The public, however, are little aware of these treasures, and even in the way of the student impediments are systematically thrown. It would seem, indeed, as though the department contained a private treasure, only to be enjoyed by officials and their favourites, because the general visitors as a body are systematically shut out, upon the plea that Hans Holbein's designs for goldsmiths, jewellers, and so forth, would have no interest for them. Then, why the works of Praxiteles? In this very Cabinet of Holbein, so little known beyond the Bloomsbury frontier, are original drawings, priceless in value, which may be engraved "by permission of the trustees," but which are themselves imprisoned from the general eye even more jealously than the jewels in the Blacas Collection. Now, what does "art-education" gain upon this system? Holbein was, in addition to his other attributes, a great domestic master. He has here a design for a chimney-piece, designed for some palace of Henry VIII., executed in the monumental style of a triumphal arch, but of it the Museum possesses no more than a photograph. Photography, in fact—and even a glimpse of this is begrudged—reigns supreme, at present, in Bloomsbury. What is the sketch of Queen Jane Seymour's gold cup except the shadow of a shadow? And what the design for a time-metre, probably one of Holbein's latest works—on the summit a clock driven by wheel-work, below which are fore and afternoon dials, showing time by shadows, with, beneath them, a clepsydra, indicating time by quarters of an hour? This should be popular art if it should be anything, and yet, if the expression may be allowed, it is buried in the first-floor crypts of Bloomsbury. Still, even this hiding-away might be tolerable were it not that a difficult admittance excludes the students of designs for book-covers and jewel-cases, chains and bracelets, monogramic fancies, and all else which represents the art and imagination of our ancestors, and all those other branches of art-study which the Arundel Society, for example, have endeavoured to promote. There can scarcely be imagined a more refined school of taste, for instance, than the rare plates from the Nielli of Peregrino da Cesena and Francesco Raibolini, who flourished during the latter half of the fifteenth century, and, illus-

trating the chief characteristics of the various schools through the intervening period, conclude with our own unrivalled works in mezzotint, after the paintings of Sir Joshua Reynolds, and, in stipple, especially by Bartolazzi, from the beautiful vignettes, designed by Cipriani, at the commencement of the present century. The Print-rooms at Bloomsbury contain only a small variety of these works, of which the earlier are the most interesting, though the public, as we have said, know scarcely anything of them, the specimens dating from the year 1452, when the first known impression was produced, to the year 1520, at which period three men—three separate workers—Mare Antonio Raimondi, at Rome; Albrecht Dürer, at Nuremberg; and Lukas van Leyden, at Leyden—brought the art to a state of proficiency which, if some consider to have been equalled, has never certainly been surpassed. The portraits of Raibolini, the arabesques of Da Cesena, the Sybils of Baldini are not to be matched at Florence, at Naples, or at Rome. This Italian school, indeed, is richly represented at Bloomsbury, with all its locked doors, dust, and dog-in-the-manger spirit. Those Andrea Mantagna, Raimondi—notably “St. Paul Preaching at Athens,” from an outline by Raffaele—Dürers, and Rembrants, should form a supplement to the National Gallery, instead of being boxed up here as though the British Museum were the veriest harem of art, instead of being, as it should be, a supplement to the National Gallery of England and the other great galleries of Europe. Many masters, in fact, are here represented whose original works might otherwise be only faintly known in England—that mysterious one, “The Master of 1466”—him who painted “The Knave” on a set of Trappola cards—Israhel von Mechenen, Hans Sebald Beham, with the others of his brilliant family, and Weneeslaus Hollar, whose illustrations from Holbein are incomparable. Hogarth, too, is here, with Reynolds and Raphael Smith, and those old shadows, Zasinger, Gloekenton, and Schöngauer; but, for the ordinary student of historical art, they might as well have never emerged from the chiaroscuro of the middle ages, to which they naturally belong. Yet, one of the collections is intitled an “Exhibition in the King’s Library,” which it is not in the slightest sense of the term. But we are told, “the present exhibition”—that is, a section of it—“is intended to convey some idea of what was done in England for the arts of designing and engraving, from the reign of Henry VIII. to the middle of the eighteenth century.” It was not necessarily confined to the works of native artists; its principal characteristics are attributable, indeed, to the eminent foreign artists who were employed by the Eighth Henry and the First Charles. We have practically, in these collections, the chronicles of a real art. The drawings of Holbein are sufficing illustrations of his power at various periods of his career, whether in England or abroad, and tell much of the influence exercised over his genius by the contemporary artists of Italy and Flanders. But, strictly speaking, the engraver, as Strange reminded us in his terrible attack on the Royal Academy, was, when first practised in England, principally applied to the embellishment of books, so that the earlier examples in the obscure department, now referred to, of the British Museum, have generally been supplied from the other department of printed volumes. Then followed a new dynasty—the engravers of portraits, as Reginald Elstracke, the Pass family, and others, all aliens—who flourished in England until they had taught William Faithome to take the work out of their hands. Those who enforce a visit on their own part—not too readily granted—to the British Museum Cabinet will find trea-

asures of which they are not aware. Thus, the pen outlines and Indian-ink washed dressings on the Holbein screens, that marvellous suggestion by the same master of “Time discovering Truth,” “The Descent of the Holy Ghost,” and the portrait—inimitable in expression, although the colour be lost—of Fisher, Bishop of Rochester—all these are engraved in the British Museum Cabinet, a large and various one, dragon-guarded, and most unintelligently classified. But, in course of time, it may be supposed that the exhibitions will prove real, and that the prints and drawings at Bloomsbury will not be altogether veiled from the public. It is, however, in view of such an eventuality that a protest has come from France. If, it is urged, the engraver’s art has become so exclusive, and so secret in England, why are not the powerful processes of photography employed, if not to supersede, at least to assist, the varying and fluctuating genius now at work? At this moment MM. Raffet, Giaeommatti, Charlet, and La Combe come upon the scene, offering lithography as a substitute for the European arts which have been lost or damaged in modern days. It is little more than half a century since the process of Senefeldar was imported into France, and a still less time since it was naturalised in England; but, brief though the period has been, it has developed a new phase of a very old form of controversy. Engraving, it was said, would be the death of painting; lithography would be the death of engraving; and photography would be the extinction of both. Not one of the prophecies has been justified. Never were pictures of merit rated at a higher value; never were copies of them more ardently sought after; never was art better popularised than by the photographer, whose camera supplies the “cheap press” of art, and makes its highest types known, through its most familiar processes. Still, we are asked, by the voice of the French Academy itself, to consider what middle place is held between the faded art of engraving with the comparatively meretricious science of photography, and the true artistic purposes of the nineteenth century. The lithographer, it will be at once admitted, is no rival, in point of pure art, with the engraver. Even Charlet and Géricault, even Raffet and Gavarni, pretended to be no more than the masters of a swift and inimitable sketching power, too rapid to be precise, too earnest to be mistaken. Said Gavarni, “I can write upon stone better than I can scrawl upon paper;” and, whatever conceit there may have lurked in the saying, it contained a grain of truth. Lithography, however, has never yet been promoted to the dignity of a place in a national collection, or even a public display, claiming any importance. It represents, nevertheless, in a considerable degree, the caricaturist history of several years past, all over Europe, and it will prosper in proportion as the engraver’s art, unfortunately, dwindles. Nor is this, by any means, to be regarded as a degradation of the engraver’s art. Bergerat and Denon were second to none in the science which, let us say, led indirectly to the revelations of Finiguerra and Daguerre. Lithography was father to the photograph. It was against a consciousness of this that Horace Vernet struggled; he said, “I am sure all these effects could be produced through an easier process; and if, through this easier process, some sudden effects of light and shadow could be produced, why, the work would fall out of my hands!” At all events, after his appeal, lithography became almost a high art in France, and as such it remains. The “Contested Flag,” the “Aurora,” the “French after Victory,” were never painted in oil on canvas by Charlet; they were given, in the first instance, to the stone, and they have remained there—stereotypes of the trium-

phant French imagination. So, with “The Grenadiers at Waterloo,” the “Voltigeurs,” and the celebrated “le Voilà!” These French lithographers never thought of quoting themselves; they chose a tablet, and inscribed upon it their meaning; well for them that it was not destined for the catacombs of Bloomsbury, where engraving is the foe of lithography, and where the fine arts naturally hold no place whatever. But the French, as is already said, believe in a link existing, and to be perpetuated, between the fine arts pure and simple, engraving as it was practised in the earlier times of the Royal Academy, and photography, as it may be supposed to have intruded upon both domains. They deny, however, that either engraving or photography can faithfully illustrate the genius of David, or Ingres, or Gros, or, even with the help of so consummate a master as Aubry-Lecompte; bring up lithography to a level with the original art of Leon Coignet. “Lithography,” says M. Henri Delabodre, “dismisses all romance.” Yet it has illustrated “Faust,” and thrown a picturesque light upon not a few scenes in the tragedy of “Hamlet.” It is true that, as a rule, the engraver has been a pupil of the painter, and, indeed, his works have, in this respect been all the more valuable, and so much the less deserving to be blocked out of sight in ostentatious red covers and ignominious glass cases. But, with memories of a late Librarian Congress still fresh, and hints from “Centre Tables” that they would prefer “the public” not to interfere with the “books” or “shelves” at all, there can be little wonder that our wealth of engravings, belonging to a National Collection, should be put out of sight, or that lithography should be called upon to fill up the gaps. But for it, where would be “The Fugitive Jongleur,” the “Lion of the Atlas,” or the “Royal Tiger?” These are wondrous pictures, not in colour, but in the simple white and yellow stone painting. Nevertheless, the school opened up at Bloomsbury is so far valuable in itself that it puts those exclusive students allowed to study in it on a par with the pupils of old Aehille Devérie, in Paris, who may, almost be styled the father of French lithography in its latest and richest relation—as a companion of art. It was he, with his pupils, Gavarni and Deecamps, who first made the art possible for portraiture; it was he who bestowed a life so actually vivid upon the traditional victories of Napoleon; and, all before this, lithography had been regarded as, in Victor Hugo’s affected words, “the tombstone of art”—a work of “oil stainers,” “chisellers,” “mock engravers,” and so forth. Yet there came a time when Balzac himself declared it owing to this craft that he was indebted for the best interpretation of his own ideas. However, apart from this, engraving has a place higher in art than lithography, and we do not blame the British Museum authorities for reserving to it a somewhat consecrated place. They have no right, however, to put out of sight an engraving, any more than an antiquity, and, now that their works of architectural improvement are nearly being completed, it may be hoped that some attempt will be made to render the institution what it was originally intended to be—one national and popular, with no doors shut on any side, and no cliques favoured. It is impossible to avoid suggesting some meanings like these. The trustees collect, and the nation pays for, collections worth all they cost, and presumably intended as popular lessons in the history and appreciation of art. “While so,” as Sir Joshua said, “welcome and good; but if for any other end there is little use in them.” This was the great painter’s decision, and he, of all other men, thought that a painter’s work should be given to the people as a study.

VALUATION OF COLLIERIES AND OTHER MINES, LEASEHOLDS AND FREEHOLDS.*

IN these days of commercial enterprise it is important that the comparative values of mineral and other kinds of property should be determined with some approach to accuracy, and that rules of a reliable kind, based on scientific principles, should take the place of approximations. Mr. H. D. Hoskold, F.R.G.S., the civil and mining engineer, has just published a comprehensive work that will meet the want, and the author's experience in valuing coal and other mines will add materially to the authenticity of the tables given. What the author tells us is too true, and has been illustrated by the ruin of thousands who have mixed in mining adventure. Immense sums of money are frequently spent in the purchase of mineral properties, and it is a common occurrence that much more is paid in order to secure them than they are really worth, and cases coming within experience are by no means few where the estimated value has exceeded the true value by 40 or 50 per cent., due in many cases to the employment of an erroneous year's purchase. The tables Mr. Hoskold has published to meet the demands of the profession and the public are full and complete, and are calculated on the principle of allowing interest to the purchaser on his capital, invested at one rate, and redeeming the capital so invested at another rate per cent. Another valuable feature of the book before us is that plain rules and formulæ have been given, involving present and deferred values at different rates of interest. The tables are of a comprehensive character, giving the year's purchase for any rate up to 25 per cent., and redeeming capital at rates of $2\frac{1}{2}$, 3, $3\frac{1}{2}$, and 4 per cent., and indicate a great difference from the old tables. An introductory chapter by Mr. Peter Gray, F.R.A.S., M. Inst. A., is prefixed to Mr. Hoskold's work, and contains some suggestive remarks. It is shown that in the valuation of a mine the elements of an annuity certainly enter—namely, the sum or the annual income to be derived from the mine, the term of years this income is to last, and the rate of interest. Mr. Gray puts the matter in a clear light thus: "In the purchase of mining property the purchaser is usually, perhaps always, allowed a rate of interest on his outlay far exceeding that at which he can invest the surplus of his annuity, which is called the 'redemption fund;' and hence, if the ordinary tables are used in the valuation of the annuity determined and assigned by the valuator, the result must be a loss to the purchaser, more or less heavy according to circumstances, since in them the difference between the two rates is ignored." It is shown that to reproduce the capital at the end of the term, when the tabular value of the annuity is used, the redemption fund must be invested at the stipulated rate, or that allowed to the purchaser. The formula adopted by Mr. Hoskold is

$$P_n = \frac{a}{S_n + r'}$$

where a is the annuity for n years to be purchased, S_n the redemption fund, and P_n the purchase money, and r' the rate per pound on investment. But there is seldom an occasion to resort to any formula, as Mr. Hoskold's book gives tables which solve every case that can occur under the problem. Tables VI. to IX. give the year's purchase, or the value of P_n , for £1, for every practical combination of the stipulated and practicable rates, and it only is necessary to multiply the tabular value by the annuity whose value is required.

* The Engineers' Valuing Assistant. By H. D. Hoskold, F.R.G.S., F.G.S., M. Soc. A., &c. London: Longmans, Green, & Co.

The disparities between these rates are pointed out. Part II., on the construction and use of valuation tables, is a useful part of Mr. Hoskold's work, and will be found of great service to students and surveyors. The formulæ are simply expressed in words; thus, the rule for increase of the principal at compound interest is thus given: "Add to unity, or 1, the interest due upon it at the end of the first year, involve the sum to the power whose index is the number representing each successive year in the given period." Thus, the principal of £1 and interest, .03, thereon = £1.03, the amount, and

$$\frac{1}{1.03} = .9708738,$$

the present value of £1, for $.9708738 \times 1.03 = £1$. Again the amount of £1 per annum, if invested and improved at compound interest in n years may be determined by the following rule: "Deduct unity, or 1, from the amount of £1 in n years, and divide remainder of the rate per £1. Again, the present value of £1, due n years hence, may be found thus:—Divide unity by the amount of £1 in n years, the quotient will then represent the present value of £1 due at end of n years." The subject of deferred annuities is considered, and the author has discussed the matter with great care and skill in this part of the work. The author observes, "The subject of deferred annuities, embracing two different rates of interest per cent., has not, in my opinion, hitherto received so much attention as some other of its branches, although deferred annuities, involving one rate of interest, have been frequently and ably discussed. Nevertheless, after diligent search and inquiries that I have instituted, I cannot discover anything which appears to me to bear directly upon the case—when two rates are considered—in any of the published works devoted specially to annuities." Thomas's and Inwood's tables would, by the author's calculations, give a result that would make a purchaser pay too much for each £1 annuity by £429681335, or 8s. 7d., and if an annuity of £20,000 were purchased, the gross overpaid sum would amount to £8,593 12s. 6½d., or a total loss of 42.968 per cent. upon the annuity. Other instances are shown, to indicate the discrepancies arising from one rate of interest. We cite one case. Allowing 20 per cent. to a present purchaser, and to reproduce the capital at the same rate we have for a duration of 55 years, after three years:—The present value of £1 per annum for 58 years at 20 per cent. = 4.999872221; the present value of £1 per annum for 3 years at 20 per cent. = 2.106481481; thus present value deferred 3 years = 2.893390740. But by allowing the purchaser 20 per cent. upon his investment, and to reproduce the capital at 3 per cent., the period of time, say, as in last case, and using the rule of Mr. Hoskold, we have

$$136.07161972$$

$$\frac{1.728 \times (1 + .20 \times 136.07161972) = 136.07161972}{48.75435056} = 2.790963639$$

the correct value, showing a difference equal to 2s. 0½d. per £1, or 10.243 per cent. We have much pleasure in recommending Mr. Hoskold's treatise to all surveyors and actuaries, as being one of the most complete and scientific expositions of a subject of such everyday importance.

ART REPRODUCTION.

THE marvellous things accomplished in line-engraving, the triumphs of wood-cutting and crayon lithography, cannot possibly, it would seem, preserve these arts under the potent influence now exerted by photography, directly or indirectly, and the invention of rapid modes of reproduction in colour or otherwise lately brought into existence. Line-

engraving is almost dead, and lithography is in a very languishing condition. Wood engraving, the earliest, is still the most vigorous form of the multiplying arts; whether its existence can be much prolonged is doubtful. A brief account of what is now being done in art reproduction may be thought interesting.

Many persons may have wondered what was the meaning of a lately much-advertised so-called "Art Society," affecting to give away copies of expensive engravings under the evidently delusive system of the would-be recipient cutting out a portion of the advertisement called a "coupon," and sending it to the publishing office, a charge being only made for "packing and postage." The whole thing was a cleverly-devised Yankee notion, based on the ready manner in which engravings can be copied by lithography without a positive engraving process. The *modus operandi* of the society was simply this. An ordinary one or two-guinea engraving was purchased from a West-end publisher for, say, £40, with permission to reproduce it. The print was then put into the hands of a lithographer, who placed it face downwards on a stone, and passed it through the press; the ink leaves the print for the stone, which is now treated in the ordinary way. It is inked by the roller, and gives off a great number of impressions almost identical with the original. Although the price for postage &c. was but small, and the society largely advertised, yet so wonderfully cheap is the process, there is no doubt a very handsome profit was achieved. The mischief of the thing was that people were led to believe they would receive the real original engraving. It may, however, be conceived that they certainly got their money's worth. The success of the scheme was quite complete; even with the advantage of steam printing, the exigencies of demand could not be met. Some must needs have several copies, thinking they could give away a thing of value, or perhaps sell again at an advanced price! Of course success was followed closely by rivalry, and the same cumbrous trick of the "coupon" is still being carried on. This mode of reproducing engravings will probably be often resorted to, and prove a boon to the million.

Another most useful application of lithography is that which the BUILDING NEWS has made so well known—copying on stone by photography line drawings and engravings. This engraving is so well done for the B. N., and the subjects so good, that it will do much to establish a distinct phase of art in the Victorian era, even if a positive style be not evolved. The young student obtains in a cheap and attractive style the best works in architecture of the leading favourites of the day, and specially by study and imitation we may fully expect the individual style of our principal professors to be thus perpetuated. Henceforth brick churches will assuredly be Brooksy; stone churches, Streety; and Mr. Shaw's peculiar style become the permanent type for country houses. One way in which the BUILDING NEWS engravings are made available in business is characteristic of these fast and slap-dash days. It is not presented for imitation. A most successful competition architect takes in two copies of the BUILDING NEWS, the one to bind in the ordinary way, the other for the sake of the engravings, which are taken out and sorted according to nature of subject—schools, mansions, town-halls, &c. When this gentleman decides on joining in a competition he desires an assistant, who is to take up the job, to bring the batch of engravings which best applies thereto. A plan or portion of plan is to be taken from this, a feature from that, and something from somewhere else. In a few minutes the design is as good as made, and the architect, instead of spending days and nights on the thing, can go on his way rejoicing, fully assured he will have a better design than could possibly be evolved out of his own limited inner consciousness.

The ordinary, and often extraordinary, chromo-lithography is now well known and an established favourite. Considering the trouble of reproduction many of these are exceedingly clever, requiring as they do twenty to thirty separate printings, yet the "registering," or planting one printing on another, is so perfect as not to have any appreciable varia-

tion. This difficult printing repetition necessarily raises the cost of the engraving, and strictly limits the circulation. A new process, however, styled steno-chromy, is now introduced, which supplies a coloured picture at a very low price comparatively. This most ingenious invention prints a perfect coloured subject without engraved block or plate, and at once. It has, too, the great advantage of permanent pigments, which the ordinary chromo has not. This extraordinary method is the invention of Mr. Otto Radde, of Hamburg, and specimens can be seen at the agent's, Mr. E. Meyerstein, Bank-buildings, Holborn-circus. It must needs be a great puzzle to most people how such a feat as this alluded to can be possible. It seems that a block of colour is made—similar, in fact, to the bundle of sticks in Tunbridge ware manufacture—the various colours and shades passing right through the block, and from this the printing is done direct, until the colour is worn away. The difficulties in preparing the block one might think would prove insuperable, but they have been most successfully surmounted. The productions have the exact appearance of oil paintings. In the development of this invention a colour scale was found necessary, and this has been produced, and as being a long-desired desideratum with manufacturers and artists, is published as an "international colour scale." There are about a thousand shades of colour, the tints being permanent. A clever application of this chromography is made in union with the Woodbury type process—the latter in itself a triumph of ingenuity. The necessary colouring of the subject is printed on the mount, and the photo fixed in front, the special paper being sufficiently transparent to show the colour through. A pretty delicate effect is thus produced without disfigurement of the photo details. This combination is published by the Société Stenochromique, Paris and Hamburg. Although heliography was successfully applied some fifteen years ago on stone and metal, but little was done with it. Now, however, Messrs. Branneck and Maier, of Mayence, have carried the principle to most successful results in copies of pictures, architectural subjects, &c., the whole of which are wonderfully perfect and most surprisingly cheap. For instance, a view they have published of the grand Opera House at Paris (size of view, 16in. by 12in.) is one that any art lover would readily give a half-guinea for. Yet the wholesale price for such is but four-teenpence per copy. The engraving, whilst possessing all the minute delicacy of the photo, is vastly superior, being without glaze, perfectly permanent (being in printing ink), is produced on ordinary plate paper, and with title complete. This invention will probably be for the future, there can be little doubt, the main means for disseminating art knowledge. The work in goodness and cheapness is unparalleled.

An invention called "Cryptotype," by Mr. Arthur E. Smith, son of the well-known architectural artist and engraver, bids fair to assist the well-being, if not existence, of wood engraving. It is a means whereby a photo image is taken on the wood block, minus the defects previously attending the attempt. The result is a more perfect drawing, and a reduction in cost of one-third.

Under the peculiar title of "poikilographie," another German invention comes before the public. It is said to be the subject of patent rights, and the process at present secret to some extent. It is proposed to establish a society here for the development of the invention, with a gallery for the public exhibition of their works. Meanwhile, a few specimens can be seen at Messrs. Colneghi's, Pall-mall, and at the City office. The works chiefly consist of copies of pictures, mostly by old masters, and are very beautiful. It will be an immense boon now attainable to artists and lovers of art to thus possess themselves of the masterpieces of our own national and foreign galleries, the copies being in perfect fac-simile. The basis of the copy is evidently photography, displaying, as it does, the exact representation of the paint and canvass on surface of original. The painting is done in some way at the back, and probably in oil, which, soaking through the paper, becomes visible.

It is proposed that the society shall also apply the art to portrait-taking, and it may be hoped that the ordinary daubs in oil from the photographer's studio will now have an end. With such attractive, numerous, and facile means of reproduction, we may hope that art—sound catholic art—with its graceful happy influences, will be diffused amongst all classes, delighting, instructing, elevating. M.

THE SANITARY INSTITUTE AT LEAMINGTON.

IT is pleasant (says *Public Health*) to be reminded that we live in a more healthy and scientific age than our forefathers; to read of plagues and pestilences which have now departed from our shores; to have pictures presented to us of filth and squalor—the weird attendants of disease and death—and to know that these belong to the past—to have long rows of figures and piled-up statistics, telling of reduced death-rates, and the successful battle with the enemies of life—to know that the accumulated experience of trained minds are even now strung to their utmost tension to grapple with the effects of careless ignorance and stupid superstition. It is pleasant to be reminded of these victories of science, and triumphs of social progress, though, perhaps, we ought not to credit all these improvements to the sanitarians, who have just been holding their first provincial congress at Leamington. Something must be put down to the increased domestic comfort of the people—the more abundant food, and the facilities of travel—all of which have had their effect on the health of the people. Prosperity induces ease and comfort. It enables the recipients of a higher wage to have better houses and warmer clothing; and though better drainage and the removal of fermenting excreta and refuse have done something towards this general result, both have had a share in the improved health and prosperity of the country. If the Congress of the Sanitary Institute has not added much to our previous knowledge of sanitary science, and the appliances necessary to carry out its details, it has given us many facts, and not a few of the many theories and hypotheses which surround those facts, and make it so difficult for the outsider to know either the cause of disease, its origin, or its remedy.

The Congress, which closed its infant session on Saturday last, has been, to some extent, a doctor's congress. The president, Dr. B. W. Richardson, did not discourse on an ideal City of Hygeia, for that would have been out of place in a garden-like town, which, with a population of 25,000, has a death-rate of 16.6 during the last year. He took up a theme on which he lectured eleven years ago in the same place, when a congress on the sewage of towns was held in Leamington, "on the poisons of the spreading of communicable disease." This poison was typified by the secretion of the poisonous fangs of a snake; it was capable of being dried, and in that state was innocuous; yet, when the proper degree of heat and moisture was present, it resumed its vitality. The varieties of poisons require different conditions, so that some diseases, like yellow fever, are only developed in certain latitudes. They affect the human body according as they come in contact with it. We absorb the poison of typhus fever through the lungs, whilst, in the case of hydrophobia, it is inserted through the salivary secretions of the infected animal—under certain conditions, such as nervous depression, starvation, fear, or anxiety; whilst typhoid fever is clearly a disease possessing hereditary transmissible quality. As a rule these communicable diseases only attack an individual once during life. He did not believe in the theory that the air around us was charged with invisible germs, capable of reproduction, which never cease to increase and multiply, and against which the skill of man was of no avail. These might, on some occasion, cause a plague over the whole world, and destroy life *in toto*. Dr. Richardson took a different view from this; an ingenious view—that man, woman, or other animal, might produce, within themselves, a poisonous secretion, and give an hereditary stamp of reproduction to such poisonous product. Such a person should be isolated from the rest of mankind,

his secretions carefully kept from the secretions of healthy persons, and the danger would be then over. If this theory be true, the sanitarians have a mastery over disease, and may yet triumph in the end. Science has, however, not stamped this theory as immutable truth, and we are inclined to await the patient research which it opens up.

The institute is an experiment, and the congress records many of those experiments. Dr. Bartlett raises grave doubts as to the accuracy and infallibility of our water analysts in the past. If the chemists cannot detect the presence of disease-producing organisms in the water they analyse, when they are notoriously present, have we not been relying upon experts and their exactness with too much faith? Water—good, wholesome water—is notoriously one of the inestimable blessings of life. If it is polluted, it is the source of disease. It is capable of taking up, carrying, and disseminating those minute organisms which produce specific diseases. Excess of water does not kill them; it merely spreads them over a wider space. It is, therefore, essential that we should be able to ascertain their existence, particularly in those deep wells where the water is not exposed to the sun's light, or other ordinary means of oxidization. Dr. Bartlett tells us that the exhaustive chemical analysis of water is one of the most tedious and troublesome known to chemists; but, if the object is merely to ascertain its fitness for domestic use according to certain formulæ, then some of the more tedious processes may be omitted. The fees usually charged for these analyses are too small to admit of much labour or research into the recondite conditions of the organic matter which the water may contain. Yet these elaborate analyses are very necessary, for an instance was quoted in which a specimen of rain-water was analysed more than once with the same results, though the medical attendant suspected its pollution. After a week it was placed under the microscope; and then a few minute spores and germs were seen. These induced further experiments, and the result was that these germs were recognised as the well-known *Sarcina ventriculi*—one of the causes of stomachic derangements.

Mr. Baldwin Latham showed the practical results of these experiments. He pointed out, in a totally independent paper, that all subterranean water was due to the rainfall; that the wells were replenished in winter and exhausted in summer; that a drop of water never stood still—if not polluted as it fell from the clouds it picked up and carried deleterious substances; either to the river, the sea, or to those subterranean waters which gushed out as springs, or were pumped up from wells; that in darkness those organisms could not be destroyed. No amount of filtration would destroy contagious matter. Even dilution only modified its action; when the wave of underground water was at its highest, then we had phthisis and similar diseases; when low, cholera, diarrhoea, and fever. It might happen that an undue elevation of the water in certain cases would disturb the filth in the subsoil, and produce fever. The healthiest neighbourhood was where the water-line was not much disturbed, and was furthest removed from the surface. It had long been known that water in contact with the soil produced malaria, and this fact had been taken advantage of in war.

It was this malaria, Dr. De Chaumont said, in speaking of the influence of climate on health, that prevented man, under certain laws of hygiene, from living in any part of the globe; for though some diseases were localised, and their causes obscure, still the army returns showed how much might be done by attention to the laws of health, and by attention to natural causes—such as the planting of trees or cutting down of forests. These subjects were of special interest to Leamington, for the town authorities have been boring into the Keuper sandstone for water, and have obtained a supply 270ft. from the surface, or about the sea-level, which is pronounced to be water of the purest quality by the borough analyst, who read a paper on the subject.

The medical view of the sanitary administration of the county was pointedly put by Mr. Dyke, who wished for medical inspectors in several grades, under a permanent medical

secretary of the Board of Health—each, however, to have a sanitary inspector or engineer to work with him. Dr. Slade King, who took up the question of the sanitary work to be done in English watering-places and summer resorts, suggested that no licence should be granted to hotels without a certificate of satisfactory sanitary arrangements; and that refreshment-houses should be required to produce this certificate every six months. No house should be permitted to be inhabited until it was certified to be in a fit sanitary condition.

Outside the exhibition of sanitary apparatus and appliances, there were but few suggestions of a practical nature to guide the householder or the builder. Dr. Moffat recommended, it is true, the use of beeswax and turpentine as a floor and furniture polish, as it produced ozone. Fir trees and juniper bushes should be planted round cesspools for the same disinfecting purposes. Miss Rose Adams advocated the better education of women in sanitary work; whilst Dr. James Russell, of Edinburgh, showed that plumbers and builders ought to have a knowledge of the laws of health as bearing on their respective occupations. He showed some specimens of indifferent and faulty plumbing in support of his arguments.

The much-vexed question of sewage disposal cropped up at the very commencement of the proceedings, and the members bade each other farewell, after visiting the works of the River Purification Association at Coventry. In the intermediate time, repeated visits were paid to Lord Warwick's Sewage Farm at Heathcote, to which all the sewage of Leamington is pumped; while at Wrexham, where Lieut.-Colonel Jones's well-known farm is situated, the sewage-sludge is separately treated. A model of Mr. Kidd's sludge-drying apparatus was shown at the exhibition—and Lieut.-Colonel Jones gave an explanation of the process. The sludge is made to pass along the grooves of a screw in a high temperature, until it leaves the machine comparatively dry, but not burnt. Its value as manure was discussed, and the possibility of its combination with other materials, so as to be sold at a profit, was not forgotten. The effluent water and the liquid portion of the sewage are used for irrigating the crops at Lieut.-Colonel Jones's sewage-farm.

At Coventry, where there are many large manufactories, the daily volume of sewage is somewhere about 2,000,000 gallons. The chairman and directors of the company stated that the process is more expensive at Coventry than it would otherwise be, in consequence of the manufacturing refuse, and its intermittent quantity. The Town Council, after three years' trial, are satisfied with the sanitary success of the scheme, which is, after all, but a precipitating process, and the advocates of the company only support it where irrigation is impossible. The precipitating material is a cheap salt of alumina, and the effluent water runs on a piece of land about nine acres in extent, for the purpose of filtration, ere it enters the river.

The novelties exhibited were but few. Mr. Ernest Turner, F.R.I.B.A., exhibited a design for the Burdett College Hospital, and there were models and designs of the various apparatus for cremation. The ventilators possessed no few features, though the exhaust cowls of Messrs. Scott, the exhibits of Messrs. Shillito and Shorland, the ingenious improvement on the Arnott valve invented by Mr. D. Crossley, which we recently noticed, and the screw revolving ventilators of Mr. Howorth attracted much attention. Amongst the filters was a floating siphon filter of Dr. Bond, whose preparations of terebene were exhibited by Messrs. Cleaver. Amongst the pans for water-closets those of Messrs. Alcock and Mr. Bostock were the most generally approved. The variety of earth-closets and traps was so great that the jurors have taken some time to consider their award. Taken as a whole, the first Congress of the Sanitary Institute cannot be considered a brilliant success. Much hard work was done by the registrar, Dr. Lory Marsh, but the result, judged by the ordinary standard of scientific congresses, had not added much to our knowledge, or to the improvement of sanitary science.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

VISIT TO THE SOUTH METROPOLITAN GASWORKS.

ON Saturday last, 6th inst., the members of the above society paid their last visit to works for the present session. Assembling at the gasworks in the Old Kent-road, they were courteously met by Mr. G. Livesey, Memb.Inst. C.E., the engineer, and his brother, Mr. Frank Livesey, both gentlemen kindly showing them through the works, and explaining the various apparatus and processes of gas manufacture. The works, like many others of its kind, started in a small way on a narrow strip of land adjoining the canal, whereas the company have now an area of about 35 acres, which is being rapidly covered. Some idea of its importance may be gathered from the fact that the district supplied with gas covers 13 square miles, and requires 180 miles of street mains.

The inspection commenced with the retort-house, where the charging and drawing the retorts were described and illustrated. After passing the condensers the visitors were shown some washing apparatus (Mr. Livesey's patent), in which the gas, after being finely divided by passing through small holes in perforated plates, and then ascending through weak liquor, parts with much of its impurity. Another and improved washer was being fitted up, by means of which it was expected the whole of the ammoniacal impurities might be extracted without the use of the ordinary scrubbers. Much interest was manifested in the gas-holders and tanks, the largest holder, 180ft. diameter, with a capacity of 2,200,000 cubic feet, being constructed without any internal trusses or bracing, the cover or crown, when empty, being supported on a timber staging erected in the tank; but the most remarkable feature, and one showing the boldness and sound judgment of the engineer, was the tank, 184ft. in diameter, 47ft. deep, constructed entirely of concrete, without either brick lining or puddle backing; this tank is in all probability destined to be the pioneer of many similar.

Another striking example of the use of concrete was seen in the new retort-houses in course of construction. The floor being raised 10ft. above the level of the ground, was carried by piers and concrete arches 21ft. span, rising 1ft. 9in. in centre, 18in. thick at the crown. Many other new and interesting points of construction and arrangement were pointed out during the very pleasant visit. The present capacity of the works is 5,000,000 cubic feet per diem, but the estimated capacity when the projected extensions are completed will be more than doubled. Experiments were being conducted in various parts of the works with the object of improving the manufacture, showing that gas managers are fully alive to the necessity of obtaining the best possible results from all available means. Among the members present were the president, Mr. R. M. Bancroft, treasurer; Mr. W. C. Street, Assoc.Inst.C.E.; Messrs. P. Burrell, Memb.Inst.C.E., Hellis Hill, Assoc.Inst.C.E., Alex. Payne, Assoc.Inst.C.E., R. Finlayson, &c.

The next session of the society for the reading and discussion of engineering papers will commence in December.

THE TURNERS' COMPETITION.

THE Master, Wardens, and governing body of the Turners' Company, according to their custom, gave this year their silver medal, the freedom of the company, and that of the City of London to the workmen, whether master, journeyman, or apprentice in the trade in England, who sent in the best specimens of hand-turning in any of the subjects of competition, except pottery, for which they gave special prizes. This year the subjects of competition were turning in ivory, pottery, stone, and jet; and steel, brass, and gold for horological purposes. The competition in ivory included vegetable ivory. The qualities considered in awarding the prize were the following:—(1) Beauty of design, symmetry of shape, utility, and general excellence of workmanship; (2) exact copying, so that two objects produced should be *fac-similes* in every part, or exact measures of capacity; (3) fitness of the work and design for the purpose proposed;

(4) ability to turn, whether circular or oval; (5) novelty in application of turning or in design; (6) carving was admissible, but it was to be subsidiary to the turning. The candidate was to make his own selection from the above conditions; but the one who best fulfilled the largest number, including the most important qualities, was preferred. The work to be all hand-turning produced in the lathe without special rest or tool apparatus, and the carving to be the work of the exhibitor. The results of the competition were exhibited on Tuesday at the Mansion House. The chief prize, silver medal and freedom of the company, has been awarded to C. Crisp, who shows a capability of manipulation in difficult turning and polishing of an exceptional kind. Another exhibitor, R. Bridgeman, has shown admirable work, accomplishing on these minute surfaces the uncommon result of finishing with the cutter only the fine pivots or axes of the balance-staff of the chronometer, leaving them as smooth and bright as if a polisher or burnisher had been used, so preserving unimpaired the perfect truth on which the time-keeping so much depends. C. J. Curzon, aged 18, has gained a special prize for apprentices for a highly-finished specimen of complete lever escapement, double roller, and other turning. A fine specimen of the marine chronometer escapement, by W. Heyes, receives the well-merited award of the bronze medal. There are no specimens in gold. The ease-makers who have been so active lately were expected to exhibit specimens of their turning work. The specimens of pottery, stone, and jet are numerous and interesting, and in the opinion of the judge show general merit. There are some fine specimens of unglazed ware, proving the great skill attained by the "throwing," or moulding by the hand only, and without use of turning tools. The coloured and finished wares are of various and elegant forms. In pottery, class A, the first prize was given to E. Byron, who gained the freedom of the company and £5 for a large vase thrown on the wheel; the second prize, a bronze medal, was given to Henry Byron, for a very large vase "thrown" in white clay. In class B the silver medal went to E. Byron for a large majolica vase. Various other money prizes and certificates were awarded. In stone and marble the specimens are fewer than in former years, but show very general excellence. The first prize, freedom of the City and a silver medal, was awarded for a beautiful tazza in serpentine to John Mankervis, Helston, Cornwall. The second prize, bronze medal and £2 in money, for a pair of cups in fawn-coloured stone on dark pedestals, to W. Coulman, Torquay. In ivory the first prize, a bronze medal and £5, was gained by J. Hegley, 4, Queen's-place, Hoxton, for a pair of ivory vases on ebony bases; the second prize, a certificate of merit and £3, was awarded to G. Freeman, 2, Milton-street, Dorset-square, for a pair of large thermometers in the shape of obelisks. The competitors in this class were but few in number, and none of the work exhibited was considered sufficiently good to receive the silver medal and freedom of the company, which were, therefore, not awarded. Some unique specimens of turning and carving were exhibited, but not for competition, by Mr. T. B. Winsor, a member of the company. In jet there were no competitors.

VENTILATION.

SOME useful observations appear in the current number of Van Nostrand's *Engineering Magazine* on the "Mechanics of Ventilation," by Mr. Geo. W. Rafter, C.E. The author treats the subject comprehensively, though there is little new that is broached. The principles laid down are, indeed, pretty well known to architects—the main purpose of the paper being to show that the laws of ventilation are based on simple mechanical principles, and that by providing a sufficient height of vertical flue of a proper cross-section, a constant velocity of discharge may be maintained. Speaking of the sources of contamination, it is shown that when carbonic acid is the only impurity, from 8 to 10 volumes in 10,000 may be respired without serious inconvenience, though

volumes in 10,000 is taken as the limit of good ventilation. An adult produces 0.6 of a cubic foot of this gas per hour; 0.43 of a cubic foot is produced by the combustion of a cubic foot of coal gas, while a paraffin candle throws off 0.31 of a cubic foot per hour. The combustion of 1 cubic foot of 16-candle power illuminating gas shows a mean of about 750 heat-units. As to moisture, from 4.5 to 5 grains in a cubic foot of air at 62°, is the limit of good ventilation. Mr. Rafter says the cheapest method of heating is by stoves, more than 90 per cent. of the heat being realised in this way, while the ordinary fireplace does not give a greater heating power than 14 per cent. of the total amount of heat produced. Captain Galton's ventilating fireplace is preferred by the writer, its heating effect being 35 per cent. of the total heating power of the fuel. Steam or hot water is pronounced healthful, the healthy effect realised being nearly 90 per cent. Treating of the mechanics of the subject, it is stated that at a temperature of 60° 13.09 cubic feet of air weighs 11b., and a cubic foot weighs 534 grains. A careful discussion of the laws, known as Gay Lussac's Mariotte's, and the principles of Archimedes, showing that the volume of gases vary with the temperature, and that the density is inversely as the volume, is entered into, from which it is shown that when the temperature of air is reduced from 70° to 32° the volume of air is reduced, its density is increased, and becoming thus heavier, tends to fall by a definite excess of weight. Thus the reduction of a cubic foot of air, from 70° to 32°, increases its weight by 40.6 grains; hence the downward currents created by window and outside wall surfaces. Again, air coming into contact with a heated surface, and being raised from 40°, the average, to 98° is made lighter; it rises until the weight of fluid displaced is equal to its own weight. A temperature of from 60° to 65° is about the proper one for inhabited rooms. From a series of observations, taken in 25 school-houses in the city of Rochester at the instance of a Board of Health last winter, the writer has deduced some useful data, to which we may briefly refer. These observations were taken 10 times a day, at the commencement of school and at certain intervals during school hours, and they show great variation of temperature. It was found that, where the ventilation is thorough, pupils and teachers were completely comfortable at a temperature of 60°-62°, and that "the temperatures increase as the perfection of ventilation decreases." The following laws are laid down, of some interest to architects, and we quote them:—1. "In rooms having but one outside exposure the temperature is uniformly higher than in those having two or more outside exposures, other conditions being the same. 2. When the communication is direct by means of roomy halls between lower and upper floors the temperature ranges higher on upper floors. 3. Of two rooms, having equal exposure and equal heating and ventilating facilities, the one containing the greater number of pupils will show the higher average temperature. 4. There is a relation between inside temperature, outside temperature, and outside humidity, which relation appears to be expressed by saying that inside temperature varies directly as outside humidity, and inversely as outside temperature."

It is thus seen that the lowest temperatures occur in well-ventilated rooms and *vice versa*, and that with imperfect ventilation there is an excess of moisture from the exhalations of the body and increase of humidity, and a high humidity produces a feeling of chilliness. The author rebuts the popular notion that air loses its moisture by heating, instead of which heating increases the capacity of air for moisture. Mr. Rafter prefers the vacuum method of ventilation, and enters into a mathematical investigation of the dimensions required for a shaft to produce the required discharge. He says the foul air should be drawn out of a room by creating a vacuum near the floor in the side walls, while fresh air should be introduced at or near the ceiling, and he gives a formula expressing the conditions of the discharge of heated air, which depends on (1) the height of flue or the velocity of discharge increases as the square root of the height increases, the inner and outer temperatures remaining con-

stant; (2) it increases as the difference between their temperatures increases; (3) and as the smoothness and directness of the flue increases. This is the usual formula, founded on the Torricellian theorem. We cannot agree, however, with the author as to the positions of the inlets and outlets, as there can be no doubt the natural ascent of heated air points to the opposite system in ordinary cases.

NEW MUNICIPAL BUILDINGS FOR GLASGOW.

GLASGOW is about to follow the excellent example set her by her southern manufacturing rival, Manchester, and other provincial capitals, by providing for herself a group of municipal buildings in which the administration of all corporate and magisterial business can be carried on under one roof.

On Thursday in last week the Town Council decided on taking this highly important, and, indeed, necessary step, accepting in their entirety all the reports of the special committee and sub-committee recently appointed to consider the expediency of securing a central site for the erection thereon of a town hall, &c. The proposal was strongly recommended by the committee in their principal report, on the ground of the increased efficiency and economy of the citizens' money and time that would be effected if the municipal, police, gas, water and sanitary departments, were brought under one roof, and they urged that the new buildings should be of an architectural character worthy of the city, and should be sufficient to meet all reasonable requirements for a considerable time to come. The committee proceeded further than making a mere recommendation, and requested Mr. John Carrick, the city architect, to report on the probable cost of acquiring the east side of George-square and neighbouring ground as a site, and also as to the value of the detached buildings in which the public service of Glasgow is now with difficulty and inconvenience carried on. Mr. Carrick has reported that the area bounded by George-square, George-street, John-street, and Cochran-street, contains about 6,569 square yards, and is at present wholly covered with buildings not of modern construction, occupied as an hotel, workshops, warehouses, counting-houses, dwelling-houses, shops, and a Wesleyan chapel. The annual assessed value of the property, exclusive of the chapel, is £4,030, and Mr. Carrick estimates the cost of the site at £165,455. The total area of floor space at present occupied by the several departments, which he considers ought to be included in the scheme, is about 3,500 square yards. Part of the surplus ground on the George-square site would be absorbed in improved approaches, but not less than 2,000 square yards would remain, sufficient for a town hall of moderate size, with a suite of saloons at the service of the magistrates and council. The sum of £20,000 would, he thinks, be sufficient for a handsome edifice worthy of the site. If the idea be carried out, he further suggests that the present Corporation halls in Sauchiehall-street might be disposed of, and an art gallery provided in connection with Kelvin-grove Museum, at a cost of about £10,000. To meet this outlay for site, buildings, and art galleries, estimated at a total of £375,455, the Corporation could sell the property at present occupied, and discontinue renting other buildings—the amount of saving on sale and capitalisation of the rent of £730 a year now paid being assumed at £175,175. Mr. Carrick further reports on the cost of obtaining additional land to the east of the suggested site, to admit of future extensions and the erection of public library, &c. The ground referred to extends to 5,373 yards, and the value may be assumed at £98,151. The city architect concludes his detailed report by a reference to the effect on the external aspect of Glasgow of the erection of the projected series of buildings, and to the great benefits that will result to the community by the concentration of the several offices in one building, both in the increased convenience of the citizens themselves, and the improved supervision afforded over all departments of the public service to those entrusted with the management of civic affairs.

The question of extending the City Indus-

trial Museum in Kelvin-grove, referred to above, and reported upon by another sub-committee, was postponed till after the November elections. It was stated that there is an urgent necessity for greatly increased exhibitional space, and they recommended the Town Council to institute steps for providing the needful extension without delay. The plans to be adopted, it was suggested, should be such as would freely admit of large future additions and extensions in a convenient and harmonious manner; indeed, that they should be the very best plans that past experience in other large museums can suggest. A lecture theatre, capable of accommodating a large audience, is an immediate requirement, and the formation of a consulting, technical, and scientific library, and the possibility of adding class-rooms and a laboratory for a technical college, should not be overlooked. With this report were submitted a sketch-elevation and plans for extension, prepared by Mr. Carrick.

NOTES FROM IRELAND.

A NEW CHURCH, in connection with the "Paulist Fathers'" College at Mount Argus, is in course of erection, and will soon be finished, except the chancel, which cannot be built at present for want of funds, from the designs of J. J. MacCarthy, R.H.A. It is in the Romanesque style of architecture, and promises to be a fine bold structure when finished.

It has been definitely arranged that the new Catholic church of St. Patrick, Newtownards, will be dedicated on Wednesday, 24th inst. It stands on a commanding site close to the railway station, and will, when everything has been completed, cost about £10,000. The church has been built at the sole expense of the Dowager Marchioness of Londonderry, who was received into the Roman Catholic Church about twenty years ago. The interior is finished, but the outside grounds, wall, and railings have not been put in order yet. Mr. Hanson, senior, of the firm of Hanson and Son, London, is superintending the works.

The foundation stone of a new Catholic church at Foxford, county Mayo, was laid on Sunday last by Dr. MacCormack, Bishop of Achonry. The church, when finished, will consist of nave, 96ft. long and 28ft. wide, with north and south transepts each 23ft. by 20ft., entered from same by arcades of two arches carried on limestone shafts, with moulded caps and bases. The chancel will be the width of nave, but 17ft. deeper, finishing square at end. Side chapels will be off the transepts. The tower will be placed at the south-west corner of the nave. The building will be faced with hammered work, the dressings being of chiselled limestone. The roofs will be the ordinary "opened-timbered, stained and varnished." The works will be carried out by Mr. Kennedy, builder, of Westport, from the drawings of J. J. O'Callaghan, architect, Dublin.

The erection of a new church at Rattoo, county Kerry, has been commenced from the designs prepared for same by Mr. J. F. Fuller, F.S.A., Dublin. Mr. Crosbie, of Tralee, is the contractor.

A new Chapel of Our Lady of Lourdes is about to be added to the Carmelite Church, Aungier-street, Dublin, from the designs, and under the directions of, Mr. G. C. Ashlin, F.R.I.A.I., architect.

A chapel is about to be added to the Convent of Mercy, Bantry, county Cork. The general material used on the exterior will be red sandstone with limestone dressings. Mr. S. Hynes, Cork, is the architect.

The new Royal Opera House, in Derry, was opened on the 10th of August last. It was designed to seat about 1,500 persons by Mr. Phipps, the architect.

On Monday a new Board school was opened in Westcott-street, Southwark. The building consists of one block, and is three stories in height, with a small detached building erected for the purposes of a nursery. The style is Queen Anne, from the designs of the Board architect. The area of the site is 23,122 square feet, and the total cost of the same £5,727. The cost of the building is £3,332, making a total cost of £14,060, or equal to a cost of £173s. 8d. per head. The school will accommodate 818 children.

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ILLUSTRATIONS.

THE OAKS, WEST BROMWICH—HOUSES IN CADOGAN SQUARE
—NEW CHURCH, ST. HELENS.

OUR LITHOGRAPHIC ILLUSTRATIONS.

NEW CHURCH, ST. HELEN'S.

This church was designed for a district where the smoke from the local chemical works is more destructive than in the generality of towns. Consequently a severe style has been adopted. The plan consists of the ordinary arrangement of nave, aisles, chancel, side chapels, &c.; the nave being lofty and spacious in width. The exterior shows an unfinished cloister—intended ultimately to join the house for the clergy connected with the church. The estimated cost of the church, as shown, was upwards of £7,800. The design from which our view is taken was exhibited in the Royal Academy this year, and in our criticism of architecture at the Royal Academy (second notice) it was described as “an agreeable return to purity in style,” and “the exterior treated in a common sense dignified manner, a deeply-moulded triplet in gable, flanked by bold turrets, being the feature.” The architect is Mr. Edmund Kirby, Liverpool.

HOUSES IN CADOGAN-SQUARE, S.W.

The two houses illustrated in the present number, and two more adjoining, from the designs of Mr. W. Niven, are about to be erected on the west side of this new square, which is named after the freeholder, Earl Cadogan. The contractors, Messrs. Pink and Son, have not yet begun on them, as they have their hands very full at present with other houses and contracts upon the same estate. In the new portions of Pont-street they are now erecting four houses from designs by the same architect, one of which, at the corner of Walton-street, we shall probably illustrate in a future number. The houses in Cadogan-square will be faced with red brick in conformity with a rule laid down by the estate company, but this will be relieved by Portland stone, which will be used for all principal moulded work and enrichments. The window heads, where stone is not used, will be flat-headed in gauged brick and jambs, &c., in cut brick. The front, with the central bay window, will be repeated in the house next but one adjoining. The houses are not designed in any particular style, though something is borrowed from the classic elegance of last century, but the quaintness of the so-called Queen Anne style is studiously avoided.

THE OAKS, WEST BROMWICH.

The series of drawings which we publish to-day are from those for which Mr. Brown was awarded the Pugin Travelling Studentship for 1876-7. We have received the following description:—This old mansion is a good specimen of the half-timbered work of the 16th century, though now sadly out of repair for want of attention. The brick part seems to have been added subsequently, as the brick work is built on the face of framing. The plan is simple, consisting of porch, hall, three

sitting-rooms and kitchen, &c., with bedrooms over. The lantern tower, which gives the house its picturesqueness, is approached by a steep staircase from landing. The interior is but slightly altered from its original state, most of the rooms still retaining their ancient panelling, and quaintly moulded chimney-pieces. The records are scanty, as Shaw, in his history of Staffordshire, only states a John Turton, of the Oak, is mentioned in the Freeholders' Book of 1653, and that in the old church of West Bromwich were inscriptions to “William Turton, of the Oak, gent.,” who died in 1682, and Eleanor his wife.—W. TALBOT BROWN.

COMPETITIONS.

ELLEN-STREET SCHOOLS, HOVE.—The authors of the design selected by the board at their meeting on Friday last, are Messrs. Thomas Simpson, of 16, Ship-street, Brighton; and Frederick W. Roper, of 9, Adam-street, Adelphi, London. Thirteen designs were sent in.

LUTON WESLEYAN SCHOOLS.—Nine sets of drawings have been sent in for these buildings. Some of the designs would, if executed, completely eclipse the chapel which adjoins the site. The instructions stated that drawings were to be uncoloured, but one of the competitors has infringed this rule.

MANCHESTER.—In July the Manchester Corporation advertised for plans for baths and wash-houses which it had been decided to erect on a site in Ancoats, bounded by Baker-street, Horne-street, and New Islington. Architects were invited to send designs in competition, for which the following premiums were offered:—A first premium of £200 (to merge in the commission, in the event of the author being selected to superintend the erection of the buildings), a second premium of £100, and a third of £50. The site contains 2,210 square yards, and upon this area accommodation was to be provided as follows—namely, first and second class swimming and private baths, and women's private baths, together with a public steam laundry and drying stoves, steam engines and boilers complete, with all the most recent improvements; and also a residence for the superintendent. The plans were to provide, in addition, for two public rooms, each 72ft. by 36ft., for ward meetings and election purposes, balls, or concerts, with the necessary retiring rooms in connection with them; and it was especially required that the designs should be “in a plain style of architecture and free from any elaborate ornament.” The baths committee have received in reply to their advertisement 31 sets of plans, which have been referred to a sub-committee, with power, should they deem it necessary, to seek the advice of a competent architect, in order to make a selection. Many of the plans received have not been drawn in compliance with the instructions, especially as to architecture, and will, therefore, be omitted from consideration.

ODD FELLOWS' HALL, TYDER.—In this competition the committee have selected the plans submitted under motto by Mr. E. A. Landdowne, architect, of Newport, Mon.

SHEFFIELD FEVER HOSPITAL.—A report of Captain Douglas Galton, C.B., on the competitive designs for the proposed fever hospital has been presented to the health committee of the Sheffield Town Council, and states that some of the plans, before adoption, will require some modification of detail. Twenty sets of plans were sent in: one was signed “Can any good thing come out of Nazareth,” and another “Let there be Light.” Captain Galton places the plans in the following order of merit:—1st, “Let there be Light;” 2nd, “Spes” (No. 1); 3rd, “Light.”

WELLINGBOROUGH.—A competition was invited for drawings for a new school and headmaster's house for this town, and ten architects, who sent twelve designs, complied with the request. The *Wellingborough News* says:—“After repeated meetings the twelve designs were reduced to three, and it is now known, and the circumstance is somewhat singular, and certainly highly creditable to the skill of the gentlemen, that these were submitted by architects of the town—viz., Mr. W. Talbot Brown, Mr. Ed. Sharman, and Mr. Mills,

Ultimately the choice of the governors fell on the design bearing the word ‘Plan,’ subject to the approval of the Charity Commissioners and to the published advertisement. The sealed envelopes were next opened, and it was found that the successful competitor was Mr. Brown. The estimated cost of the school buildings of the competing architects ranged from £5,000 to £10,000. The estimate of the cost, according to the selected plan, is £7,500.”

SCHOOLS OF ART.

HASTINGS.—The second annual meeting of the Hastings School of Art took place on Monday week, when prizes and certificates were distributed to the successful competitors. The committee's report showed that the number of students has been quite equal to the former year, and that the work done evinces progress. It is hoped to remove the school to the commodious premises at Clarendon, now being erected at the cost of Mr. T. Brassey, M.P., at Christmas next. The report of Mr. Sullivan, the head-master, states that 891 works by industrial, and 985 by middle-class students, were sent to South Kensington for examination, and one third-grade prize was awarded. In the second-grade examinations 42 passed out of 56 presented. A sketching club has been formed, under the presidency of Mr. Charles Thorneley.

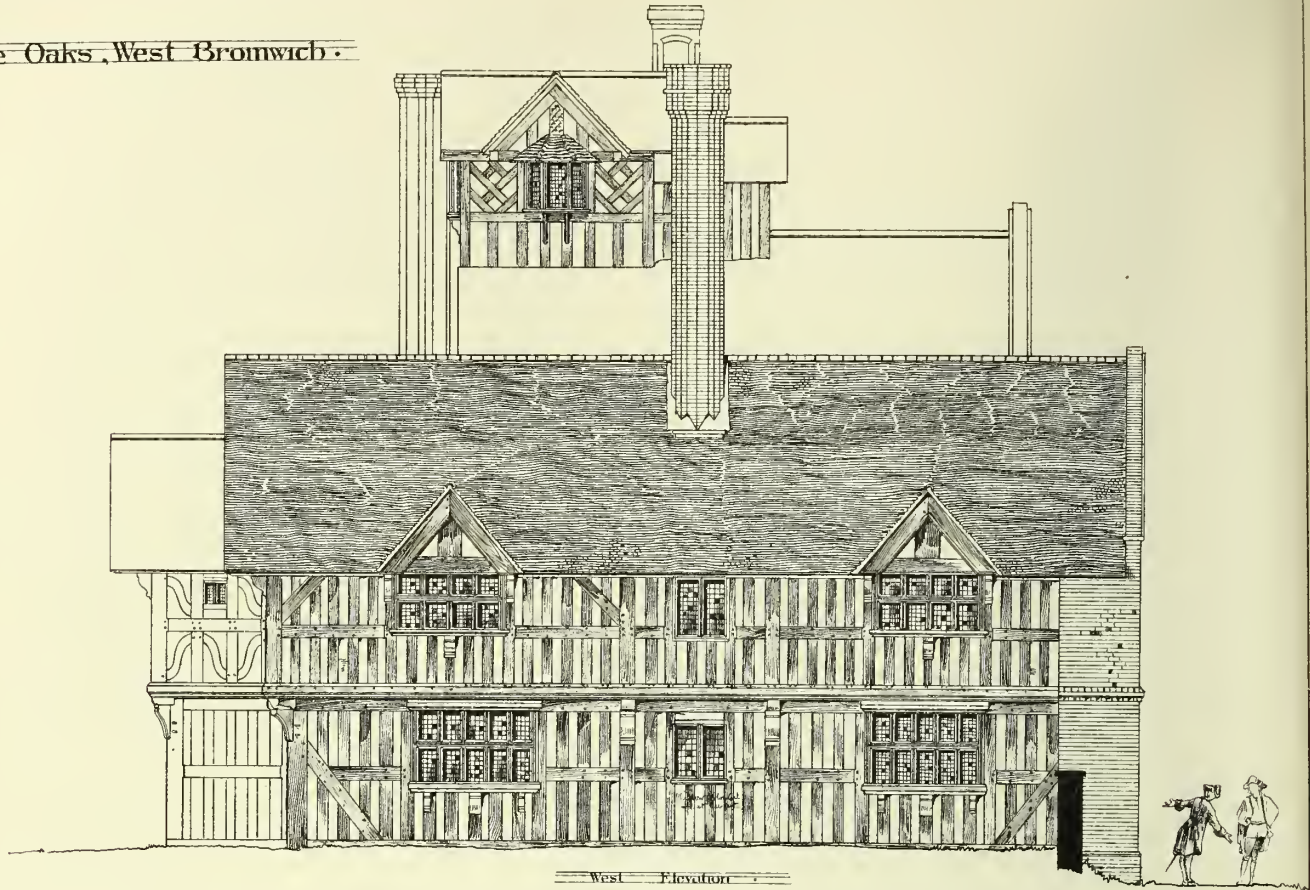
ARCHITECTURAL & ARCHAEOLOGICAL SOCIETIES.

MANCHESTER ARCHITECTURAL SOCIETY.—The second annual *conversazione* of the Manchester Architectural Association was held on Tuesday evening. The chair was occupied, in the absence of the president, by Mr. J. Corbett, who briefly detailed the objects of the association and its progress during the year. It has now 65 members, with classes for design, outdoor sketching, &c. Visits had been paid to many buildings of interest and importance, including Owens College, the Royal Exchange, the new Town Hall, &c. The chairman concluded by an allusion to the work of the Mayor of Manchester in connection with the last-named building, and invited his worship to address them.—Mr. Heywood, who was very cordially received, bore testimony to the genius of Mr. Waterhouse, and said that the arduous labours of the committee, of which for a number of years he had been the chairman, in no way detracted from the greatness of the architect. They might occasionally have made suggestions which met with his approval, but it was only fair to them and to Mr. Waterhouse to say that the architect had had the full control of his work, and, except for the hindrance caused by the strike, there had been the completest harmony during the whole time the work was in progress.—Mr. James Murgatroyd then awarded the prize for elementary construction to Mr. S. Davies, and in the course of a practical address advised plenty of outdoor sketching. The remainder of the evening was occupied by the performance of a selection of music.

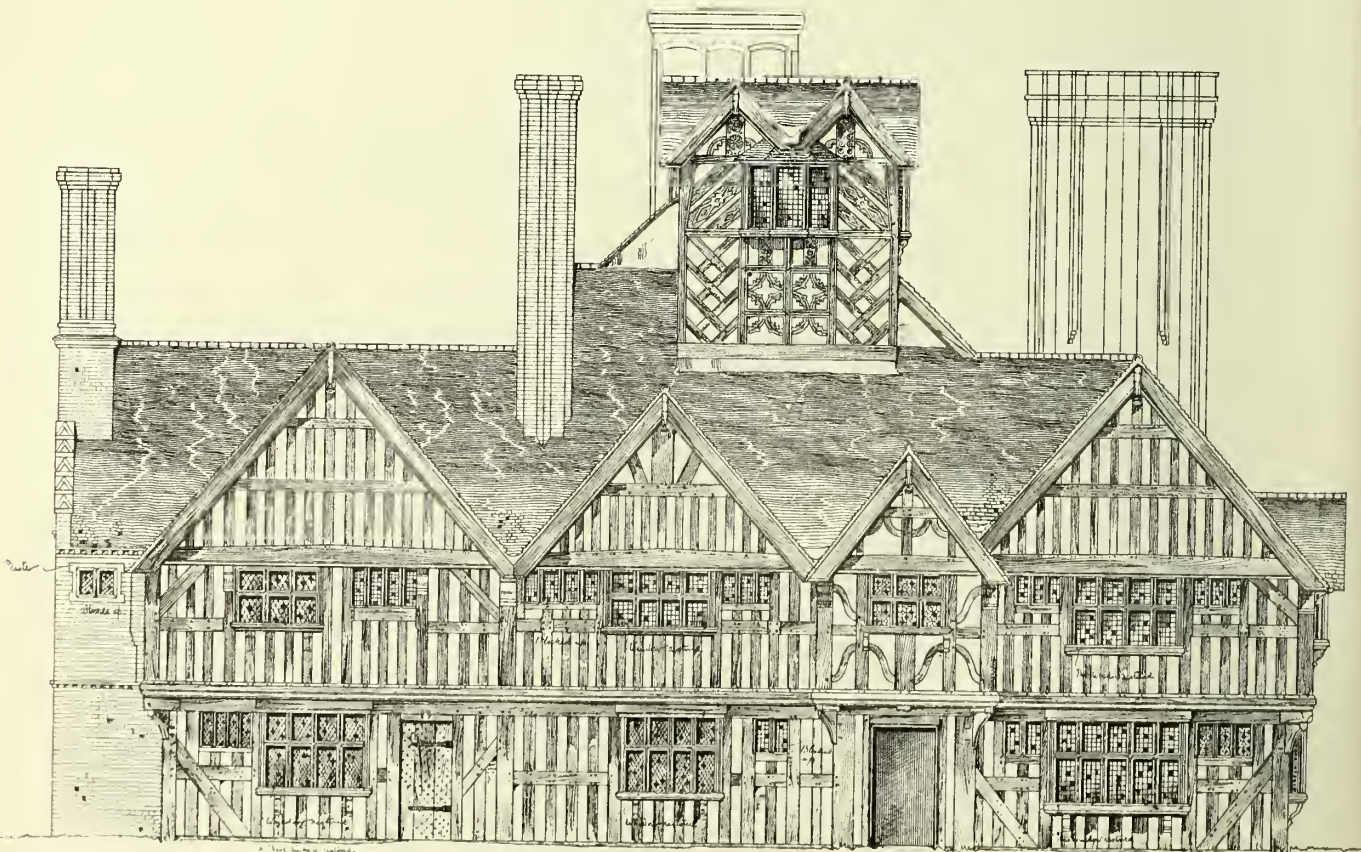
ST. ALBAN'S ARCHITECTURAL AND ARCHAEOLOGICAL SOCIETY.—The annual general meeting of this society was held yesterday (Thursday) afternoon at the Town Hall, Saint Alban's. The President delivered an address, and papers were read by the Rev. O. W. Davys, M.A., “A Glance at the Restorative Works in St. Alban's Cathedral. Finished, in Progress, and to Come;” and by Mr. Chapple (the clerk of works for the abbey), on “Recent Discoveries in St. Alban's Abbey.” These papers we may give in a condensed form next week. In the evening an adjourned meeting was held, at which papers were to be read by the Rev. H. Fowler, M.A., and Mr. Ridgway Lloyd.

A fountain erected at Monaghan, as a memorial of the late Lord Rossmore, was unveiled by the Duke of Connaught on Friday. It is Gothic in character, and octagonal in form. It occupies a space of 24ft. in the centre of the Diamond, rising to a height of 50ft. Richly-carved capitals surmount the eight columns, and support a canopy, dome, and spire over the central basin. The structure is surrounded by railing and a gate. The total cost has been £1,000, and the architects and constructors were Messrs. Robinson and Sons, of Belfast.

The Oaks, West Bromwich.



West Elevation



North Front

THE BUILDING NEWS, OCT. 12, 1877.

The Oaks, West Bromwich

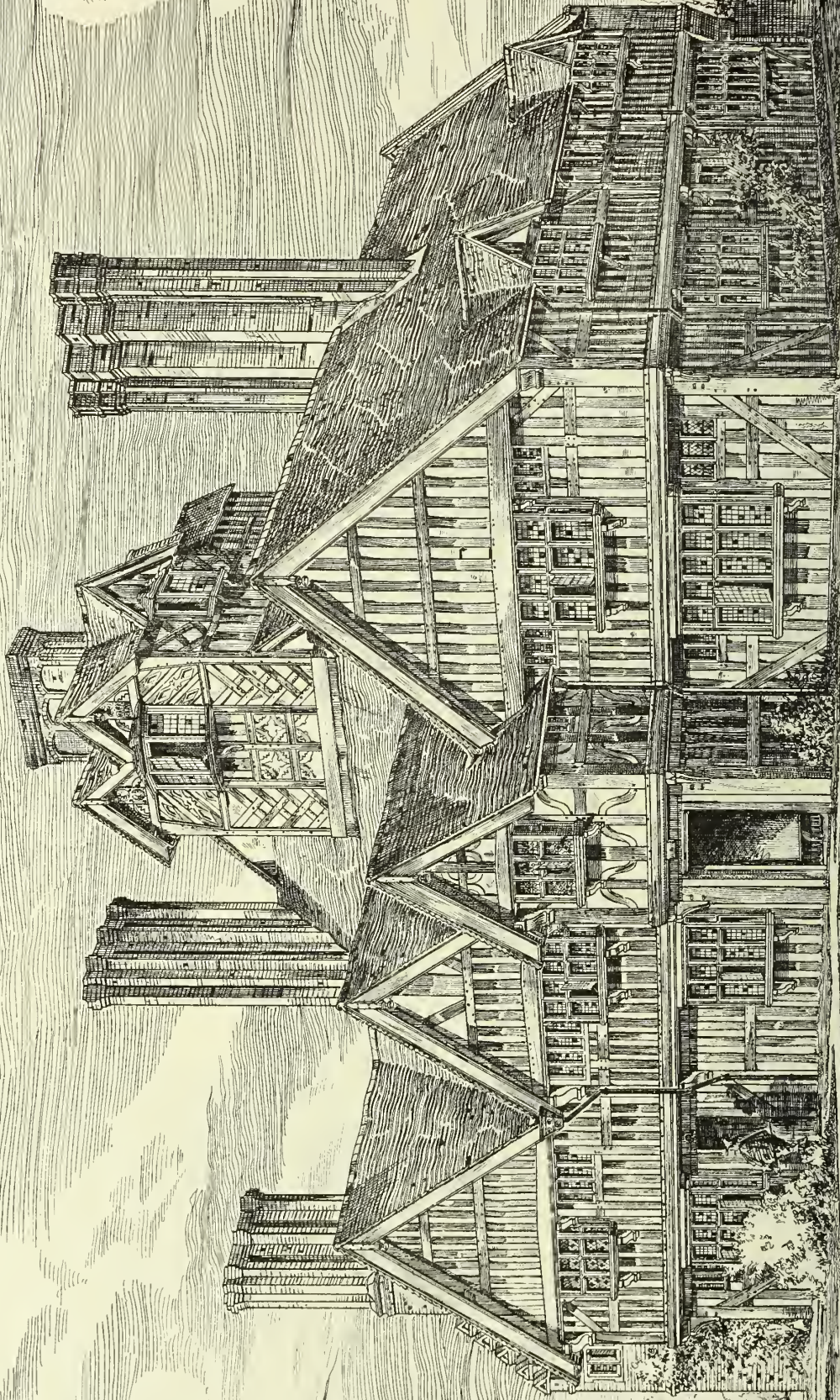
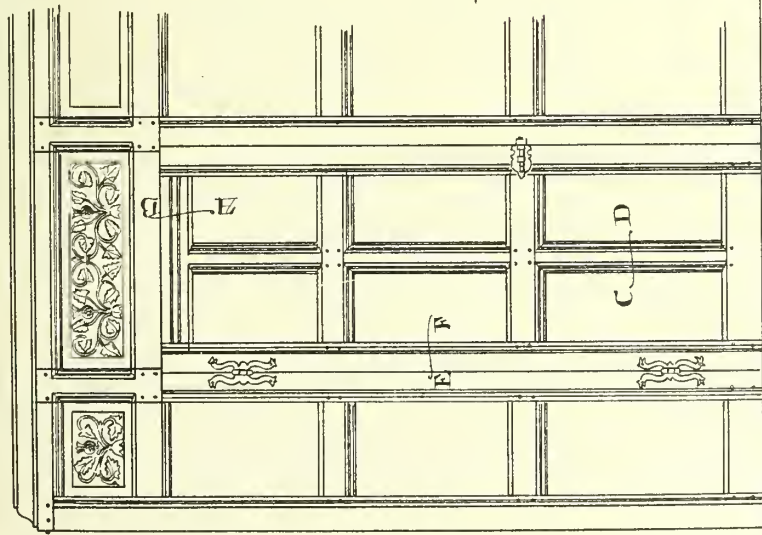
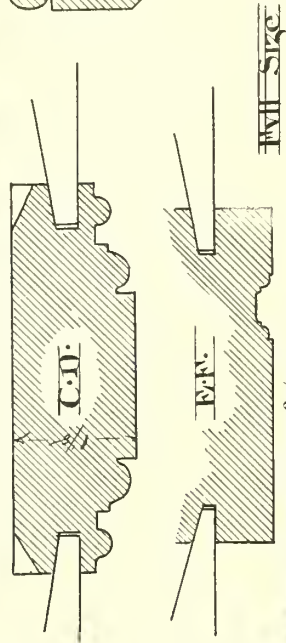


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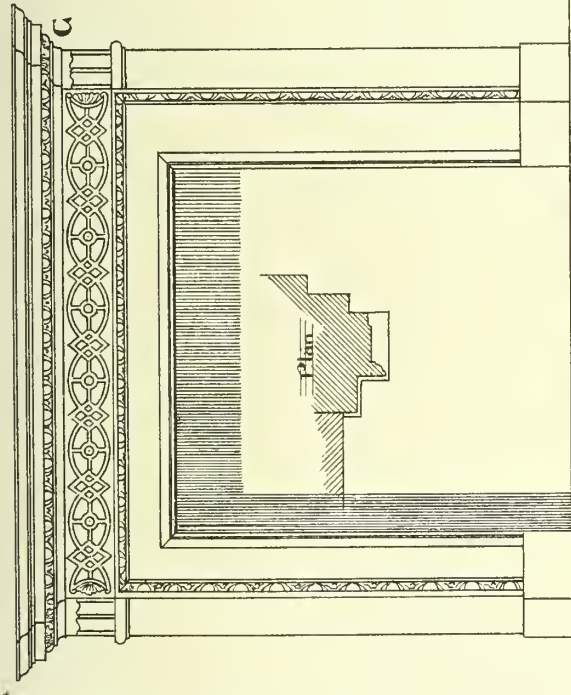
The Oaks - West Bromwich.



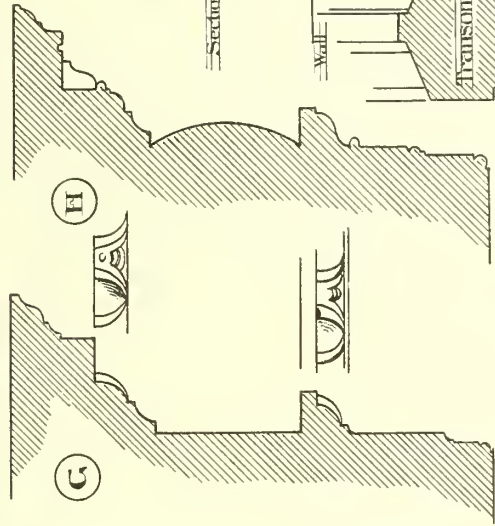
Oak Door and Paneling in Bedroom - 1st Scale



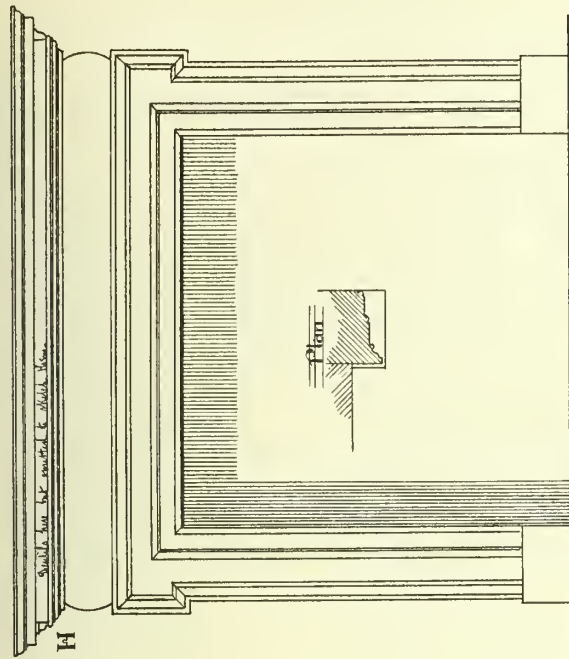
W. Rathot-Thorn & Co. 10/6



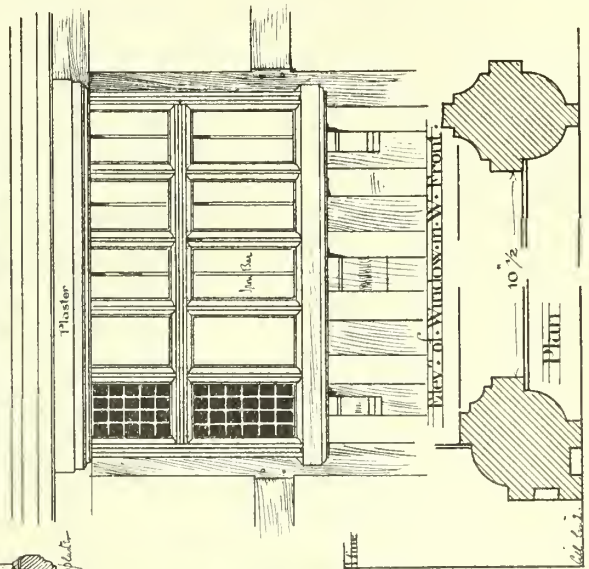
Stone Fireplace in Bedroom



Moldings of Shelves

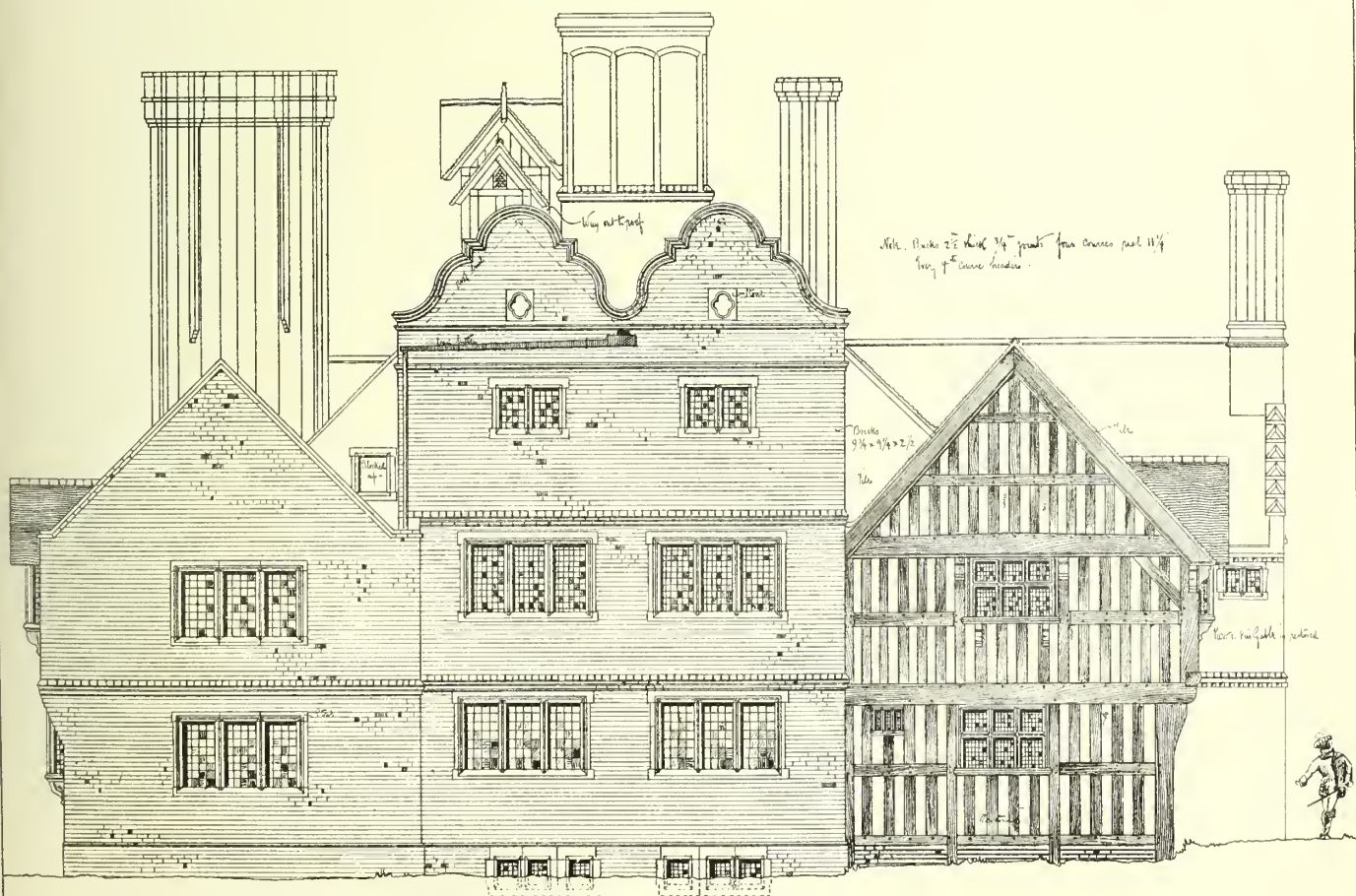
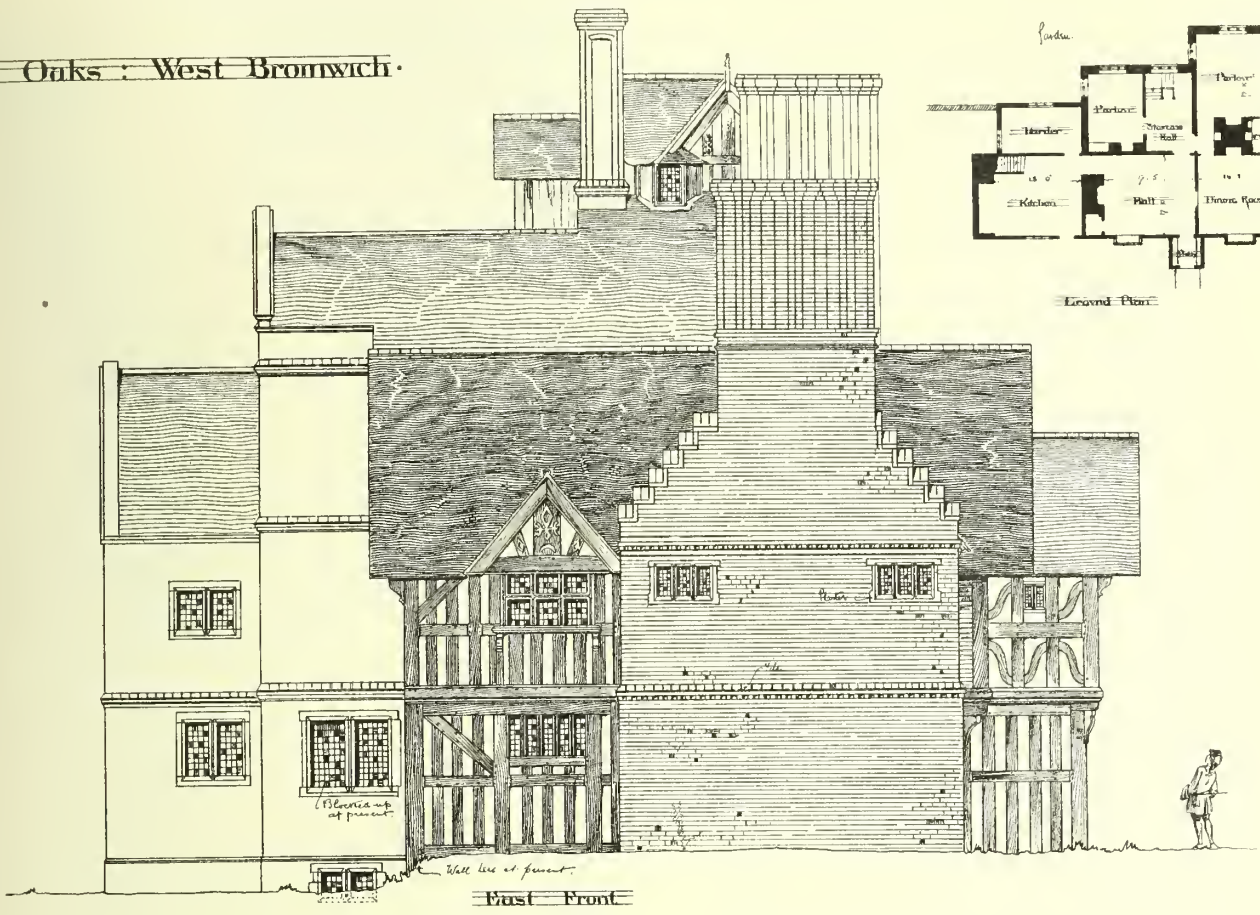
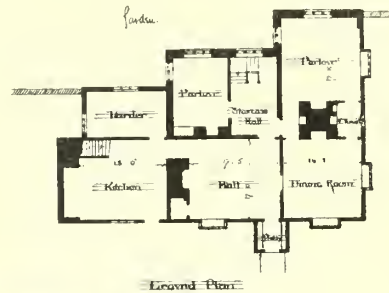


Fireplace in Parlour

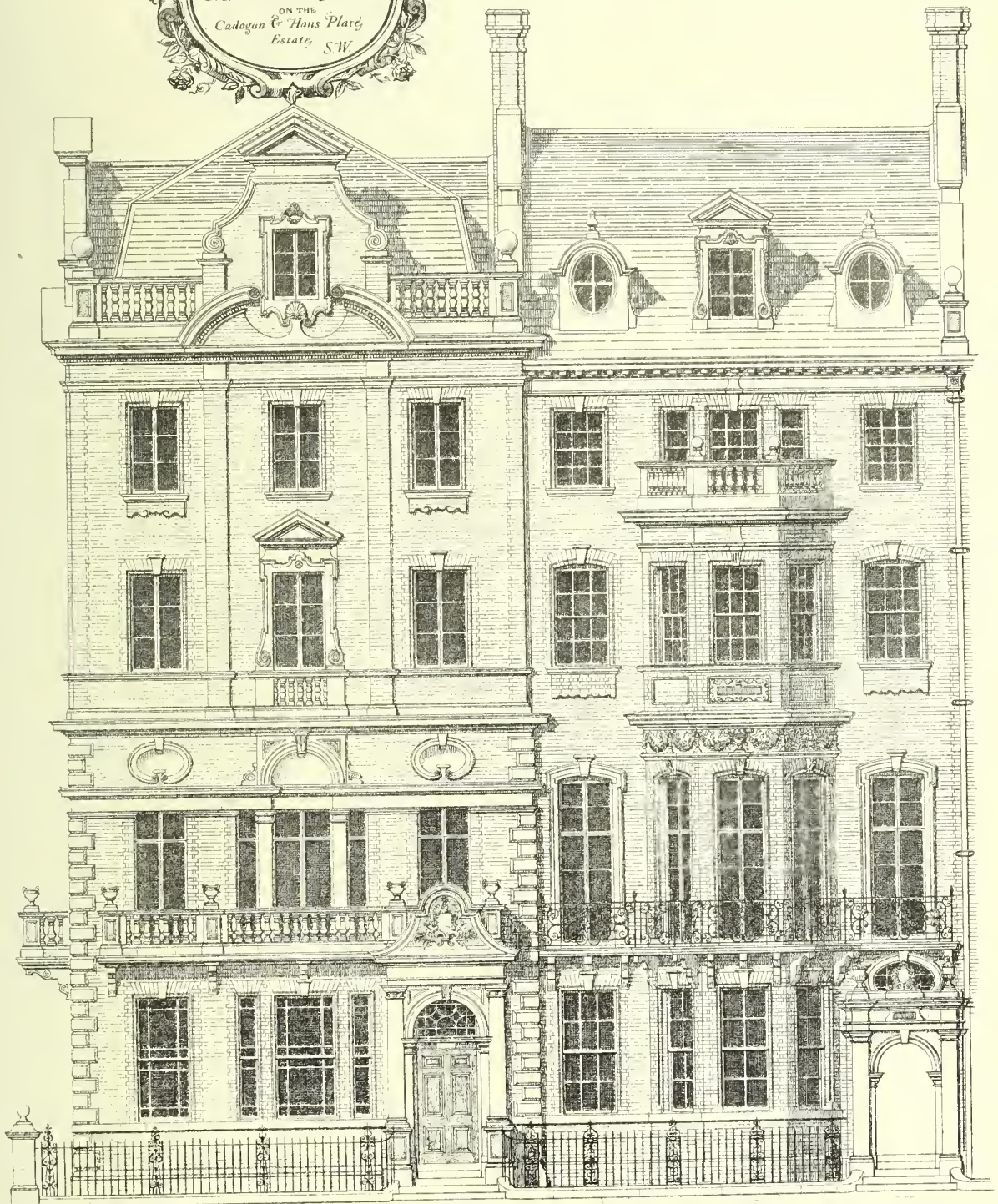


Fireplace in Window

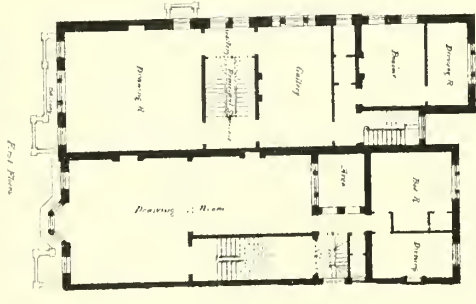
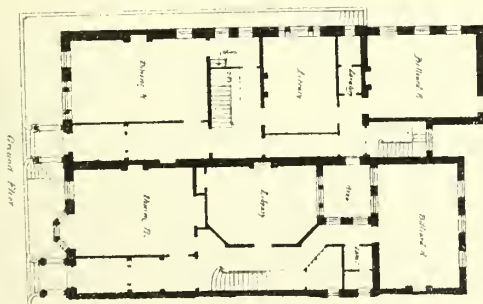
The Oaks : West Bromwich.



HOUSES
About to be erected
IN
CADOGAN SQUARE.
ON THE
Cadogan & Hans Place
Estate, S.W.



W. Nixon Architect



THE STUDY OF ART HISTORY.

DR. ZERFFI delivered the first of the ninth series of forty lectures on "The Historical Development of Ornamental Art," in the Lecture Theatre, South Kensington Museum, on Tuesday evening last, at eight o'clock. After some preliminary remarks the lecturer said that, passing back even to the remotest periods of the development of humanity, we should find certain traces of art expressed as poetry in popular songs, or in attempts at ornamentation, amongst all nations, even during their most primitive savage state. The farther we went back the more closely should we find æsthetic and religious feelings intermingled, so that it was exceedingly difficult to separate art and religion; as we advanced, however, we should find that the necessity for a "division of labour" had made itself felt, and art and religion had not only separated, but even assumed apparently antagonistic positions. This antagonism, however, was merely artificial, and had no lasting vitality. Art and religion were outgrowths of our emotional element, they were twin-daughters of our higher and most elevated worship of the Creator and His works. The artist worked in absorbing impressions from *without* and reproducing them in new forms from *within*. This process of ideal filtration of the impressions of nature constituted the very essence of art, and transformed a mere *work of imitation* into a *work of art*. This process had to be carried out subject to the rules of taste, and these rules scientifically systematised constituted æsthetics, for taste was based on the refined, well-trained action of the intellect, stimulated to activity by the imagination. It was impossible to deny that this process had had its historical development, and this development was intimately connected with the gradual progress of human civilisation. Many of his (the lecturer's) hearers might possibly still say to themselves, "Of what use can a knowledge of Chinese customs or Greek mythology be to me? So long as I can draw and copy what I see I know as much as I want." If they wished to become mechanical draughtsmen, and not intelligent artists, it was undoubtedly true that they need not know much of Chinese customs to enable them to reproduce Chinese patterns correctly; but if they wished, not merely to reproduce, but to work in the Chinese style, it was essential that they should be able to follow the very mode of thinking of the Chinese artist in order to be able to produce an original Chinese work. Mere imitation, only, then became independent artistic work when such work had grown out of that clear consciousness which stamped a copy of the outward impressions of nature as a product of our inward mental power. The history of art scientifically treated should be as seriously and earnestly studied as the mixing of colours, the drawing of correct outlines, or the general practice of art. History taught us, beyond a doubt, that art had only succeeded in reaching the highest climax of classical or romantic beauty when the technical capacities of the artists were well-balanced by their intellectual powers—when science and taste had combined to guide the merely mechanical in the artists, and had aided them to bring thoughts and ideas into forms. If art did not improve our refined taste for beauty, soften our rude customs, banish vulgarity, and elevate our minds, then, indeed, the study of art would be a mere question of fancy or trade, unworthy the expenditure of physical or mental labour. But an art in which taste tried to grasp the beautiful, and imagination endeavoured to give it form, was well worthy of our highest efforts. The ideal of spotless beauty, which should be the aim of art, was not to be found in nature. This did not mean that the elements of beauty were not given us in nature, but the selecting intellect of the artist had to find them, combine, and free them from the accidental, ugly, and grotesque, in order to change the forms given by nature into consciously conceived and created works of art. He (the lecturer) much regretted that he found it necessary, after eight years' teaching, still to remind his hearers that art history and æsthetics were sciences as strictly as botany or chemistry. Like the other sciences, art history and æsthetics were based on observation, on a correct classification of phenomena or facts, and on the careful tracing of certain effects in

certain cases. That they allowed a broader range of opinion, and did not apparently directly influence our appetites, the safety of our property, or the material welfare of our body, did not in any way weaken their title to rank as sciences. We were not merely composed of phosphorus, chalk, lime, iron, oxygen, hydrogen, carbon, and—money, but we were endowed with consciousness, which we attained, through ideality, poetry, and art, the most glorious fruits of our intellectual capacity. Poetry and art led us into a world of possibilities and probabilities more beautiful than reality. Supposing that we knew all the languages in the world, but were unacquainted with the poetical works of all nations, what dreary philological machines we should be! If reality were our sole end and aim, art would be superfluous, yet art had been practised by man from the moment he had been able to use his intellectual faculty. Just as the rose had its innate beauty in colour and fragrance, so man had his innate power to produce works of intellect and emotion in science and art, united by religion, by faith, and an ever firm belief that the culture of our higher faculties was the most sacred duty of an intellectual being. That mere work could be disregarded in a work of art no one could attempt to assert. It would be as absurd as to seek to give shape to a beautiful creature without using visible materials for its representation. The idea, however, the spirit, the soul, must manifest itself in the work of art as did the Deity in the universe. The beautiful was the representation of the infinite in the finite, and in this in itself lay the close connection between ethics and æsthetics.

These lectures are illustrated with models, photographs, &c., and are delivered in the Lecture Theatre, South Kensington Museum, every Tuesday evening at 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE first meeting of the session of the Liverpool Architectural Society was held last week. The chair was occupied by the president of the society, Mr. James M. Hay, who delivered the usual inaugural address, in the course of which, after giving an account of the annual excursion to Whalley Abbey, including a full description of that building and its various appurtenances, he remarked that these and similar ruins were to us what the celebrated Torso, the mutilated fragment of the antique statue of Theseus, was to Michael Angelo—viz., his school. These were our schools wherein we were taught to read the history of that glorious living art which extended from the period of the Norman Conquest down to the time of Henry VIII. For five centuries we were able to trace the rise and progress and development of architectural thought, but at no period did it become stereotyped. Change was everywhere and ever at work, but it was not the change of caprice, whether of an individual or of a clique. It was a mighty wave of human sentiment, based on thorough acquaintance with scientific law and artistic principle. To the architectural student such a record was simply invaluable. Hence the jealousy with which we should preserve every genuine remain. The so-called restoration was simply destruction. He entered into a history of the Gothic revival, and said it was curious to observe that it was the style lowest down in the historic scale that first found favour in our sight—viz., the Rectilinear. After more study our admiration ascended to the next in order, the Decorated, which was the period when Gothic art had reached the summit of perfection, and it was advocated as the best style for our imitation and adoption, and as a point of departure for a new style of our own. He alluded to the revival of the Queen Anne style, and said surely there was nothing in the architecture of Queen Anne's reign but what might be readily infused into the classic architecture of the 19th century. To be consistent we should go on and recover the Georgian styles. But we had arrears of history to bring up. There was the William and Mary style. Why could we not have the Bloody Mary style? He next referred to a remarkable movement of the present day—the establishment of a society for the protection of

ancient buildings, which could not fail, he thought, to have an interest of some kind for all persons of taste; for than such buildings as Durham and Lincoln Cathedrals, York Minster, or Westminster Abbey, no structures could be more worthy of protection from every species of injury. He called attention to the fact that this society owed its existence mainly, he believed, to the writings of a member and ex-president—Mr. Samuel Huggins—whose first paper on the subject, as well as one so late as last November, was read to them.—A vote of thanks was passed to the president for his address.

A communication was read from the Manchester Master Builders' Association asking that the architects of Liverpool should not, during the present joiners' strike in Manchester, press on the several works in course of progress in that town. Mr. J. Boulton said that if the architects were to ally themselves with one side or the other they should have some information as to the merits of the dispute. During the last thirty years there had been several occasions like this in Liverpool, when, if a third party had come in, the dispute might have been adjusted without loss of time.

The President then distributed the prize awarded at the last session for design and construction to Mr. Alexander Bleakley, jun., a member of the student class, and complimented him on the ability he had displayed.

THE NEW DOCKS AT FLEETWOOD.

THE new docks at Fleetwood were opened on Monday by the directors of the Lancashire and Yorkshire Railway Co. The dock, which has for more than three years been steadily progressing under the hands of Messrs. Aird and Sons, of Lambeth, is from the designs of Sir John Hawkshaw, and forms at once a massive, and wonderfully finished piece of marine architecture. The length of the structure from end to end is 1,000 feet, with a breadth of 400 feet, embracing altogether an area of 9½ acres; in addition to which there is a lock entrance measuring 250 feet by 50 feet. The dock walls are built with square blocks of stone, surmounted by a broad and solid coping of Cornish granite, and filled in behind with concrete, the whole being placed on a solid concrete foundation of 14 feet wide; they have an altitude of 33ft. 6in. The walls themselves vary in width as they approach the surface, and are in the lower half of their distance 12½ feet, then 10½ feet, and in the highest section 8½ feet wide. The sill or floor of the dock is well puddled with clay, and stands 2ft. 9in. above the level of low water spring tides, so that an average spring tide of 26 feet will rise 23ft. 3in. above the sill, and an average neap tide of 20 feet will in like manner furnish a depth of 17ft. 3in. in the dock. The lock entrance is terminated at either end by an immense iron gate, consisting of two leaves, each of which is divided into three compartments weighing 60 tons, giving a total weight in the two gates of 240 tons. The gates are ballasted with 2½ tons of gas tar to each, and the appliances for opening and shutting them are thoroughly efficient and handy. These gates were constructed by Messrs. Easton and Anderson, of London, and some idea of the labour they necessitated may be conceived when it is stated that the four leaves contain no less than 28,800 rivets, being one rivet in every three inches.

THE LATE MR. RAPHAEL BRANDON.

ANOTHER gentleman, who has left a mark upon the architectural history of his time, has prematurely closed his career. With deep regret we record that on Monday afternoon last, at his chambers, 17, Clement's-inn, by his own hand, Mr. Raphael Brandon, well known to the architectural profession, terminated his existence. Some time ago we noticed a change in this gentleman's appearance—an anxious and careworn expression, betraying the yielding of an overwrought constitution to a highly sensitive temperament. The whole profession will receive the intelligence of so sudden a death with pain. It appears, from what we have gathered, that Mr. Brandon went last Friday to see the schools

now building at Ham, near Twickenham, from his designs. Of what occurred there we are at present in ignorance; but he told his brother-in-law, on his return, that he had no idea how he got back again. It also appears that the deceased gentleman became lately addicted to a habit which had gradually increased upon him, due probably to an overwrought mind, and to possibly the pressure of other cares. It appears his lease at Clement's-inn, which he has held 21 years, expired on the 29th ult., and he experienced some difficulty in getting the Inn to renew it. Marked peculiarities in his temper and habits appear to have shown themselves lately. We are told, on one occasion, he did not wish to sleep alone; on another occasion he found himself in his garden with only his shirt on; and his capricious freaks caused some anxiety to his friends as they noticed the breaking down of a once vigorous mind. His wife died about five years ago, but left no children.

Mr. Raphael Brandon commenced life with a burden; he became surety for a near relative for a large amount, which, however, he had to pay off. Those who knew the character of the deceased gentleman found him, in all pecuniary and other transactions, strictly honourable—indeed, this scrupulousness he even carried to an extreme. Mr. Brandon was a pupil of J. Dédeau, of Alencon, and Mr. J. J. Parkinson, of London, and began partnership with his brother Arthur, a promising young architect, who died in 1847, just thirty years ago, after which he joined Mr. Ritchie. Of his earlier works may be mentioned the Town Hall and Corn Exchange, Colchester, the Catholic Apostolic Church, Gordon-square, built in 1840—a building of sufficient importance and architectural merit as an Early English structure to have brought him into notice; the church of St. Peter, Great Windmillstreet; Holy Trinity, Knightsbridge; and latterly he was engaged in carrying on the restoration of St. Martin's Church, Leicester, for which he erected a conspicuous tower and spire. We may here remark that Mr. Raphael Brandon sent in a design for the Nelson monument, which was illustrated only by a perspective. The design was first selected, and the author was asked to make other drawings, instead of which he sent in a modified design, and was thrown out. Mr. Brandon was a thorough Gothickist, but he was a Gothickist on principle and education, not because it was fashionable. He never wavered in his choice of a style, and in 1859, when the "battle of the styles" was raging, we well remember the interest he took in supporting by all he could say Mr. Scott's (now Sir Gilbert Scott) designs for the new Foreign Office. Mr. Raphael Brandon was by no means a copyist. We remember, at the time to which we are referring, that he advocated in this journal the claims of Gothic architecture to form the basis of a new style, and he put the significant questions that retain their import even to this day—namely, "How is it that if Gothic architecture is applicable to such a diversity of buildings it should stop short of these? and what is it that renders Gothic capable of such universal application?" These remarks were written at Clement's-inn eighteen years ago, and published in the BUILDING NEWS. Since that time many changes have occurred. A reaction in favour of Classicism has set in, but we find Mr. Brandon in his latest works still true to his principles. Of other buildings designed by him we may name the new offices of Clement's-inn, on the west side of the Law Courts, and Messrs. Rimmell's premises, Beaufort-buildings. In 1874 we remember he exhibited a fine water-colour drawing of the interior of the Catholic and Apostolic Church, Gordon-square, in the Royal Academy. He also competed for a church at Twickenham, published in the BUILDING NEWS in 1875, Vol. XXVIII., page 372. Mr. Brandon's reputation as an architect was so far established that he was one of the twelve invited to contribute a design for the new Law Courts. His design for this was characterised by great ability, originality, and vigour. The style adopted by the author was a florid rendering of Gothic, in which a freedom of detail, borrowed from foreign and English sources, is noticeable. The loftiness of the towers and fleches,

perhaps, were amenable to a charge of being a little too ecclesiastical, but nothing could be much finer than the Strand front and Mr. Brandon's treatment of the Temple Bar site. Here a segmental pointed arch, with an arcade of tracery windows, forming a passage way over the roadway, joined a nobly-designed tower springing from the pavement, through which an archway was pierced. We refer our readers to the BUILDING NEWS of 1867, pages 190 and 374. About this time Mr. Brandon severed his connection with Mr. Ritchie.

We must not omit to notice the many works on Gothic architecture Mr. Raphael Brandon published. His greatest work, and that by which his name will be longest remembered, even after his practical success as an architect is forgotten, is the "Analysis of Gothic Architecture," published in two quarto volumes in 1847. In this he was associated with his brother, Mr. J. A. Brandon. In this work the inculcation of true methods of study and observation is the main purport of the author, and he instances the difference of old and modern practice, and shows that the builders of the middle ages never fell back upon a past era of their art, even when engaged in completing structures of past times—a lesson some of our anti-Restorationists and Gothickists may take to heart. The "Analysis" will long remain a text-book for the student, and the remarks on the meaning and purpose of Gothic features generally are full of interest. In 1848 he published another work, in conjunction with his brother, that will long keep its place as an authority—"Parish Churches." This book contains perspectives and plans of English parish churches, many of which have since undergone processes of restoration. We remember the first appearance of this work, and the value in which we then held it. Another quarto, "Open Timber Roofs," is well known to all students as the only masterly exposition of a most interesting subject. "Ancient Timber Framing," "Papers on Gothic Tracery," are other works from the pen of this indefatigable student of Gothic. One of his recent works, which created considerable attention at the time, was entitled "Railways and the Public, or How to make them Remunerative," a pamphlet we noticed at the time of its publication. We are told he worked hard, and had he been as careful in his pecuniary affairs as he was of his professional reputation, he might have amassed a considerable fortune. Mr. Raphael Brandon lived quite a retired and isolated life; he was not an obtrusive man; and his independence of mind and disposition was so great that he never won that popularity more obsequious men enjoyed. Many a man with less ability has achieved a more popular reputation. He was often selected in competitions as an arbitrator, and when Sir G. G. Scott was unable to attend to business of this kind he more than once referred applicants to Mr. Raphael Brandon, so high an opinion had Sir Gilbert of him. Mr. Brandon was 60 years of age. The inquest will be held to-day (Friday).

The annual dinner of the Builders' Benevolent Institution will take place on November 8; Mr. William Higgs, the President, in the chair.

A new United Presbyterian church was opened on Snaday at Hillhead, near Glasgow. Messrs. Campbell, Douglas, and Sellars are the architects, and the building, which will accommodate 900 people, has cost £12,000.

A new United Presbyterian church was opened at Partick, N.B., on Friday last. The style is Sixteenth Century, and the designs were prepared by Mr. Leiper, architect, of Glasgow. Accommodation is provided for 800 people.

On Saturday afternoon the Bishop of Manchester laid the corner stone of the church of St. Andrew, Mouton-lane, Eccles. The bishop mentioned in the course of his address that a working man, earning weekly wages, was a contributor to the extent of £20. Contracts have been let to the amount of £8,500, and it is estimated that the church when completed, with the parsonage-house, will cost £10,000 or £12,000. It will accommodate about 800 persons. Mr. H. E. Tijon is the architect, and the contracts have been let separately.

The parish church of Wilslow is about to be restored at a cost of £1,500, under the care of Mr. J. S. Crowther, architect, of Manchester.

Alterations are being carried out at Lady Holles' Schools, Redcross-street, E.C., under the superintendence of Mr. E. Woodthorpe.

Building Intelligence.

BEDFORD.—St. Cuthbert's Church was reopened on Sunday week after alteration and enlargement from the designs of Mr. Horsford, architect. The church, formerly a low and mean building, of presumably Saxon date, was rebuilt, in 1849, as a cruciform edifice, in Anglo-Norman style, and subsequently enlarged by the addition of a north aisle. The present alterations include the lengthening of nave and aisles by 17ft., increasing the accommodation from 600 to 800 sittings, with west entrance porch, the addition of an organ-chamber at north angle of transept, and the re-laying of the chancel floor with encaustic tiles. The fresh seating consists of open benches constructed of oak, from Chicheleypark, Bucks, and the new south aisle windows are filled with stained glass. Mr. S. Foster, of Kempson, was the builder. The cost of the alteration has been about £1,400.

BRADFORD.—Messrs. J. Holden and Sons, of the Alston Concrete Works, Thornton-road, Bradford, are about to erect new premises. The contracts have been let, and the work of extending the combing sheds on the southern side of the present works is proceeding. The extreme length of the new shed is 380ft., the breadth is 80ft. The style of building will strictly harmonise with the existing premises. The arching for the shed is composed of Thomas Cordingley and Sons' concreting, and all the floors finished with their granite-faced concreting. Underneath the new shed there will be a cellar, the floor of which is granite-faced concreting. The roof will be about 45ft. in height from the ground line, and will admit light from the north, and on that side be glazed on Rendell's patent system. The plans have been drawn by Messrs. Milnes and France, architects; and the mason's work is being carried out by Mr. Thomas Patefield, Bradford; concrete arching and floors, Thomas Cordingley and Sons, Bradford. The other contractors are Mr. Charles Nelson, plumber; Messrs. Johnson and Smith, joiners; and Messrs. Hill and Nelson, slaters. Mr. Abner Rhodes is the clerk of the works.—A new Friends' Meeting-house has been opened at Bradford. It comprises two frontages—one to Fountain-street, and another to Brunswick-place. In the centre is the main entrance, admitting to an outer vestibule 21ft. by 12ft. From this vestibule open to right and left ladies' and gentlemen's cloak-rooms. Separated from the outer one by folding-doors is the inner vestibule, 21ft. by 19ft., from which there are entrances to the large meeting-room and school-room, as well as staircases to the galleries of the meeting-room, and to other rooms on the upper floor. The large meeting-room is 55ft. by 45ft., and 33ft. high, with gallery round three sides. A smaller or ladies' meeting-room, 46ft. by 31ft., and 21ft. high, adjoins, and is approached either from the same vestibule, or by a separate entrance. The school and class-rooms adjoin the meeting-room on its western side, the former being 35ft. by 33ft., and 21ft. high. Besides the above arrangements, the premises comprise a large tea-room, kitchen, and other rooms. The style adopted by the architects, Messrs. Lockwood and Mawson, is Italian. The total cost has not yet been ascertained, but with the site it will probably amount to about £23,000.

CAMBERWELL, S.E.—The constant increase of Sunday scholars having rendered it necessary to enlarge the school accommodation of Camberwell-green Congregational Church, Wren-road, (Rev. Clewcut Clewance, B.A., pastor), it was decided to carry out an extensive scheme. The boys' schoolroom is to be doubled in size, the girls' room enlarged, and a library built between these rooms. New buildings are to be erected on a plot of ground adjoining, including new infants' school-room, four class-rooms for boys and young men, four for girls and young women, and pastor's receiving room. Plans have been approved, and the tender of Mr. Joseph Thompson, of Camberwell-green, accepted, and the buildings are in progress. The principal front will correspond with the adjoining church, which is in the

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published October 12 contains articles on The Congress of the Sanitary Institute at Leamington, The Belfast Factory District, The Sanitary Housing of our Population, Smoke-cases on Tyne and the Artisans' Dwellings Act, The Alurometer or Flour Tester, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c., &c. Price Two-pence. Annual subscription, Post-free, Eleven Shillings. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—G. W.—Boro.—Surveyor.—J. E.—Ralph Johnson Hull.—James, Seward, and Thomas Leizlad.—W. H.—J. D. H.—W. H. S. and Son.—B. and S.—H. G. B.—A. and Co.—Farnley Iron Co.—M. and Co.—J. R. B.—J. H.—W. and B.—A. W.—J. and A.—W. R.—G. E. C.—L. W. and Co.—W. T. W.—Ignotus.—H. H. G.—J. D. W.—H. P.—O. E. T.—W. H. S.—J. S. C.—S. W. F.—D. D.

BUILDING NEWS DESIGNING CLUB.—Drawings received: Discere Volo, Mechlin, J'Espere.

ERRATUM. (On p. 319, in our account of the new Tay Bridge, by an absurd lapsus calami, it was described as carrying the railway across the Frith of Forth. The Frith of Tay of course was meant.)

Correspondence.

SHARP PRACTICE.

To the Editor of the BUILDING NEWS.

SIR,—I have always thought that the wisdom of criticising designs submitted in a competition that was still *sub judice* was at least questionable, but the circumstances of a recent competition place the matter, to my mind, beyond a doubt. A public institution advertise for designs for a building adapted to their particular requirements, and their invitation is responded to by a small number of architects, among whom is one whom I will call "A."

"A." sends in his drawings, plainly and legibly signed with his own proper name and address, covered, but not concealed, by a thin paper label bearing his motto. The same thing is done with his report, which is dated from his office, without any attempt at concealment, and his perspective is signed with his initials.

A critique of the designs appears in due course in your journal, and contains almost unqualified praise of "A.'s" design, whilst the other drawings are disposed of summarily, or merely described. An opportunity is thus furnished to "A." for a letter to Mr. Editor, and accordingly a gushing effusion appears in the next impression, thanking him for his kind remarks, and endeavouring most feebly to injure his opponents.

To say that "A.'s" conduct is scarcely what is anticipated or desirable in an opponent is, I imagine, nothing more than a fair and temperate statement of the facts of the case.

detail with moderate cost. The design is described as a broad and square mass of rich red, subdivided by piers and colonnades, with lofty arches, to give light to the respective offices. Relief and further enrichment are afforded by the introduction of stone work for the salient parts of the building. The accommodation of the offices comprises rental office, accountant's office, collector's office, board-room, secretary's room, two staircases, and two strong rooms. The works have been executed, under a contract, by Messrs. W. R. and C. Light, Bros., of Landport.

METROPOLITAN BOARD OF WORKS.—At Friday's meeting consent was granted Messrs. Stutely and Cubitt Nicholls, on behalf of Lord Kensington, M.P., for the formation of two ornamental enclosures in roads now being laid out for building purposes, to be known as Nevern-square, S.W., and Lexham-gardens, W. A discussion arose as to the Brunel statue, opposite the School Board offices, in consequence of a committee's recommendation that the Embankment railings be brought round the pedestal to protect it from injury. Mr. Saunders condemned this suggestion as likely to render the memorial absurd as the stone seats, the only sensible feature of the structure, would be railed-in. He asked also why the hideous flanks had been allowed to be erected? The members of the works committee strongly objected to the design, and referred it to the engineer, and yet it had been erected on its original plan. Sir Joseph Bazalgette explained that in consequence of a defect in the statue's legs it was thought necessary to conceal them by the existing mass of masonry. The matter was referred to the works committee to report upon.

POPLAR.—The memorial stone of the new Hospital for Contagious and Infectious Diseases, at Poplar, was laid last week. The building consists of two pavilions, each two stories high, with the necessary offices. The cost, including the land, will be about £14,000. Mr. E. L. Bracebridge is the architect, and Mr. J. W. Martin, of Stratford, the builder. This is the first permanent hospital founded for non-pauper infectious cases by any Metropolitan Board, with the exception of the Cottage Hospital at Lewisham.

SAPFON WALDEN.—The town council met on the 3rd inst. to consider the desirability of erecting a more suitable and commodious town hall than the existing structure in the market-place. Plans and designs by Mr. Edward Burgess, estimated to cost in execution £3,500, were inspected. A letter was read from Mr. G. S. Gibson, the Mayor, offering to place the sum of £4,000 at the disposal of the Corporation to carry out these plans as an evidence of his family's interest in the welfare of the town. The offer was accepted with hearty thanks, and it was decided that Mr. Burgess's plans be adopted.

SHUTE.—A new board school at Shute, Devon, was opened on Wednesday week. The school is in the Gothic style, and is built of "knobbed flint" dug in the neighbourhood, with Ham stone dressings. It will accommodate 130 children, and has two class-rooms. A house for the residence of the master is attached. Messrs. Board and Wakley, of Whitford, were the contractors, and Mr. Pinney, of Axminster, the architect. The cost of the building, with extras, is about £2,000.

Last week the foundation stone of a new Free Church was laid at Dumbarton. The building will be in the Early English style, and will measure about 88ft. in length, and about 49ft. in width, including the session-house and vestry; it will have a gallery, and will seat about 570. The total cost will be about £3,600.

A new east window in Stanton-on-Peak Church, Derbyshire, was unveiled on the 28th ult. It contains the institution of the Lord's Supper in a canopied base, running through the four lights, and above a large subject of our Lord's Baptism, surmounted by a canopy. The work was executed by Messrs. Camm Brothers, of Smethwick and Birmingham.

The Ladbroke Theatre, Notting-hill, has been re-decorated, and the stage enlarged from designs by Mr. Walters.

An U. P. church, erected at a cost of between £6,000 and £7,000, was opened in Balchagray-avenue, Whiteinch, N.B., on Friday.

Decorated French Gothic of 15 years since, and will, like it, be faced with Kentish rag and Bath dressings, and backed with stocks. The memorial stone was laid on Saturday afternoon by Mr. Whitley, who purchased and gave the new site. The cost of the new buildings will be about £3,500.

CAMBRIDGE.—The foundation stone of new Zion (Baptist) Chapel was laid on Tuesday week. The chapel is being built next to the old one in East-road, which will be altered into a school-room and class-rooms. The style of architecture is Early French Gothic, the front next the road showing a gable in brick and stone, with three windows on the floor level, two above, and a central rose window. The entrances are by side wings into the chapel, which will measure 68ft. by 48ft. internally. Before the rostrum will be the baptistery, which will be lined with blue and white glazed tiles. The seats are to be stained and varnished deal, to provide for 900 persons. The gallery front will be of wood panels, with ornamental ironwork above, and the staircases will be of stone. It is to be lighted with gas and warmed with hot water by apparatus supplied by Messrs. Hearn, of Liverpool. Mr. Peachey, of York, is the architect, and Messrs. Thoday and Son, of Cambridge, the builders. The cost will be £4,000, and that of altering the old chapel for Sunday-school purposes about £2,000 more.

GLASGOW.—Belhaven U.P. Church, on the Observatory-road, was opened on Sunday last. It is Gothic in style, and externally depends for effect chiefly on the largeness and simplicity of its parts; but internally it is decorated to a degree quite unusual in a Presbyterian place of worship. It is roofed in three spans; a nave 120ft. by 34ft., and nearly 60ft. in height to ceiling, being separated from the side aisles, which are each 75ft. by 12ft. wide, by arcades and piers of stone. At each end is a small gallery. The building is lighted entirely by the clerestory windows and a large three-light in the north gable. The accommodation is for rather fewer than 900 persons. The small hall, seated for 200, adjoins the church, as does also the vestry, session-house, and church officer's residence. The nave ceiling is of wood, which has been first stained to a rich warm tone, and then decorated elaborately, black and red being the colours principally used, with gold sparingly introduced; the panels contain symbols of the Evangelists. The upper part of the clerestory walls is painted in a rich buff, and decorated with red, the lower part a neutral green, with ornamentation in darker shades. The spandrels of the arcade, and the aisle walls, have for a ground colour a rich red, with applied decoration in various tones of red, black, and buff. The woodwork throughout is stained to a dark tint, and that of the pulpit and organ will be enriched with gold and colour. The north gable window, and those in the entrance, porch, and staircase, are filled with stained glass illustrating Biblical incidents and parallels. The organ has been built (at a cost of £1,150) by Messrs. Thomas Lewis and Co., of London, from a specification by Mr. Henry Smart. The total cost of the buildings will be about £12,000. The architects are Messrs. Campbell, Douglas, and Sellars; the decorations are being carried out under their personal direction. Mr. J. MacIntosh is clerk of works; Mr. Andrew Wells executed the painting and decoration; and the stained glass is by Messrs. Adam and Small. Mr. Malcolm McRorie has been the mason; Messrs. W. Cowan and Son, joiners; Mr. John Rattray, plumber; Mr. John Bradford, plasterer; and Messrs. A. and D. Mackay, slaters.

GOOLE.—A new cemetery at Goole was opened on Friday. The plans were selected from about a score submitted to the board by various architects, and those of Mr. W. Watson, of Wakefield, were chosen. The buildings include two chapels and a curator's house, with board-room. The total cost has been £2,200, of which £4,000 was paid for the land.

LANDPORT.—New offices for the Portsea Gas Co. have been erected at Landport, from the designs of Mr. Alfred A. Hudson, of Southsea. The architecture of the building is exceedingly elaborate. Terra cotta is largely used in the building material, thus allowing of considerable

I trust that you, Sir, by giving publicity to this letter, will do something towards remedying a state of things little calculated to raise our already much-abused profession in the public esteem. When we have arrived at such a pass as to have architects sending in drawings and reports, signed with their full names and addresses, in a competition ostensibly anonymous, it is surely time that some steps should be taken to set our own house in order, and approach the subject with a view to reform from the other side—*e.g.*, that of ourselves.—I am, &c.,

KEITH D. YOUNG.

11, Red Lion-square, W.C., Oct. 2.

A VICTORIAN STYLE.

SIR,—The letter of your correspondent, Mr. Asbury Jackson, touches a question which is rapidly becoming one of the first importance to architects, and may briefly be described as that of "a new style."

It is an interesting matter of speculation what sort of verdict posterity will pass upon the mass of the most important buildings erected during the last thirty years; but what can it be but that they are imitations—more or less happy? It is also a dreadful thought, but one that will force itself upon us, that after a few generations all the most eminent architects of the day, the most celebrated restorers, all those whom the younger members of the profession now look up to with awe and veneration, may be consigned to oblivion, or only mentioned as clever copyists—men who were sufficiently versed in the intricacies of bygone styles to be able to put up buildings more or less consistent in treatment and pure in detail.

In ecclesiastical architecture especially, a dearth of originality is conspicuous. It would seem that the highest praise that can be awarded to a new church is that "it could almost be taken for old work." Nor is this, on reflection, surprising. So long as the same form of worship exists as, in the main, was practised in the middle ages, so long must we expect the buildings provided for it to retain their distinctive features; so long as men profess a belief in saints and other holy mysteries, so long is it fitting that they should decorate their sacred buildings with symbols indicative of their belief. And it is not unreasonable to suppose that the lukewarm faith which characterises the age is leaving its mark in the spiritless churches which spring up on every hand.

With Nonconformist places of worship there is not the same restriction, and it certainly seems a pity to continue building chapels exactly like churches, when, if they were made to embody the peculiar characteristics of the worshippers, they might pave the way to what so many people are crying out for—an abiding nineteenth-century style—for no lasting style will ever be attained that does not faithfully express the wants of the age. And hence it is to be expected that when architects have come fully to appreciate this, we shall have, considering our multifarious wants, more than one style. We seem to forget that in the middle ages there was only one religion to cater for—consequently we have only one broad type of ecclesiastical buildings, though varied in detail and arrangement of parts. There is little doubt that the servile copying of old forms and fashions which seems to be one of the chief aims of the profession, is producing a very bad impression outside, and helps to strengthen the feeling that architects are not "practical," which results in an increasing reluctance to place our new public buildings under the direction of an architect. Mr. Frederic Harrison lately observed that, were he going to erect a building, he should not employ an architect; he should place it in the hands of an engineer, and rest satisfied that, though the result might not be gratifying from an artistic point of view, yet he would be certain to have the benefit of the best skill and most scientific construction; in fact, that his building, even though it were ugly, would be expressive of the genius of the times. And it can scarcely be doubted that, if our grandchildren are called upon to point out the works of the Victorian period, they will not point to our churches, our mansions, or even our public buildings, but rather to our railways and railway stations and

our bridges—in short, to the works of engineers, and not of architects.

Does not this suggest a solution of the difficulty of a new style? By all means let us study mediæval work, since, if we are imbued with its spirit, we shall be imbued with the spirit of truth; but if, instead of studying old work with the mere intention of reproducing it with more or less modification, we were to give ourselves up rather more to the study of the latest improvements in new materials, and render ourselves more familiar with their properties and peculiarities, is there not some hope that we might learn to treat them in a more artistic manner than our practical brethren allow themselves time for? and might we not hope to apply our knowledge in such a way as to stamp our works with so distinct an impress of the age that we should have the germ, and more, of a new style?

Yet, after all, a new style is wanted, not because it is a "style," but because its existence would imply an appreciative use of the most convenient materials, truthfully and artistically employed to give expression to the wants of the age.—I am, &c.,

J. A. G.

Manchester, October 8.

SHRINES AT HEREFORD AND ST. ALBAN'S CATHEDRALS.

SIR,—The reproduction in your last issue of a sketch of the shrine of St. Thomas de Cantilupe, in Hereford Cathedral, leads me to offer a few remarks on that singular tomb, and the somewhat analogous one recently reconstructed in St. Alban's Abbey, as I have lately visited and carefully examined both structures.

The Cantilupe shrine is unique, its peculiarity lying in the fact that it consists of two feretories (or "altar tombs") of almost equal length and breadth, erected one above the other, upon the altar pedestal. Each (as your illustration shows) has, as a leading feature, a large slab of marble, with the matrices of brasses upon the surface. These slabs are supported on arcaded work and dwarf columns socketed into the substructures. The carving and treatment of the two stages differ greatly, being of very unequal merit in various parts. The lower (feretory) is solid, the arcading being cinquefoiled, with freely-carved capitals, and canopied figures of knights templars; the upper one is of open trefoiled arches; the columns have hollowed-out capitals and bases. Both parts, however, exhibit singular differences, some of the stones dovetailed into the general body of the work being very poor and spiritless; especially is this applicable to the diapering of some of the spandrels in the upper part, which is as mechanical as engine-turned work. Study and comparison during the Archaeological Congress at Hereford of the details, stone by stone, and the mode of socketing together, led me to the conclusion that the lower portion was mainly executed soon after Cantilupe's death (1282), say, about 1290, by a sculptor (presumably of advanced years), who adhered to older traditions of working. Certainly it was not carved so late as the usually assigned date, 1350, when the shrine was erected in its present place—John the Baptist's aisle of the north transept. Half a century later, to do greater honour to Bishop St. Thomas, the second shrine was added—a manifest effort being made to adhere to the conventional character of the older work. In the well-known removals of the shrine, from pillar to post, and from the Lady Chapel and the north transept, it seems to have been injured, and was patched up as well as the sculptors of the day could manage. The spirit of the older work had evaporated, but a fair replacement—as restorations go—of the outline features was made by the copyists.

St. Alban's shrine, although of a more usual type, has great interest, partly from its ornate character, but chiefly as an instance of the recovery of a lost feature in fragmentary form, and its successful rebuilding. Half a dozen years since no trace of the shrine of the patron saint was known to exist in St. Alban's Abbey, but in February, 1872, a small piece of clunch, decorated with blue and gold, was found in the floor of the presbytery. Sir Gilbert Scott directed further search to be made, and between

300 and 400 pieces of marble and clunch were found in the floor, walls, and blocked-up arches of the chapel and ante-chapel. These were carefully fitted, and now stand a nearly perfect "altar tomb" in the saints' chapel immediately to the east of the great stone reredos, and opposite Duke Humphrey's tomb. I spent yesterday (Tuesday) in the abbey, and may write on some notes made as to the shrine. The structure is about 8ft. 9in. in height, 9ft. long, and 4ft. broad. It consists of a low pedestal slab of marble greatly worn into hollows (by kneeling?). Upon this is a feretory about 2ft. 3in. in height, and ornamented with four quatrefoils on each side, and one at each end. In two of these are lozenge-shaped openings into the base of the feretory, possibly for the removal and exhibition of the relics usually kept within it. From between the quatrefoils spring shafts dividing the outer superstructure into a series of niches, each enclosed by a cinquefoiled canopy. These canopies, altogether, on the four sides, are ten in number; each ends in a steep gable, richly cusped and crocketed. Recessed from these is the solid superstructure of the feretory, which is ornamented with tracery less carefully worked than that within. The roofs of these niches are groined with very delicate tracery. The tympana at the extremities are filled, the one with a carving in bold relief of the martyrdom of St. Alban by scourging, the other with the scourging of St. Amphibalus. The latter is much more freely sculptured, and apparently later in date, corresponding in character with the seated figures with which the spandrels of the side niches are adorned. The dignity given to the latter figures, and the graceful folds of the drapery throughout, deserve careful attention. The side tympana merely contain conventional foliage—the spandrels of the ends are occupied by censuring angels, in which the arrangement and flow of the garments are the best features. The cornice above is ornamented with a continuous honeysuckle pattern, and appears of somewhat earlier workmanship than the shrine itself, and I am inclined to agree with the conjecture that it has been removed from an earlier shrine to St. Alban's. The main structure is of black marble, with clunch used here and there for groining and shafts, both the materials revealing on close inspection traces of decoration in gold and vivid primary colour. Outside the shrine on each side stand the bases of three twisted columns, similar to the well-known ones at that of Edward the Confessor, at Westminster. They were probably added a century or two subsequently, to support the reliquary cover, perhaps carrying enclosing gratings of wrought iron, as on Duke Humphrey's tomb opposite. As in Cantilupe's shrine there are perplexing traces of many hands at work in construction, alteration, and ornamentation, each complicating the problem of the date of this beautiful and very elaborate shrine. As a whole, this of St. Alban cannot be attributed to a later period than the opening year of the 14th century. We have documentary proofs of successive erections, including that of Abbot John de Marinis (1362-8), which would fit in with Sir Gilbert Scott's theory that it was erected in the latter year. Possibly, however, Abbot John simply completed and further ornamented the shrine built by Abbot Simon some 20 or 30 years previously.

I have not yet seen a good representation of the Alban shrine. It would be very interesting to possess in the same volume of the BUILDING NEWS illustrations of these remarkable shrines to Thomas of Cantilupe and Alban, which I have endeavoured to show are of nearly contemporaneous workmanship, and are almost the only English specimens of such structures. Perhaps some of your occasional artist contributors will take the hint of a fresh subject for the sketcher, and devote a few leisure hours to measuring and sketching the details of the fabric (by far the most interesting feature of the newly-erected cathedral), and you, Sir, may be disposed to give space for their reproduction in your photo-lithographic pages.*—I am, &c.,

E. W. P.

October 10th, 1877.

* Willingly.—Ed. B. N.

Intercommunication.

QUESTIONS.

[5145].—Hospital Chapel.—How should the seats be arranged—facing one another or facing east? And in a small chapel where there would be no choir seats what provision should be made for the officiating clergyman? Would either a pulpit or a lectern be required, or would it be sufficient to have, say, a prayer desk on each side?—F. J. C.

[5146].—Sending Drawings by Post.—Would any of your readers oblige me with a good method of sending unmounted drawings through the post, otherwise than with a wooden roller?—B. N. D. C.

[5147].—Translation of Term "Quantity Surveyor" into French.—Will you kindly inform me of—either in your "Answers to Correspondents" or obtain for me through your columns of "Intercommunication"—the best translation in French and German of the term "quantity surveyor?" I cannot obtain any information from any of the dictionaries I have consulted.—FRANCO-GERMAN.

[5148].—Measuring Winders.—Will some correspondent kindly explain the mode of measuring winders in a dog-legged staircase?—B. W.

[5149].—Plans for the Laying-out of New Streets.—A and B are the owners of two adjoining fields of building land, each desirous to lay out new streets, and to sell his land for building purposes. A has got good frontages on two sides of his field to two public thoroughfares or highways, but B has only one end of his field open, being blocked in on the remaining sides by land belonging to A and others; and not being on good terms with each other, A naturally refuses to allow B to have through communication with his intended streets, unless the latter pays him compensation, which B refuses to do; but he submits plans and sections to the local authorities of several intended streets having no connections or through communications with any others, and are what are termed "cul-de-sac" streets, which are very objectionable at all times, and if allowed to be built upon in this form, will for ever spoil that part of the town. Have the local authorities any power or control over adjoining landowners to compel them to lay out new streets with some degree of uniformity, and communicating with each other? 2nd. Can the local authorities refuse to pass plans of "cul-de-sac" streets if, in all other respects, the owner complies with the local bye-laws, and if so, what section of the Act gives such power? 3rd. Can any cases be given touching upon this?—ANXIETY.

[5150].—Stain for Pitch-Pine Dado.—What stain is the best for a pitch-pine panelled dado, that will do without varnishing, and bear washing?—D. W.

REPLIES.

[5110].—Separating Fine Sand from Water.—If "K. Y. Z." will call at the Floating Swimming Baths, Charing-cross, I can show him in operation a machine perfectly adapted for his wants. The apparatus is used to filter muddy Thames water, which would clog up any ordinary filter in the way he describes the sand does the charcoal and felt.—W. SMITH, Superintendent F. S. B., Charing-cross.

[5127].—Flooring.—With respect to your correspondent's question as to the best method of "tongueing" wooden flooring-boards, whether with wood tongues or iron, I beg to give him a sketch showing a new system which I have largely used during the past three years in Nottingham, in the construction of lace and bosetry factories—viz., by rebating both boards at the lower edges, and filling up the rebates by a wooden tongue, thus: The advantages are these: 1. Several more years' endurance is obtained, as the wear and tear does not work down to the tongue so rapidly as when the tongue is in the middle of the floor-board. 2. The boards are



much more rapidly laid. 3. A wood tongue is cheaper than an iron one, and beds to the floor-board better than iron. With respect to flooring generally it may be useful to the younger members of the profession to know that the narrower the board the better the flooring will be, as there is much less shrinkage. I very seldom now use boards more than 3 1/2 in. to 4 1/2 in. wide, and have seen them used 2 1/2 in. wide for skating rinks, &c. If the flooring is for a factory the boards are better without planing, but may be simply mill-sawn, as this will save a couple of years' wear; but if for a warehouse, they should be wrought. Of course the rebating necessary for the system here advocated, and the requisite tongues, can be worked by steam machinery.—S. DUTTON WALKER, F.S.A., Architect, Nottingham.

[5142].—Covering a Semi-circular Roof with Tiles.—If "P." applies at the Gillingham Pottery, Dorset, he will obtain information as to the tiles he asks about.—T. P. LILLY.

Our Office Table.

So many goods are now sent into London, coloured by various processes, to imitate the real Staffordshire paving blocks and tiles, that builders and others need to exercise considerable care in selecting. We have recently examined specimens of the blocks manufactured by Mr. Joseph Hamblet, of West Bromwich, which are some of the strongest, cleanest-looking, and most durable of their kind we have ever handled. The chequered paving is especially for footpaths, yards, railway platforms, and similar positions, affording a good foothold, and being easy to clean and impossible to wear out. The plain blocks are suitable for the same purposes, and will also do well for cottage floors. The stable paving, which is made in thicker blocks to allow for deep channels for drainage, is especially designed for coach-houses, stables, yards, and crossings, and may also be used with advantage for general agricultural paving purposes. Mr. Hamblet also manufactures building blocks of the same material, which have most satisfactorily stood the severest crushing strains at Kirkaldy's testing works, together with copings, plinths, and cornices, and in fact every kind of brick that is used in building, tunnelling, sewerage, and heavy engineering work. The colour, which is that of the natural clay, is capital, and we are not surprised to learn that the demand for the goods is daily increasing. Mr. Hamblet employs nearly 400 people in their manufacture, and the excellence of his specialities was duly recognised at the Paris Exhibition of 1875, and the Brussels Exhibition of last year, at each of which he took first prizes in the shape of gold and silver medals.

THE October quarterly statement of the Palestine Exploration Fund announces that the survey of the north of Palestine is at length completed. It was commenced by Lieut. Kitchener on the 27th of February, and finished on the 10th of July. In the course of the work 1,000 square miles of country were surveyed; 2,773 names were collected, and 476 ruins were visited and described, some with special plans. All the villages were also described with regard to the number and religion of inhabitants, the remains of ancient buildings, and the nature of the country. The water-supply has also in all cases been specially described. The whole country has been hill-shaded; the altitudes of a great number of points have been obtained by aneroid readings, besides the observed heights: special notes have been taken on the geology, archæology, &c., of the country. The line of levels connecting the Mediterranean and the Sea of Galilee was completed on the 24th March. Photographs have been taken of the more interesting sites.

THE re-survey of the City of Edinburgh, which was commenced in December last by the Ordnance Survey Department, has now been completed, in so far as the outdoor work is concerned. The last survey of the city was made so long ago as the year 1851, and great changes have taken place since then. Some idea of these alterations and additions may be formed from the fact that, whereas in 1851 the population numbered 132,997, and the value of real property was estimated at £657,665, the population now numbers 196,979, and the value of the real property is set down at £1,468,941. The actual extent of ground surveyed at this time measures about three and a half miles from east and west, and four and a half from north to south—that area including the whole of Edinburgh and its suburbs of Grange, Morningside, Newington, &c., as well as Leith, Newhaven, Trinity, and Granton. Lieutenant Kirkwood has had the direction of the staff engaged on the work.

An interesting scheme of interior decoration has recently been carried out, according to the Academy, by Mr. Aldam Heaton, of Bloomsbury-square, for the billiard and smoking-rooms of Mr. Ripley, M.P. for Bradford, residing at Acacia, near that town. The special character of the work arises from the ornaments being always on a gilded gesso or "raising" preparation, which, whether actually raised above its substratum in any appreciable

degree or not, necessarily gives a different texture, and generally a very superior one, to carry the decoration. In the present instance the raising is in the main not above 1-16th in., occasionally, for the salient parts, approaching 3-16ths; a complex design, however, may have several diverse raisings. As in the Italian gesso, the main factor is lime, mixed with oils and adhesive ingredients which produce, when dry, a surface as fine in grain as ivory, and of much the same appearance. The colours used upon the gilding are delicate and transparent, and the smallest amount of pigment becomes at once of value: glazings of one colour over another, lit up by the gilt beneath, increase the effect. In Mr. Heaton's present series a complete frieze goes round each of the two rooms—one of them of foliage, children, animals, and birds. The walls are divided by pilasters of conventional foliage and flowers, and 24 panels contain subjects of boys climbing, hunting, fishing, shooting, swimming, &c., the motive for these being obtained from work by Luini at Milan. The foliations in the pilasters and friezes are from Italian Cinquecento work. The material of the panels is oak, which, of course, will darken with time.

WE have received a clipping from a local paper, describing a visit paid last week by some Liverpool architects and others, to inspect a new ventilator patented by a Mr. Quack, and with the action of which it is stated all the party were delighted. No particulars are given of the ventilator further than that "it is constructed of an iron frame which fulfils the double purpose of a hearth-bearer and ventilator." We trust it may prove to be based on more rational ideas than have inspired many inventions having the same end in view which have challenged public opinion during the last few years.

CHIPS.

A meeting of the Newhaven Harbour Commissioners was held at Lewes on Monday, when the officials of the London, Brighton, and South Coast Railway Company submitted plans for the enlargement and improvement of Newhaven-harbour, and the construction of a large embankment. The cost of the proposed works is estimated at £300,000, which the railway contemplates raising as a separate undertaking.

The Burgh Commissioners of Partick, N.B., have accepted the tender of Mr. Faill for the cleansing of the streets of the burgh, and that of Mr. Nelson for asphaltting contracts.

It had been proposed to repair Crieff parish church, but it is now decided to build a new church close by, and towards this purpose more than £3,000 has been subscribed.

The Ratherglen Town Council have decided to purchase from the Duke of Hamilton a plot of 16 acres of land at White Cawburn, as a cemetery, at a cost of £8,000.

The branch banking premises of the North British Linen Company at Greenock were re-opened on Monday, after extension and improvements executed by Messrs. James Salmon and Co., of Glasgow, from the designs of Mr. James Cardigan.

Cremorne Gardens will no longer disturb the Chelsea Vestry or the Middlesex magistrates. The proprietress is about to convert the property into building sites.

An up-platform approach and inclined covered way, 200ft. in length, and other extensions have just been completed at Romford for the Great Eastern Railway Company, by Mr. W. H. Springer, contractor, of Stratford-by-Bow.

The Airdrie Town Council have accepted plans by Mr. Carswell, of the North British Railway Company, for the widening of the North Bridge.

Conway and Towyn, Carnarvonshire, are about to be severed into the river Conway, according to plans by Mr. J. Farrar, C.E., at an estimated cost of £1,800.

Mr. Howcroft, of Redcar, has been appointed surveyor and inspector of nuisances to the local board of Kirkleatham. There were 63 applications for the appointment.

The Dwygyfyleli Local Board of Health have appointed Mr. J. Farrar, late of Rochdale, engineer for the drainage works about to be carried out at Penmaenmawr.

The five-light east window of the old parish church of Great Yarmouth (St. Nicholas) is about to be filled with stained glass as a memorial. The subjects, 10 in number, will illustrate principal incidents in the life of our Lord.

The Paisley Abbey Parochial Board accepted, on Thursday, tenders for the new poorhouse buildings, which, together with architects' commission and other incidentals, will bring the total outlay to £3,930.

A monument to the memory of the soldiers and sailors of the city of Boston, Mass., who fell during the late Civil War, was unveiled in that city a fortnight since. It is a lofty marble column on a pedestal surmounted with a statue of America, with thirteen stars around her, the star-spangled banner in her left hand, in her right a sword, while at the four corners are statues of a soldier, a sailor, peace, and history. On the panels of the pedestal are appropriate bas-reliefs. Mr. Milmore, sculptor, of Boston, designed the memorial.

The Stranton School Board, county Durham, have requested Mr. Clayton, architect, to prepare plans for a board-room, master's residence, &c., on a site close to the Ward-Jackson Schools.

The death is announced of Mr. Alderman Bradwell, of Cambridge, a well-known builder, who held appointments in that capacity to many of the colleges in that university.

The Glasgow Town Council have accepted the portrait of Mr. Coucillor James Moir, now being painted for the subscribers by Sir Daniel Macnee, P.R.S.A., and will add it to the collection in the Corporation galleries.

A new skating rink at Handsworth was opened on Monday evening. The building, which is 200ft. long, has cost £2,000. Messrs. Davies and Middleton, of Birmingham and Dudley, were the architects; and Mr. C. Corbett, of Lozells, the builder.

The foundation stone of the new Church of St. John the Baptist was laid at Foord, a suburb of Folkestone, on Wednesday week, by the suffragan Bishop of Dover. At present a nave and aisle are to be erected, leaving the proposed chancel, transept, tower, and vestry till a future period. The style is Early English. Mr. Rowland Harcourt is the architect, and Messrs. R. and D. Baker, of Folkestone, are the builders. The contract amounts to £4,000. Messrs. Saunders, builders, have entered into a contract to build 90 artisans' dwellings in the immediate vicinity of the church.

The foundation stone of the new infirmary in connection with the Holborn Union has been laid on the site at Highgate-hill, lying to the west of the Archway-road. The building will accommodate in its wards 625 patients. The contract of Messrs. Freeman and Burt, Grosvenor Wharf, Westminster, was accepted in June last, and the building must be completed in eighteen months from that date. The contract price is £84,000.

A bust of the late Admiral Rous, executed by Mr. Belt, is now on exhibition at the Jockey Club, Newmarket.

The North-Eastern Railway Company have determined to complete the line between Whitby and Lofthouse, and thence to Redcar and Middlesborough. It was commenced six years ago by an independent company, but abandoned after many thousands of pounds had been expended, and the work is in a state of utter neglect. Deep cuttings have fallen in, bridges have given way, embankments have toppled over, and there is scarcely a section of 100 yards of metalling in proper position. Much of the line will be relaid, and in some cases deviations are to be made.

A new reredos has been placed in Swaffham parish church, Norfolk. It is divided into three panels filled in with glass mosaic. The central one has the monogram "I.H.S." in polished white marble, while in either side panel are the wheat and vine, all the backgrounds being gold mosaic. These panels are enclosed in arches of Derbyshire alabaster, with diaper in low relief in the spandrels, and above is a super-altar of polished grey marble. Mr. W. O. Milne, architect, designed the reredos. The carving has been executed by Mr. Earp, of Lambeth, and the mosaic glass decorations by Messrs. Powell and Sons, of Whitefriars. The south porch of the church is being restored by Mr. G. Jeffries from the designs of Mr. R. R. Phipson, of Norwich. Iron gates have been set up by Messrs. Plowright at the outer entrance.

The foundation stone of a new church in Steelhouse-lane, Wolverhampton, was laid on Tuesday week. The church is to be in the form of a parallelogram, and will provide accommodation for 600 adults and 190 children. Messrs. Higham, of Castle-street, are the builders; and Mr. T. Taylor Smith, of London, the architect.

LEGAL INTELLIGENCE.

ANCIENT LIGHTS.—*Dickey v. Pfeil*.—The plaintiff applied, at the Chancery Division, for an injunction to restrain the defendant from proceeding with some buildings in Charles-street, Drury-lane, which obstructed the light coming to plaintiff's houses; and for a mandatory injunction to pull down the new buildings, in so far as they exceeded the height of the old buildings.—Mr. Locock Webb, Q.C., appeared for the plaintiff; Mr. Marten, Q.C., for the defendant.—His Lordship, after hearing the evidence, granted the injunction on the ground that the new buildings would seriously interfere with the rights of the plaintiff.

GAS COMPANY ILLEGALLY CUTTING OFF THE SUPPLY.—*Blake v. the London Gas Company*.—The plaintiff in this case, a painter and gas-fitter, of Walton-street, Chelsea, brought an action before a jury, in the Brompton County Court, to recover damages against the defendants for improperly cutting off his gas and removing the meter.—Mr. McCall, barrister, appeared for the plaintiff, and Mr. Grain was counsel for the defendants.—It appeared from the evidence that the plaintiff had been but a very small customer of the defendants, and on the 9th of July last two of the defendants' servants passed the premises in Walton-street, and discovered that brokers were in possession. Fearful that the meter would be lost or damaged they went in, and without any notice detached it from the pipes and took it away.—On behalf of the plaintiff it was not denied that he was in a very impecunious position, but it was contended that the loss of the gas, under the circumstances, made his affairs worse; also that the Gas Company were bound, under Act of Parliament, to give 24 hours' notice of the removal of a meter.—The jury returned a verdict for the plaintiff for £5.

ANCIENT LIGHTS.—*Lawrence v. the London and North Western Railway*.—This was a claim under the Lands Clauses Consolidation Act, heard before Mr. Under Sheriff Burchell and a Special Jury, at the Sheriff's Court, Red Lion-square, London. The claim was on account of the premises of the claimant, No. 48, Surrey-street, Bishopsgate, being injuriously affected, by reason of the access of light to his windows having been interfered with by works of the company which they were empowered to construct by their special Act of Parliament. The street was made into a *cul de sac* by the Great Eastern Railway Company, and for the depreciation of his lease the claimant had been awarded £250, and he had a sum of £160 by a verdict against the London and North-Western Company. The present claim was for £280 against the London and North-Western, and witnesses were examined on both sides. The rent was £60 a year, and the lease had 10 years to run. The company had offered £50. As usual the evidence of the valuers was very conflicting. The claimant, a news-vender and tobacconist, and his wife, an artificial flower-maker, had resided a long time in the house, and the premises had been damaged by the encroachments of the company. On the part of the claimant the depreciation was from £150 to £200, while on the part of the company, it was only £37 10s.—Mr. Winell was counsel for the claimant; Mr. McIntyre, Q.C., for the company. The jury went to view the property, and the evidence occupied the whole day.—Mr. Under-Sheriff Burchell told the jury that the fact of two other cases of compensation by the claimant for the same premises should not militate against the present claim. He summed up the evidence.—The jury retired, and returned with a verdict for £75.

WATER SUPPLY AND SANITARY MATTERS.

PUBLIC INQUIRY AT SOWERBY-BRIDGE.—On the 3rd inst. Mr. Arnold Taylor, an inspector for the Local Government Board, held an inquiry at the Local Board Office, Sowerby-bridge, relative to an application to the Local Government Board for sanction to borrow £5,000 for public baths, and £2,000 for local board offices, at Sowerby-bridge. Mr. Barstow, the clerk to the board, furnished Mr. Taylor with the information required, and Mr. J. H. Smethurst, C.E., surveyor to the board, gave evidence in support of the same. No objection was taken to the board borrowing the money for the purposes specified. The plans have been prepared by Mr. Smethurst, and the works are being proceeded with.

NOTICE OF REMOVAL.

CHUBB AND SON, LOCK, SAFE, AND IRON DOOR MAKERS,

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Trade News.

WAGES MOVEMENT.

LANCASHIRE.—The operative plasterers of Lancaster have given their employers six months' notice for an advance of wages at the rate of 1d. per hour all the year round. The men are now receiving 7d. per hour in summer, and 7½d. in winter.

LONDON.—Last week a meeting of masons' delegates and representative working men was held at the Cannon-street Hotel to consider the question of the importation of foreign labour into the English market, especially in connection with the strike now in progress among the London masons. It was decided to adopt measures to counteract the influence of the masters, and a resolution expressing a determination to continue the strike was adopted.

MANCHESTER.—The strike of the Manchester joiners still continues. Last week a meeting of the men was held at Whitby-grove. It was stated that many of the German carpenters who had been imported had returned. An opinion was expressed that the employers had made a mistake in refusing to meet the men when requested by the mayor, and that public feeling and the sympathy of trade unionists had entirely turned in favour of the men in consequence.

PERTH.—The Perth plasterers on Monday struck work for an advance of ¾d. per hour, the present wage being 7½d. per hour.

ROTHERSAY.—The masons working at the new parish church, West Bay, Rothersay, have struck work because the walls were being pointed by slaters instead of by masons. As the builder (Mr. Wm. Hunter) has not the contract for the pointing, the matter is beyond his control. All the men engaged on Mr. Hunter's other contracts have also struck work.

WOLVERHAMPTON.—Great opposition to the fifty German carpenters, plasterers, and bricklayers now in Wolverhampton is being shown by the English operatives. About ninety of the latter struck on Monday, and hundreds assembled where some of the Germans were employed.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—ADVT.]

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

THE BUILDING NEWS.

LONDON, FRIDAY, OCT. 19, 1877.

OLD AND NEW CLASSICISM IN WESTMINSTER.

IN looking over old prints and memorials of London during the past century we are made aware of changes that have completely transformed the metropolis. To take the city of Westminster as the old maps and prints show it to us, as late as the latter half of the eighteenth century, we are lost in a labyrinth of irregular streets and enclosures that have little resemblance to the locality of to-day. Whitehall and its memories teem with interest for the reader of history under the Stuarts, while the process of its transformation from the old Court days of the unfortunate Charles I. to our own is no less interesting to the archaeologist and topographer. It takes us back to the time of Henry VIII. and Elizabeth, and its later associations are well portrayed by Macaulay, who speaks of the Court of Whitehall as a seraglio, where maids of honour "danced voluptuously," and "romped with lords of the bedchamber and captains of the guards," &c. The palace has been so mixed up with the Tudors and Stuarts that we cannot say how much of the old buildings were due to any one monarch. Henry VIII. had a splendid collection of pictures, which was increased by Charles I.; but perhaps one of the indications of his taste for art was the erection of the well-known Holbein Gateway, which was built, by his command, by the celebrated Holbein, and faced with stone of a check pattern. This old gateway may be seen in prints of the seventeenth century, and stood between Whitehall and the Privy Garden in front of the palace on the south side of the present Banqueting Hall of Inigo Jones. It was faced with square stones and flint boulders of two colours, disposed in a tessellated manner. The archway was flanked by octagonal and embattled turrets, the faces of which, between the windows, were adorned with busts by Torregiano or John de Maiano, if we are to accept Mr. Cunningham. Over the archway, according to a drawing by G. Vertue, was an oriel window with royal arms below the sill, and embattled parapet, and above this was a flat four-light transomed window. The gateway was erected in 1546, and was taken down in 1750 to widen the approaches to Westminster, and the glazed bricks and stonework were "sold to repair the high roads." Another remarkable gateway, called the King-street Gateway, demolished in 1723, was also built by Henry VIII., and illustrations of it appeared in the "Vetusta Monumenta." It had a square centre opening and two circular foot archways, enriched by Classical entablature, with Ionic pilasters; the flanking towers were circular, had mullioned windows above the openings, and were carried up and capped by spherical cupolas, the centre part and the main opening being in a hybrid or Elizabethan style, with a four-light window, crowned by a semicircular tympanum and steppings. Maitland describes this gateway as an "ancient piece of building, opening out of the Cock-pit into King-street in the north part of Westminster." It was adorned with roses, queen's arms, &c., and was a singular mixture of the Tudor and Classical features of the time. It is said the Countess of Buckingham, the mother of George Villiers, Duke of Buckingham, lodged in the gateway. Between these two gateways was a square garden, called the Privy Garden, the bowling green and tennis court being on the south side, through which Whitehall thoroughfare now passes—the

only clues of the position of these parts being the fragment called the Banqueting Hall and the Horse Guards. The former of these is the only portion of Inigo Jones's design for the rebuilding of Whitehall Palace that was executed for James I. It is a mere fraction of the palace as we find it shown in old engravings of the original design now at Worcester College, Oxford, which enclosed a central court, and consisted of four fronts, each with an entrance between towers, the whole palace measuring 1,152ft. in length by 872ft. in depth. Horace Walpole has criticised the purity of Inigo Jones's work. The towers he considered more Gothic than Roman, and the circular court meaningless; yet in another place he says the intended palace, if it had been carried out, would have been the "most truly magnificent and beautiful fabric of any of the kind in Europe." It is at least certain that if Inigo Jones's design had been carried out, Whitehall would have presented us with some of the features of Parisian magnificence; we should have possessed a pile of buildings equal to those of the Cour de Louvre.

A view by Maurer, 1753, gives us a faint idea of the locality at that date. Let us imagine ourselves looking down Whitehall from a point a little on the north side of the Banqueting House, in the middle of the roadway. Instead of a fine open thoroughfare before us, as it is now, we see Holbein's gateway standing across the roadway on the other side of that building, while on the right-hand side are two blocks with pediments and cornices, the opposite side, adjoining the Banqueting House, being rows of low shed-like buildings. Fisher's ground plan of the Royal Palace, made in 1680, gives the student a good idea of the higgledy-piggledy arrangements of the palace and its surroundings in the days of the Second Charles. The fragment still remaining, only one-fortieth of Inigo Jones's palatial design, is well known to every visitor of this part of London as the Chapel Royal. It was commenced in 1619. Its painted ceiling, in nine compartments, by Rubens, illustrating allegorical subjects and the apotheosis of James I., the triumph of Peace and the Virtues, was retouched by Cipriani. Rubens was paid at the rate of £10 per yard, or £4,000 for the ceiling. We believe the Chapel Royal, as it is now called (an appellation given it in the reign of George I.), has never been consecrated. Early in the eighteenth century Whitehall Palace was destroyed by fire, and St. James's took its place.

Since these early times Whitehall has considerably changed architecturally. It is true Whitehall-gardens still remain, and show some of the old houses occupied by notabilities, now dingy, and chiefly to be remembered for their associations and eighteenth-century architecture. We may note, in passing, Gwydyr House, now the offices of the Local Government Board; Pembroke House, Montagu House, rebuilt since 1860, from the designs of Mr. Burns, for the Duke of Buccleuch. On the other side of Whitehall still greater changes have been made. The Admiralty, designed by Mr. Ripley, on the site of old Wallingford House, displays a structure whose style is just now popular. The Doric colonnade or screen in front was designed by Robert Adam, and the composition, as a whole, presents some noticeable features, although very few passers-by take the trouble to look at it. A far more popularly-marked edifice is the Horse Guards, a structure built in the middle of the last century by Kent, and, although comparatively simple in its detail, possessing a certain degree of picturesque massing—a quality Kent seems to have been a master in. We pass a small domed structure call York House, added by the Duke of York in 1789; the Treasury,

originally built by Sir John Soane, and re-fronted by Sir Charles Barry in the Corinthian order, till we reach the Foreign Office, the work of Sir Gilbert Scott and Sir M. Digby Wyatt. The latter in its turn replaced a brick building, the old Foreign Office. Taking these edifices from Charing-cross to Parliament-street as indications of the change of architectural style during the last half a century, we can remark a considerable divergence, a gradual resumption of Palladian features. The Foreign Office façades, indeed, must ever be regarded as an Italian dressing-up of a Gothic conception. This rehabilitation in a Classical garb is due to Palmerston, and we owe to this cause a certain indefiniteness about the Whitehall façade. The superposed orders appear to want more coherence and connection—the carving in the spandrels of the lower arcade is redundant, while the basement generally is too florid for a classical composition. These faults we lay not so much to the charge of the author, as to those who forced him to abandon a style in which he had won a well-earned reputation. But the contrast the new façades present to those of Sir Charles Barry, Kent, and Ripley, give us occasion for the remark that Gothicism has played a decided part in the modern revival of Classicism. A man brought up in the school of Gothicism is far less likely to imbibe the true Classical spirit than a Classicist would be to unlearn the restrictions of academic rules, and think in the freer atmosphere of Gothic. It is far better that an architect should "cut his teeth" upon Classic than the Mediæval style. Nowhere in a better degree does the spirit of modern architecture contrast with the old so remarkably as it does in this thoroughfare, and for that reason Whitehall is a school to the Classical student. We have here within a few yards four or five well-marked epochs of the style. There is first the fragment of Inigo Jones, the earliest revivalist of Italian probably in this country—a work acknowledged by all critics to be one of the purest examples of Italian Renaissance we possess; we have next an example of the style of the reign of George II., by Ripley, in the severer Classic which came into vogue nearly a century later; third, the freer and more picturesque grouping of Kent in the Horse Guards; fourth, the florid Italian of Sir Charles Barry's Treasury front; and, lastly, the work of one of our greatest Gothicists. If we compare the first work with the last we perceive as great a difference in the feeling as that to be found between the Palladian and the less formal Classicism of Kent.

THE MECHANICS OF ARCHED IRON ROOFS.

IN modern roofs of large span the old form of tie-beam truss is now being generally superseded by the more elegant and simple wrought-iron rib, by means of which the whole space between the springing of the roof and the vertex can be rendered available without the interference of cross-ties, struts, or braces. These ribs either spring from the outer walls or are supported on pillars at moderate distances apart, from 12ft. to 20ft., and the load of the covering is borne on purlins securely fixed to the main ribs, by which it is ultimately conveyed to the walls or other supports. The load on the ribs is not uniformly distributed, but is concentrated at the points where the purlins are attached to them. The pressure upon the ribs produces a vertical and horizontal thrust upon the supports, and these must be made strong enough to resist both kinds of pressure. As, however, this form of roof does not admit of the introduction of visible ties to counteract the horizontal thrust, this

must be done either by means of buttresses or by ties placed under the floor of the room or building covered by the roof. The mechanics of arched ribs made of wrought iron differ very considerably from those of voussoir arches, as the iron rib is not liable to break up into masses, and is also capable of resisting strains of any kind, whether transverse or longitudinal, compressive or tensile, since the whole is united in one continuous beam.

Attempts have been made by a few writers to explain the mode of investigating the strains and thrust produced in arched ribs, but it will be found that from the nature of the subject any general theory takes too complicated a form to be of much service to the practical builder. The best way to make the matter clear seems to be to take an individual case and proceed to investigate the strains arising from the known forces. By this means a near approximation can be obtained to the various strains produced, and the necessary strength that is required for the rib and its abutments can be determined. We therefore propose in the present article to investigate the thrust and strains arising in an arched rib of given span, section, and loading, the methods adopted being equally applicable to any other similar example.

The case we take is that of a semicircular arched rib (Fig. 1), covering an opening of 50ft. span, the radius of the intrados being 25ft., and that of extrados 26ft., giving a depth of 12in. to the rib itself. Suppose the cross section of the rib to be as represented in Fig. 2, showing a web or vertical plate $\frac{1}{2}$ in. thick and 12in. deep, and two angle-irons $2\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. \times $\frac{1}{2}$ in., rivetted at top and bottom on each side of the web. Let the purlins which carry the load of the covering be fixed to the rib at the points A, C, E, and I, the load w at each of these points being for simplicity taken as a uniform weight of 50 cwt. We find by calculation that the weight, W , of the half-rib, AZ, is 10 cwt., and this weight acts at the centre of gravity, G , of the half-rib on the line, OG , which bisects the angle, AOZ . The position of G will be found most readily if we assume that the centre of gravity of the half-rib coincides with that of a circular arc midway between extrados and intrados, and whose radius is $25\frac{1}{2}$ ft. By using the formula given in treatises on mechanics for the distance of the centre of gravity of any arc from the centre, we find

$$OG = \frac{r \cdot \sin \theta}{\theta} \dots (A).$$

where r is the radius of the arc, and θ is half the angle which the arc subtends at O , measured in the denominator in circular units, and not in degrees. Thus, for a quadrant we have $\theta = \frac{\pi}{4}$, where π is the ratio of circumference to diameter and equals 3.1416, the angle θ being in this case half a right angle, or 45° . Taking $r = 25\frac{1}{2}$, $\sin. 45^\circ = .707$, $\frac{\pi}{4} = .7854$; then we obtain from (A), $OG = 23$ ft.; which determines the point G where the weight $W (= 10$ cwt.) acts.

If the half-rib were standing alone it would be strained by its own weight acting at G , and by the loads at the purlins, which would tend to pull it inwards about its base at L . But as there is another half-rib pressing against it at A , this must produce a horizontal force sufficient to balance these weights, and tending to turn the rib over the other way about the base at Z ; therefore the moments of these several forces taken about Z must be equal. Only half the load w at A will be borne by the half-rib; so that we have for the forces acting on the rib, H the horizontal thrust at A arising from the other half-rib, $\frac{w}{2}$ acting

vertically at A , w the vertical load at C , E , and F , and the weight W of the rib itself acting vertically at G . Taking the moments of all these forces about Z , we can determine the value of H from the equation

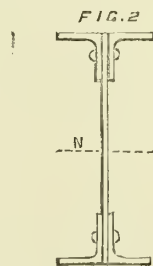
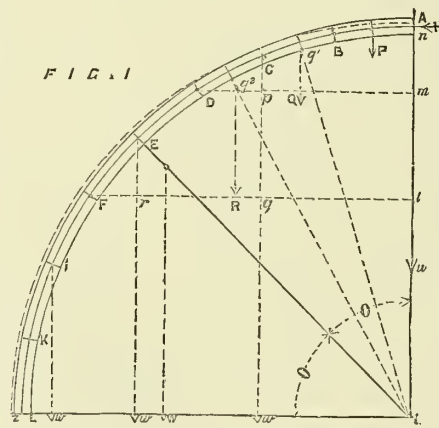
$$H \times AO = W \times Zb + \frac{w}{2} \times ZO + w \frac{(Za + Zd + Ze)}{2}$$

$$\text{or } H \times 25\frac{1}{2} = 10 \times 9.7 + 25 \times 26 + 50 \frac{(16.25 + 7.9 + 2.5)}{2}$$

$$= 2077$$

$$\therefore H = \frac{2077}{25\frac{1}{2}} = 81\frac{1}{2} \text{ cwt.}$$

This horizontal thrust at A is communicated through the rib to the abutment at Z , and must in some manner be counterbalanced in order to secure the stability of the structure. The method adopted will depend entirely upon the character of the building which the roof spans; if the ribs rest upon main walls with buttresses, or cross-walls which act as buttresses, the strength to be given to these can be easily calculated according to the height they rise above the ground. But, as it often happens that the ribs are elevated on iron columns whose weight alone is quite insufficient to resist the horizontal thrust, they must be kept from being pushed outwards either by means of cross girders or struts at the top which convey the thrust on to the outer walls, or by horizontal ties at the base of the columns passing under the floor. When iron is used throughout a structure the whole is firmly rivetted and bolted together, so as to form one continuous beam, the thrusts and strains being made to each other. The general impression which a roof of this form conveys to mind is, that there is no horizontal thrust to be resisted, and that the rib acts like a continuous horizontal beam resting on its ends. The practical builder ought, however, always remember that wherever we have an arch, of whatever form or material, we must have some horizontal thrust to contend with, the amount of which depends on the load the arch has to sustain.



Having ascertained the value of the horizontal thrust we can now determine the strain produced at any part of the rib by taking moments of the forces about that part. In order to find whether the given section of the rib is such as to enable it to withstand safely the strains put upon it, we will calculate the moments of the forces about the points B, D, and F, which lie

half-way between the purlins, and then compare these moments with the moment of resistance of the section about its neutral axis.

To determine the strain at B we may suppose the whole rib from B to Z to be rigidly fixed, and the point B to be strained by the moment of the horizontal force

H at A , the moments of the weight $\frac{w}{2}$ at A and of weight $P (= \frac{W}{8})$ of the part

AB acting at its centre. Taking moments of these forces about the middle point of the rib at B , we have

$$\text{Moments of forces about } B = P \times \frac{Bn}{2} +$$

$$\frac{w}{2} \times Bn - H \times An$$

$$= \frac{5}{4} \times 2.4 + 25 \times 4.9 - \frac{81.5}{2}$$

$$= 84\frac{3}{4}$$

the value of W being 10 cwt., and of w 50 cwt. The dimensions Bn and An can be measured by a scale.

For the strain at D , we have first to find the position of g_1 , the centre of gravity of the portion of rib AD . Using the formula (A) we find that when the angle θ is $\frac{3}{8} \pi$ in circular measure, or $16^\circ 53'$, we have

$$Og_1 = \frac{25.5 \times \sin. 16^\circ 53'}{\frac{3}{8} \pi}$$

$$= \frac{25.5 \times .29}{.945} = 25\text{ft. lin.}$$

which shows that g_1 is just at the inner edge of the rib, at which point the weight $Q (= \frac{3}{8} W)$ will act.

We have now to take moments of the horizontal force H acting at A with a lever arm Am , and of the vertical forces $\frac{w}{2}$ at A , w at C , and Q at g_1 .

$$\text{Moments of forces about } D = Q \times DQ + \frac{w}{2} \times Dm + w \times Dp - H \times Am$$

$$= \frac{15}{4} \times 7 + 25 \times 14\frac{1}{4} + 50 \times 4\frac{1}{2} - 81\frac{1}{2} \times 4.3$$

$$= 256.5$$

In the same manner we find the moment of strain at F ; first obtaining the position g of the centre of gravity of the arc AF from the formula (A),

$$Og_2 = \frac{25.5 \times \sin. 28^\circ 8'}{\frac{5}{8} \pi}$$

$$= \frac{25.5 \times .456}{.491} = 24\frac{1}{2}\text{ft.}$$

In this case g_2 lies 6in. within the intrados, on the line Og_2 bisecting the arc AF . The forces which strain the section of the rib at F are, the weight $R (= \frac{5}{8} W)$ acting at g_2 ,

and the same forces which produced the strain on D , as well as the additional weight w acting at E .

$$\text{Moments of forces about } F = R \times FR + \frac{w}{2} \times Fl + w (Fq + Fr) - H \times Al$$

$$= \frac{25}{4} \times 9.6 + 25 \times 21\frac{1}{4} + 50 (11.5 + 3.2) - 81.5 \times 11.3$$

$$= 405$$

We have, therefore, the moments of the strains at the middle points of the sections at B , D , and F , represented by the numbers

$$84\frac{3}{4}, 256\frac{1}{2}, 405;$$

but since the moment of resistance of the beam to fracture at any section is nearly proportional to the square of the depth, it follows that in order to have an equal power of resistance to the strains at all three of these points, the depth of the rib at B , D ,

and F, must be proportional to the square root of the moments of the strains; that is, depth at B : depth at D : depth at F
 $\therefore \sqrt{84.75} : \sqrt{256.5} : \sqrt{405}$
 or, $\therefore 9.2 : 16 : 20$. (B)

From this rule we see that the depth at F should be more than double that at B. This result also shows us that the rib of uniform depth which we have assumed is not the one that will afford us the greatest strength with a given weight of metal. It has, however, served our purpose in enabling us to ascertain what the proper proportions of such a beam ought to be.

In order to find what actual depth the rib must have we can calculate the moment of resistance of the section about its neutral axis N (Fig. 2); and we will assume that for safety the metal is not to be strained beyond 100cw. per square inch of section. Putting, then, $S (= 100)$ as the strain per square inch, and I for the moment of inertia of the section about the neutral axis, d being the depth of the section, it is shown in works on the strength of materials that the moment of resistance (M) is

$$M = S \times \frac{I}{\frac{1}{2}d} \dots (C)$$

Now, the moment of inertia of a rectangle about a line through its centre is

$$I = \frac{b.d^3}{12}$$

Consequently, in this case we have
 $I = \frac{1}{12} \{ 5.25 \times 12^3 - 4.5 \times (11.5)^3 - \frac{1}{2} \times 7^3 \} = 168$

Putting this value in the formula (C), we find

$$M = \frac{100 \times 168}{6} = 2,800$$

We are now in a position to compare this moment of resistance (M) with the moments of the strains at B, D, and F. But as these latter were taken with the lengths of the lever arms measured in feet, we must multiply each of them by 12 in order to make the comparison with the moment M , in which all the dimensions are in inches. Moments of strains at

$$B = 12 \times 84.75 = 1,017$$

$$D = 12 \times 256.5 = 3,078$$

$$F = 12 \times 405 = 4,860$$

From this we see that the rib is very nearly of sufficient depth (12in.) at D, since the moment at D is very little more than the value of M ; but the section is too deep at B, and not deep enough at F. If, then, we put the depth at D as 12in. we ought by the rule (B) to have

$$\text{depth at B} = \frac{9.25}{16} \times 12 = 7\text{in.}$$

$$\text{depth at F} = \frac{20}{16} \times 12 = 15\text{in.}$$

The proper line of extrados, therefore, of a rib of uniform strength will be that shown by the dotted line Z A (Fig. 1). The moment of the strains reaches about the maximum at or near the point F, and diminishes from that point downwards until it becomes nothing, or the forces balance each other, near the springing.

By the method here adopted it can readily be ascertained whether any arched rib of which the dimensions have been assumed possesses sufficient strength for the purpose to which it is applied, and the calculations will enable us to modify its form to meet the particular necessities of the case.

In the above example we have taken the most usual form of arched rib, in which the height from the springing is half the span; but it is easy to see that where the height bears a greater ratio than this to the span, the thrust H will be diminished, and where it has a less ratio the horizontal thrust will be increased. In order, therefore, to have the horizontal thrust on the abutments as small as possible it will be advisable to have the height of the crown above the springing as great as possible.

In the foregoing calculations we have taken no account of the pressure of the wind, which will only act on one side of the roof at a time, and therefore produces an unequal strain on the two sides and their abutments. When the roof is in an exposed situation a very considerable addition must be made to the pressures in order to allow for the force of the wind, which will be less upon a round or cylindrical surface than on a flat one.

For a full description and details of several important examples of iron roofs of the arched form our readers are referred to a paper in the "Transactions of the Society of Engineers" for 1866, in which the modes adopted for counteracting the horizontal thrust in the various cases are pointed out, and also a general method is given for approximately investigating the stability of wrought-iron arched ribs. There is also considerable information to be found on the same subject in the article on "Roofs," in Spon's "Dictionary of Engineering."

THE "DICTIONARY OF ARCHITECTURE."*

ANOTHER part towards the completion of this long-looked-for dictionary has been issued by the Architectural Publication Society. Subscribers to the work will be glad to find they have at least reached the letter "P;" and that the committee have assured them that the work is being proceeded with as rapidly as funds will permit. We do not undervalue the immense cost and labour involved in such a work as an encyclopædia, nor the increased difficulty in the production of one devoted specifically to one class of the public, not perhaps the greatest of readers; we can estimate pretty well the difficulty the committee have had in selecting a staff of contributors equal to the ability and labour of research required in such an undertaking, and we can congratulate Mr. Wyatt Papworth and his collaborateurs upon the successful result of past labours; at the same time, these instalments appear at longer intervals than even the patience of the subscribers can justify. In these days of rapid publication, when cyclopædias and dictionaries in almost every branch of knowledge are pouring from the press, it is not too much to ask how it is an architectural dictionary cannot be published at a faster rate? The answer to this is, doubtless, that with the abundance and wealth of material at the command of the compilers, it is difficult to winnow the chaff from the grain, to collate and compare the innumerable authorities on certain subjects, and to obtain sufficient reliable information on others. The architectural profession in England is not rich in students; and though a vast amount of scattered and fragmentary literature exists, it requires a great deal of learning and skill to utilise this material for the purpose of an encyclopædia. Again, although science holds an unprecedented position in our day, its application to architecture has been remarkably slow, there has been a considerable hesitation in applying its methods to architectural practice, and we find, as a rule, that theory and practice are woefully at variance. Partly archæological and artistic, and partly scientific, the position of architectural knowledge is in one of those unsettled and transitional states that the encyclopædist is unable to draw any conclusions, and can only lay before the student the experience and results of his own time. For these reasons a dictionary of architecture is a far more laborious and difficult task than that of an ordinary scientific work of the kind, or, for instance, than that of a dictionary of engineering. The part before us appears to sustain the character of its predeces-

sors. The articles begin with the letters "Maca," and to give our readers some notion of this part, we may say that the dictionary comprises not only the scientific, technical, and æsthetic branches, but the historical, archæological, and biographical portions of the theory and practice of architecture. It may be open to question whether if, instead of covering so many fields, fuller and more exact information of the historical, scientific, technical, and æsthetic portion of the art would not have been more judicious. On the other hand, biographical and historical data are necessarily so interwoven, archæological discovery is so closely connected with topography and biography on the one side, and art-history on the other, that it was difficult to give archæological notices without referring to the writings and labours of separate individuals, and to well-known cities and localities. There were certain advantages, therefore, in making the dictionary comprehensive. We may instance the range of subjects by mentioning the terms of M-Roof, Macadam paving, Macario of Siena, Macerata, a town in Italy, Macdougall disinfectant powder, Mackinnel ventilator, Malachite, Malt-house, Market, Matchboarding, Mathematics, Maze, Message, Monk, Mortuary, Mosaic, New York, Nitrogen, Numismatics, Oratorians, Oven, &c. The most important articles under the letter "M," are one on "Malt-houses," illustrated by plans, and those under the heads of "Mortar," "Mosaic," and "Music-hall." We have also a pretty complete notice of "Naples," with a list of its two hundred churches, a sketch of the life of John Nash, and tolerably complete articles on "Ornament," and "Ornamental Gardening," with copious references. We confess ourselves rather disappointed with the cursory notices given of some important subjects—such as those of Mathematics, Mensuration, and the almost exclusive bibliographic accounts of others. In fact, the notices appear to be all that can be desired by the bibliographer or student in search of original authorities; but less so for those who require a concisely-written digest or abstract of all that is known on any given subject. But we must be reminded that the work is not so much an encyclopædia as a dictionary. When we turn for information to any encyclopædia, such as the "Britannica," we expect to find an epitomised abstract of any required subject, an article more or less condensed and complete, written by an unimpeachable authority, and containing all that is known upon the matter. As a rule, a good encyclopædia should take the place of a library of reference, giving in a concise yet exact form everything important on any particular subject. We can hardly view the "Architectural Dictionary" in this light. It is more of a dictionary giving a definition, and supplying the reader with an index of authorities to which he may refer for further information, and we have no hesitation in saying that we know of few works more complete and exhaustive as a bibliographical authority. Another valuable feature of the Dictionary is, that the student or architect can refer to any particular and special class of structure he may be engaged upon, and in this manner it furnishes him with a *vade mecum* not to be found in any other treatise, and in these subjects we find frequent references have been made to the BUILDING NEWS. Thus, the building of a malt-house has been fully described, and the most usual arrangement has been indicated. We read:—"The most convenient arrangement is to have the steep (or cistern) at one end of the building, and the barley store above it, so that the barley is filled into the steep by means of shoots; the working floors form the centre portion of the building, and at the other end is the drying-kiln, with malt store

* The Dictionary of Architecture. Part XX., M, N, O. London: THOMAS RICHARDS.

adjoining. All malt-houses are constructed to steep at one time some number of quarters of barley divisible by 15, as that number of quarters is considered to be one man's work. Therefore, the house is known as a 15, 45, 60, &c., quarter house, as the case may be." The processes of malting and construction are next entered into, and illustrated by wood engravings—an element, by the way, we find has been rather scantily supplied to illustrate the text. For example, in the article "Man-hole," one or two wood- engravings would have been a desirable addition, and a few illustrations under "Mansard's roof," would have been equally acceptable. Under the head of "Mansfield quarries," we have some useful remarks. Referring to the white Mansfield, it is stated "where hardness is required, the lower and thinner beds, about 2ft. thick, are recommended, and may be cut in lengths of 15ft. or 20ft." The weight per cubic foot is 146lb. 9oz. Our own pages are referred to. Marble is pretty concisely noticed. We find its crushing weight stated at 6,000lb. per square inch, but this is only approximate. The experiments made upon the strength of marble under the inspection of a committee of the Institute are recorded, and will be found of interest. The subject, "Market-house," has been rather summarily dismissed, and the types of old structures described are not complete. The term "Master-mason" (*magister-cementariorum*) is described as one equivalent in the middle ages to that of a builder, designer, or architect, and references are made to Dallaway's "Discourses," 1833, which gives a list of master masons in England from the twelfth to the sixteenth century; Papworth's "Historical Account of Masons;" Didron, and other writers. Under the term, "Materials," a reference is made to an article in the BUILDING NEWS, "Materials and their Decorative Treatment," Vol. for 1871., p. 71. Mathematics and mathematical instruments are rather cursorily dismissed, and the references appear to be imperfect, though some well-known authorities are mentioned under the head of "Measure." Mr. Penrose's "Investigation," 1851, and other works, including our own journal, have been consulted. "Measure and Value" is discussed at some length. "Theoretically," we are told, "measure and value is the most equitable and accurate method of ascertaining the amount due from an employer to a builder or workman for work executed. . . . But, in practice, however advantageous this system may be to the tradesman, it has been found open to serious objection on the part of the employer; thus, until the accounts have been finally made up, the total amount of expenditure cannot be ascertained with certainty." The system of contracts, the writer proceeds to say, finds more favour from employers, who think they thus gain the benefit of competition between builders, and their skill and business capabilities in taking advantage of the markets. The article proceeds:—"Measure and value have been brought into much discredit from having been adopted amongst tradesmen to ascertain the respective values of work done for each other on speculative buildings—a class of work termed 'blood work,' value being charged as by custom, and not with reference to the manner in which the work was executed, whether good, bad, or indifferent, and each tradesman endeavouring to take advantage of the other to the utmost of his ability." It is stated, under the term "Measurer," that a measurer or measuring clerk was formerly one of the architect's staff, and that measuring as an independent system arose about 1800. Since then measuring or quantity surveyors have established themselves, especially since the contract system was adopted. As regards "quantities," if

the building be not proceeded with, the surveyor appointed by or with the concurrence of the client or his architect looks for his remuneration in preparing quantities to the client for whose benefit they have been prepared, it being held that "the providing of quantities being a necessary preliminary to the obtaining of tenders, the architect has by custom authority to employ the surveyor on behalf of the client, although the latter may not have directly authorised such employment." The process of measuring is also referred to in regard to the different practices adopted. The article says:—"The practice of claiming by the profession remuneration for measuring work, distinct from the ordinary commission of 5 per cent., appears to have originated about 1790." Various references are made to this subject. In the article "Memel Timber" our own pages are referred to (1867. p. 899). An interesting article on "Mortar" appears to be exhaustive and well written. The different kinds of mortar are mentioned, including "pargetting," plaster, putty, taras, &c. Various authorities are quoted amongst them Reid, Langley, Higgins, G. Aitchison's experiments, recorded in the BUILDING NEWS, 1871, XXI., 5, Moxon, Donaldson and Glen, Burnell, &c., besides notices of mortar found in old buildings. "Mosaic" has been written on pretty fully. Roman mosaic is divided into four classes, thus:—

Tesselatum Lectile	} Applied to pavements, and mentioned by Vitruvius.
Figlinum Vermiculatum	
	} Usually applied to walls and vaults.

Most of the Mosaics found in England belong to the first class. Wyatt's work on "Geometrical Mosaic" has been largely used in the compilation of this article. We have also notices of the various revived manufactures, such as Salviati's Venetian mosaic, Rust's enamelled mosaics, Mr. Minton Campbell's process, and others. We find, under the term "Ornament," frequent reference to our own pages and illustrations, as in Egyptian, Greek, and Etruscan, Medieval, Japanese, Mexican, and other varieties of ornament. A complete list of works on the different styles of ornament is given, classified according to style and period, which will be found of service to students and others. We take leave of the Dictionary with the hope that it will find a large public, and that, at least, the labours and learning of its editors and those who have contributed to it will be amply rewarded, as the want of an architectural dictionary, worthy of the profession, is daily more felt.

THE YEAR'S BUILDING OPERATIONS IN OXFORD.

IN accordance with a custom of long standing, the *Oxford Journal* gives this week, by way of marking the end of the Long Vacation, an account of the principal alterations and improvements that have been carried out in the University and City of Oxford during the past twelve months, and to that source we are indebted for the condensed report below.

The alterations at the principal quadrangle of Christ Church have been continued until now about three-fourths are completed [the Renaissance parapets and other additions of Wren being replaced by others of Perpendicular character]. New pinnacles and parapet have been placed on the hall, in keeping with the remainder of the quadrangle, and a gable has been placed in the east end. The wooden casing which is placed round the bells is now hidden from sight by the parapet and pinnacles of the new tower [on the north side of the quadrangle], which, it is understood, will be surmounted by a dome. A commodious residence has been made for the treasurer out of the almshouses opposite Christ Church, in St.

Aldate's. The whole of the above work is entrusted to Messrs. Symm and Co., builders, Oxford, who are carrying it out from the plans of Messrs. Bodley and Garner, London. At Merton College the whole of the fellows' quadrangle has been re-roofed with Westmoreland slates by Messrs. Fisher and Hobdell, and the chapel is being redecorated from the designs of Mr. Pollen (one of the fellows) with floriated work in colours. The same firm have substituted Westmoreland for Stonesfield slates at Oriol College, and they are about to erect a house, bar, &c., on the site of the Three Cups Hotel. At All Souls' College Messrs. Symm and Co. have erected a handsome stone paneling on the north wall of the chapel, deeply moulded and carved, to correspond with that on the south wall. Sir Gilbert Scott is the architect. At Keble's College the warden's house has been finished. It is for the present isolated, but will hereafter be connected with a proposed second quadrangle. The dining-hall (127ft. by 35ft.) and the library (86ft. by 35ft.) have been steadily progressing, and will, it is expected, be finished to come into use on St. Mark's Day next year. The western half of the hall, though in an entirely unfinished state, is now used by the college. Its ceiling has been painted, and its permanent floor has been laid during the past four months. Mr. W. Butterfield, of Aldelphi-street, London, is the architect, and Mr. J. H. Newton the clerk of works; Messrs. Parnell, of Rugby, are the builders. At Worcester College the hall has been panelled all round up to the usual height with walnut paneling, the upper panels containing the arms of various fellows and scholars, and the other panels are inlaid with wreaths and ornaments executed in marquetry. A new buffet, carved and inlaid so as to agree with paneling, is placed at the west end, and a carved chimney of statuary and coloured marbles has taken the place of the old one. The ceiling is slightly decorated in distemper colour, with borders round panels in polychrome. The walls are very simply treated in distemper colour. The warming has been rearranged. The work has been done under the superintendence of Mr. W. Burges, of Buckingham-street, Strand. The north side of the college has been reslated with Westmoreland slates, and there has been a restoration of Stonesfield slating in other parts of the college. This work has been carried out by Messrs. Wyatt and Son. The north and south sides and west end of the Bodleian Library are being restored, and a new parapet and pinnacles erected by Messrs. Symm and Co. The floor of the room over the stone-groined ceiling of the Divinity School has been removed, and a new one laid down, and by means of trussed girders the whole of the weight has been transferred from the roof to the walls.—Messrs. Symm and Co. have also executed the following works:—In the Radcliffe Library they have removed the stone floor, and strengthened it by means of concrete, massive brickwork, and iron girders, from the plans of Mr. Alfred Waterhouse, of London. An extensive enlargement of the chemical department is being carried out at the University Museum, from the designs of the architect, Mr. Deane, of Dublin. The addition is above 100ft. in length, in a line with the present front of the museum, with which it is in keeping, and 64ft. in depth. A lecture-room and library are being added to the new observatory in the Parks on the north side, the architect being Mr. Barry, of London. The old parapet at New College is being replaced by another of similar design in Teynton stone. A bay window in University College, facing the High-street, and others in the front quadrangle, have been restored, the hall cleaned and coloured, and new heating apparatus, by Hayden and Son, fixed in it. In connection with the Oriol-street improvements a wall, from the designs of Messrs. Bodley and Garner, is in course of erection. Carfax Church has undergone considerable improvement and restoration. The slates have been taken off, and replaced with a boarded roof covered with felt, and new heating apparatus has been supplied by Messrs. Hayden and Son. The new Wesleyan chapel*, in New-inn-hall-street, is making good progress at the hands of the same

* Illustrated in the BUILDING NEWS, Feb. 18th, 1876.

builders. The edifice, which is being built from Mr. Charles Bell's designs, will be in the Decorated Gothic character, with a spire in the chief front, and will be built of Gibraltar stone. Internally it is 70ft. x 48ft., and 40ft. high, providing for 850 worshippers. The total cost will reach £10,000. By the same firm was erected the new chapel of St. Edmund's School, Summertown, from the designs of Mr. Wilkinson, the style being Early English. The chapel is 94ft. x 26ft. 6in., and 50ft. high to ridge. There is a clock tower rising to a height of 113ft., and the whole being of stone, forms a prominent feature in the landscape. At St. Clement's Church Messrs. Symm and Co. have removed the organ gallery from the west end, the instrument being re-erected in the east end of the south aisle.—A much-needed improvement is being carried out at the Sheldonian Theatre in the substitution of a new and powerful organ for that which has occupied the gallery for so many years. The maker of the new instrument is Mr. Willis, of London, and a finely-carved case, from the designs of Mr. Jackson, is being erected by Messrs. Farmer and Brindley, of Westminster-bridge-road.—The new buildings undertaken at Balliol College were finished a few months since, and include, besides twenty-two sets of rooms, a new hall 90ft. x 20ft., kitchen, buttery, common-room, laboratory, and lecture-room; the old hall is being converted into a library. The laying out of the foundations for the new University Examination Schools,* to be erected from Mr. Jackson's designs, has been commenced. They will consist of a quadrangle open on the front side towards the east. On the ground floor will be nine *viâ voce* schools, and three large writing schools and two *viâ voce* schools occupy the first floor. The building will be heated on Messrs. Hayden's principle. Messrs. Fisher and Hobdell have erected a laboratory, class-room, and microscopic room at the botanic gardens on the right-hand side of the entrance gateway. The interior of St. Thomas's Church has been cleansed and repainted, and the seats re-varnished, the works being carried out under the direction of the senior churchwarden. The new children's wards and fever blocks of the Radcliffe Infirmary, formally opened by Prince Leopold in June, were built from the designs of Mr. A. W. Blomfield, of London—the former by Mr. George Castle and the latter by Messrs. Wyatt and Son. The last-mentioned firm are now erecting a presbytery three stories in height, adjacent to the new Roman Catholic Church in St. Giles's, and amongst other works executed by the same firm are the restoration of stonework at Jesus' College and at Brasenose, where the old hall is being decorated for use as an undergraduates' library, and two more sets of rooms are being added; and internal and external repairs to St. John's, Queen's, Pembroke, and Trinity Colleges. The Armoury in the New-road is being rearranged for the county police from the designs of Mr. Tollit. A new Liberal Hall has been erected in New-inn Hall-street, containing, on the first floor, a room 55ft. square and 20ft. high, and seated for 300. Mr. T. Selby, of Oxford, is the builder, and Mr. F. Codd the architect and superintendent. A new Conservative Hall is on the point of completion at the rear of the Plough and Anchor, Great Clarendon-street. The dimensions are 60ft. by 26ft., with a height of 20ft. to ridge. The roof is open-timbered, with light iron rods; the walls are of white bricks, with diamond patterns in red bricks, and the floor is of wood. Mr. Selby also built this hall, and has effected considerable alterations and extensions in the licensed house itself. During the vacation both the Great Western and London and North-Western stations have been improved and renovated.

During the past twelve months important progress has been made with the main drainage. The outfall sewer has been finished, as have also the difficult works of carrying the iron tubes underneath the river bed at Osney and at Saunders Bridge, the last-named being the link required to connect the district of New Hincksey with the drainage on the Oxfordshire side of the valley. The whole of the remaining street sewers, the crossing in St. Aldate's, under

Trill Mill-stream, and the canal from the same to the site of the pumping station at Littlemore, have been completed. Nearly all the land for the intended sewage irrigation farm has been purchased, and the rising main between it and the pumping station, a mile and a half in length, consisting of 2½ft. iron pipes, has been laid. The contract for the building of the pumping station has been let to Mr. T. Jones, of Oxford, and the excavations are in progress. The contract for the engines, boilers, and pumps has been taken by the Northmore Foundry Company, Oldham. The Local Board of Health having determined to take the sewage from Oxford and dispose of it at the pumping station, pending the erection of the permanent pumping power and the preparation of the sewage farm, temporary pumping buildings and machinery were erected early this year. The sewage is lifted at an average rate of 24,000 gallons per minute into a brick tank, from whence it flows by pipes laid underground and along the bed of the river into the latter at midchannel, near the railway bridge at Ilfley. The reservoir at Headington-hill, in connection with the waterworks, was opened on the 29th ult. (see p. 348, ante). The principal street improvement has been the new road connecting the south with the north of Oxford, *viâ* Holywell; this has been carried out by Messrs. Fisher and Hobdell, the next most important being that just completed in St. Ebbe's-street. Extensive progress has been made in the laying out of the Hincksey Park estate, the property of Mr. E. W. Harcourt, of Nuneaton Court. The probable cost of the laying out will be about £6,000, and on its completion, twelve months hence, the estate will be divided into plots, on which residences will be erected.

THE PARIS EXHIBITION OF 1878.

WE have received from the hon. secretary to the "Paris Exhibition (1878) Architectural Committee" the following memorandum for the information of architects who may be desirous of exhibiting drawings at the forthcoming International Exhibition in Paris:—

"The Royal Commission for Great Britain have entrusted to the Institute the duty of organising this portion of the Fine Art Section. It has been decided to aim at forming a select collection of works of genuine excellence, rather than a large one including works of moderate or inferior character, in the belief that such a collection will most adequately represent our art as practised in this country at the present day, and will be worthy of the position which English architecture may justly claim before Europe.

"The architects of Great Britain and Ireland are invited to forward such drawings as they may be willing to exhibit as representing their best recent works. These will be received in London at a place in which they will be subsequently arranged, in the month of February, 1878 (due notice of the exact day and place being given hereafter by circular to all intending exhibitors). These contributions will not be publicly exhibited in London. From them the committee will make a careful selection, having regard to the space placed at their disposal and the actual merit of the works.

"Drawings must be framed; frames and margins must be narrow. There will be no space for plans, except key plans to a small scale, which should be included in the same frame as the drawing they illustrate. It is uncertain whether any space can be afforded for models. The regulations require that the works exhibited shall have been executed within the last ten years. Works that have been already publicly exhibited are not excluded, nor are projects for the restoration of ancient buildings.

"The British Commission will undertake the whole responsibility and expense of packing, transmitting to Paris, hanging, exhibiting, and returning to London the selected works. It is expected that a representative selected by the committee will be sent to Paris to superintend the hanging of them. The insurance, and the cost and risk of carriage both ways between the exhibitor's own house and the place of reception in London will rest with exhibitor."

This statement of conditions is signed by the chairman, Mr. Charles Barry, P.R.I.B.A., and

by Mr. T. Roger Smith, to the latter of whom all communications are to be addressed, at the Royal Institute of British Architects, 9, Conduit-street, Hanover-square, London, W., endorsed "Paris Exhibition (1878) Architectural Committee." The works of art admissible are those of French or foreign artists executed since 1st of May, 1867.

BRISTOL CATHEDRAL.

THE restoration of Bristol Cathedral has so far progressed that the new nave will be opened on the 23rd and 24th inst. (Tuesday and Wednesday next). The erection of the nave has been 10 years in progress, and has cost £45,000, in addition to the sum of £13,000 which has been expended since 1860 in the restoration of the choir. The new nave has been erected on the lines laid down by Abbot Knowle in the fourteenth century, the foundations which he began for the nave and north porch, but never built, having been discovered in 1866. The nave (which we illustrated on October 20th last year, when we devoted three pages of photo-lithos to the elevations, section, and plan) is 120ft. long and 68ft. wide, and is divided into six bays. The west front is to be flanked by two steeples, furnished with dwarf lead-covered spires, but the money is not yet forthcoming for these. Mr. Wait, M.P., has, at his own cost, erected the north porch, whence the objectionable figures were removed two years since. With a few trifling alterations the style of the choir has been followed in the lengthening of the structure, a plan unique in this country amongst our cathedrals, and only matched by that of Poitiers, the peculiarities being there is no triforium or clerestory, and that the main building and aisles are of equal height. The flooring is of Remnant and Portland stone and Goodwood tiles arranged in pattern. A local journal states that the view from the new nave has made a most striking alteration in the hitherto dumpy and dwarfed appearance of the choir, the *coup d'œil* being now exceedingly fine. Most of the new windows are filled with memorials of deceased Bristolians in coloured glass. Mr. G. E. Street, R.A., was the architect, and Mr. Booth, of Bedford-street, Covent-garden, W.C., the contractor.

DEAN OF GUILD COURTS.

THESE Scotch courts opened a new session on Thursday, the 11th inst., when the occasion was taken advantage of in several instances, by the Dean, to make a statement as to the work of the past year. At Glasgow Sir James Watson delivered an address, in which he stated that the business of the past year had not been equal to that of either 1876 or 1875, although still very considerable. Linings for property had been passed to the value of £1,564,360, including 851 single apartments, 2,190 houses of two apartments, 643 of three, 131 of four, 84 of five, and 64 of four apartments each; 586 single shops, and 297 double shops. He confidently expected that the business of the coming twelvemonth would not be so extensive as for the past few years, and would not be surprised to see a considerable lull in the building trade. A good many cases of bad and insufficient work had been brought before the court during the year, and they had dealt pretty severely with some of the parties. In one case they obliged a builder to take down his property, and he made himself a bankrupt on the plea that he was not able to rebuild.—At Greenock, Dean of Guild Erskine stated that the prosperity of the burgh was made abundantly evident by the great amount of work that had passed through the hands of the Dean of Guild Court during the year; the total value of new buildings authorised, according to the estimate of the master of works, was £210,500, and the alteration of buildings £12,600, which, when the work of the day had been passed, would show a total addition to the town property of a quarter of a million sterling in value during the past twelve months.

A new organ, built by Messrs. Hill and Son London, at a cost of £266, was opened at Long Sutton parish church, near Somerton, on Wednesday week.

* Illustrated in the BUILDING NEWS, Dec. 22nd, 1876.

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REGENT-SQUARE—OLD BOND-STREET GALLERIES—
SCREEN IN LAVENHAM CHURCH—" BUILDING NEWS "
CLUB DESIGNS FOR VILLAGE SCHOOL.

OUR LITHOGRAPHIC ILLUSTRATIONS.

MESSRS. AGNEW'S NEW PREMISES, OLD BOND-STREET.

This drawing shows the front, towards Old Bond-street, of Messrs. Thomas Agnew and Sons' new property. The face has been set back from the building line a little, in order to give a slight prominence to the porch, which conducts through a wood-lined passage to Messrs. Agnew's galleries. This projection of the porch helps to separate the gallery entrance from the adjoining shop, with which it has nothing to do; it is for this reason also that the porch has been raised above the level of the first floor. The site extends from Old Bond-street to Albemarle-street, and on it are raised Messrs. Agnew's galleries, consisting of a large basement, with entrance from Albemarle-street, a saloon for general purposes, two sale-rooms, offices, and an exhibition gallery. Besides this establishment there are two large shops with basements, four sets of chambers in Old Bond-street, and seven in Albemarle-street, with a large studio and flat at the top of the latter. The highest story of Old Bond-street, as here shown, has not been carried up—it was objected to by the shopkeepers opposite. This top story may, perhaps, be added at some future time. With the exception of the top balusters and the balconies this front is carried up in red brickwork of the best kind, every brick rubbed and laid 12 courses to 2ft. 6in. Messrs. Holland and Hannen were the contractors; Messrs. Knox, Finlay, and Smith, carvers; and Mr. Shrivell, ironworker. The whole from the designs, and under the direction, of Messrs. Ed. Salomons and R. Selden Wornum, architects, 21, Whitehall-place.

CHURCH OF ST. PETER, REGENT-SQUARE.

The Church of St. Peter, Regent-square, built soon after the erection of St. Pancras, is one of those edifices the ecclesiastical interior of which is so familiar to the London church-goer. It is a vast space well roofed, certainly well-pewed, and admirably galleried, just the kind of arrangement which, in the dead-alive ages, both in church and art, in this country, at the beginning of the present century, appeared to be the *beau idéal* of the decorous and comfortable Churchman of the period. Still withal, there is a vast amount of good design, and a capital proportion in the building, and it has been the desire of the architect to make the present structure a thoroughly church-like interior, without destroying the characteristics of style; and especially avoiding anything like a "Victorian" Gothic appearance in the renovated interior. First and foremost in the

scheme comes the removal of the enormous galleries, and in a line with the pillars now supporting the same is introduced an arcade of stone, with red Mansfield insertions, caps of Bath stone, and panels in the square shafts of della robbia ware, and terra cotta in alternate bays, surmounted by a cornice inlaid with marbles. The present roof is kept intact between the arcades, the large space of ceiling being relieved by panels of moulded wood and other ornaments; the aisle roof would be carried somewhat lower down. The walls of the present sacarium have been thrown out to the end of the space now existent towards the railings, eastward of the church enclosure, a chancel being thus obtained of 35ft. 6in. in length, by 26ft. breadth, of which 20ft. 6in. of length is gained by the extension. Choir stalls of walnut or oak, a pavement of marble and stone, dwarf screens of stone and marbles, new east window, reredos and wall decorations, complete the usual adornment of the sanctuary. A chancel arch is built from the old walls. The existing vestries for clergy and choir have been retained. At the eastern end of the south aisle is formed a morning chapel, and over north aisle is an organ chamber. A new pulpit and lectern, together with reseating throughout the nave, the floor of which it is proposed to lay in parquetry, complete the sum of details which can be mentioned in this general outline of the restoration scheme in prospect. Mr. Wm. Scott Champion is the architect, and the cost has been estimated at about £5,000 to £6,000.

SCREEN AND STALLS, LAVENHAM CHURCH.

IN the BUILDING NEWS, June 29th last, we published several measured drawings and details of the remarkably fine parish church at Lavenham, Suffolk—the well-known example of Perpendicular work. To-day we give some details of the screen and stall work, drawn by the author of the former plates, Mr. W. Gillbee Scott, who writes:—"The oak screens in this church are very beautiful, but in many cases have suffered greatly from neglect, and worse still, from those antiquarians, who, with itching fingers, pull off a little piece here and a little piece there, till the thing is but a wreck compared with what it once was. All this is, however, stopped now. The church has been carefully restored, and is well looked after. One of the screens has been adapted to its present position, and was not made for it. On this one are traces of colour, principally red and gold. They are drawn exactly as they now exist, nothing having been restored in the drawings." There is also on the plate a drawing of an earlier chancel screen from Northfleet Church, Kent.

PONT DES MOULINS, STRASBOURG.

STANDING on the canal which passes through Strasbourg are the picturesque old half-timber houses represented in the sketch. This is one of the only remaining groups left untouched. Formerly tanneries, these buildings are now used for dwellings and various other purposes. Like most old houses in this part of Germany the roofs span each building, and many contain (as in one instance here shown) several floors in the roof. The accompanying sketch was made in 1875 by Mr. W. West Neve, of 5, Bloomsbury-square, and was in the Royal Academy of the present year.

BUILDING NEWS DESIGNING CLUB.

WE illustrate the best sets of designs received in the competition for a village school, which, the conditions prescribed, was to accommodate 100 children, at a cost, together with master's residence adjoining, not to exceed £1,000. We reviewed the drawings a fortnight since on page 327.

COMPETITIONS.

HALIFAX BOARD SCHOOLS.—At Monday's meeting of the School Board for Halifax the building committee reported that ten sets of plans for the proposed Board School at Haughshaw had been submitted in competition by Halifax architects, and that the committee had instructed Mr. Adams, architect to the Leeds School Board, to examine the drawings and report thereon.

NEW CHURCH OF ST. PHILIP, TRIPPETT, HULL.—By invitation, a limited number of architects recently submitted designs in competition, under motto, for the above church, which is to seat 600 persons. The design marked "Experto Crede" has been selected by the committee as the best, and it is to be carried into execution. Its authors are Messrs. W. Botterill and Son, of Hull, architects.

OXSPRING.—New schools for 120 children and a master's house are about to be erected at Oxspring, near Sheffield. Three designs were sent in in competition, and those by Mr. C. S. Milne have been selected for execution.

PUTNEY.—A new boat and club-house is about to be built at Putney for the Thames Boat-house Company. For the purpose of obtaining designs, a competition was instituted, and seventeen sets of drawings were submitted. The design selected is that by Mr. H. Townley Sugden, architect, of 12, Buckingham-street, Strand. There will be a public exhibition of the competing designs at the club-rooms, Star and Garter Hotel, Putney, on Monday next, from 10 a.m. to 4 p.m. The cost proposed is £1,500, and the premium paid is £25. This sum, however, will merge into the architect's commission in the event of the chosen design being executed.

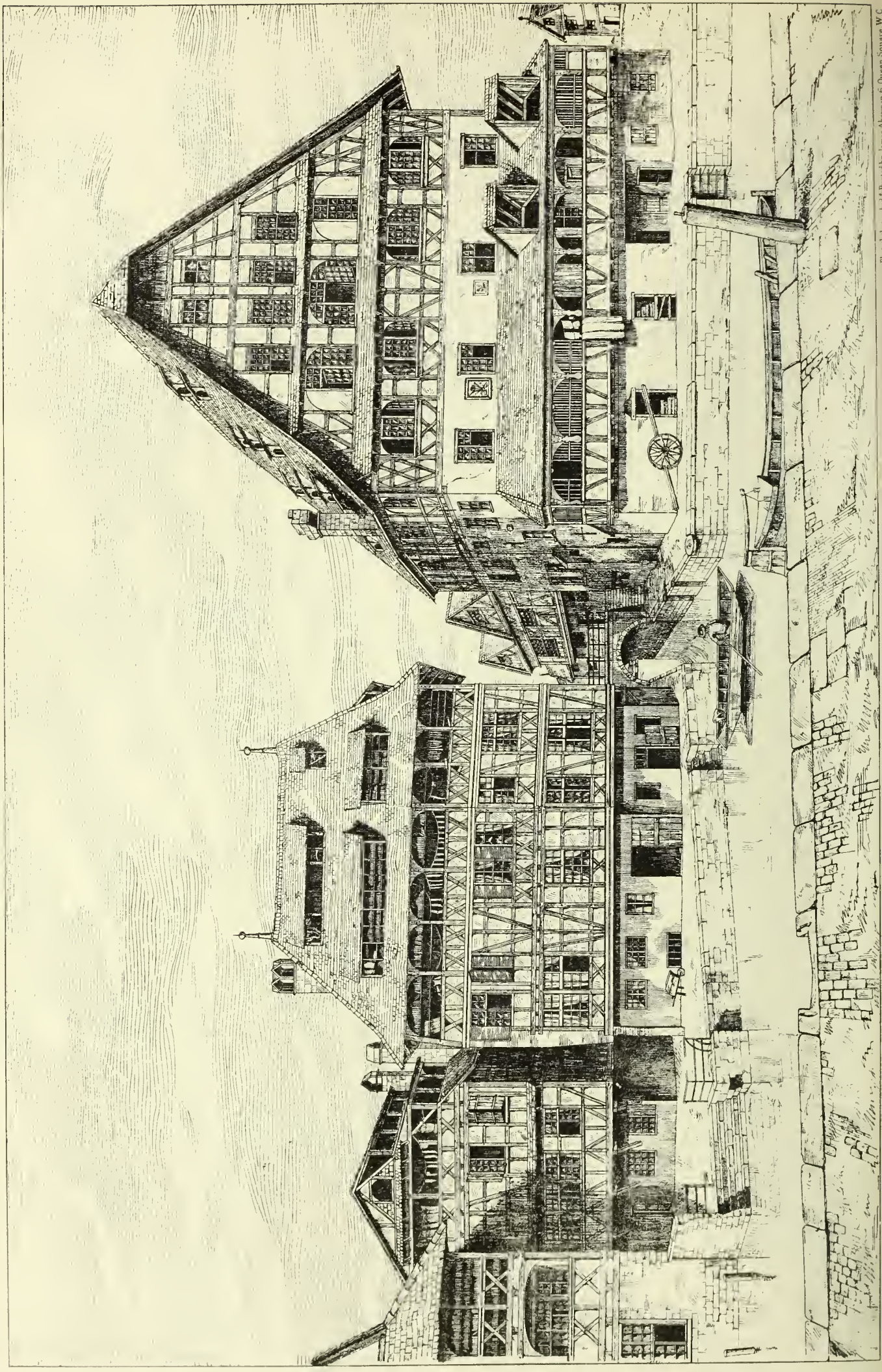
THE LIEBIG MEMORIAL COMPETITION.—Immediately after the death of Liebig, at the suggestion of the German Chemical Society an International Committee was formed for the purpose of preserving to future generations in a visible form the memory of the great investigator. This committee has now so far advanced in its preparations as to be able to proceed to the accomplishment of this task. The monument is to be erected in the Maximilian-platz in Munich, which is laid out as a garden. More exact information concerning this Place and its surroundings may be obtained on personal or written application from the "Stadtmagistrat," in Munich. The sum of 120,000 marks is allotted to the execution of the memorial. This sum should be able to erect a bronze statue upon a richly-decorated pedestal for the artistic adornment of which Liebig's varied activity affords most appropriate materials. The executive commission offers for the best of the models sent in a prize of 2,000 marks, for the second a prize of 1,500 marks. The award of the prizes depends upon the decision of at least eleven members (who will assemble in Munich) of a jury upon which, at the invitation of the executive commission, eighteen gentlemen have consented to serve, of whom the only Englishman is Sir Benjamin Brodie. The competitors are requested to choose such a scale for their models that the figure, considered as standing upright, should be 40 centimetres in height. The models, which will be publicly exhibited, first in Berlin and then in Munich, must be sent in between the 1st and 15th of June, 1878, addressed to *Kastellan der Königl. Akademie der Kunst, 38, Unter den Linden, Berlin*. The cost of carriage both ways will be borne by the commission. The executive commission reserves the right to erect in Giessen a bronze cast of the memorial executed in Munich.

SCHOOLS OF ART.

WIDNES.—On Monday evening Mr. J. Warrington Wood distributed the prizes to the successful students of the Widnes Science and Art Classes. The report of the committee stated that during the session 116 individual students attended the classes, of whom 81 came up for the Government examination. The following was the result of the examination:—Free-hand drawing, 34 examined, 8 passed; machine construction and drawing, 12 examined, 10 passed; building ditto, 8 examined, 7 passed; theoretical mechanics, 6 examined, 6 passed; mathematics, 14 examined, 11 passed; inorganic chemistry, 23 examined, 18 passed; acoustics, light, and heat, 14 examined, 14 passed.

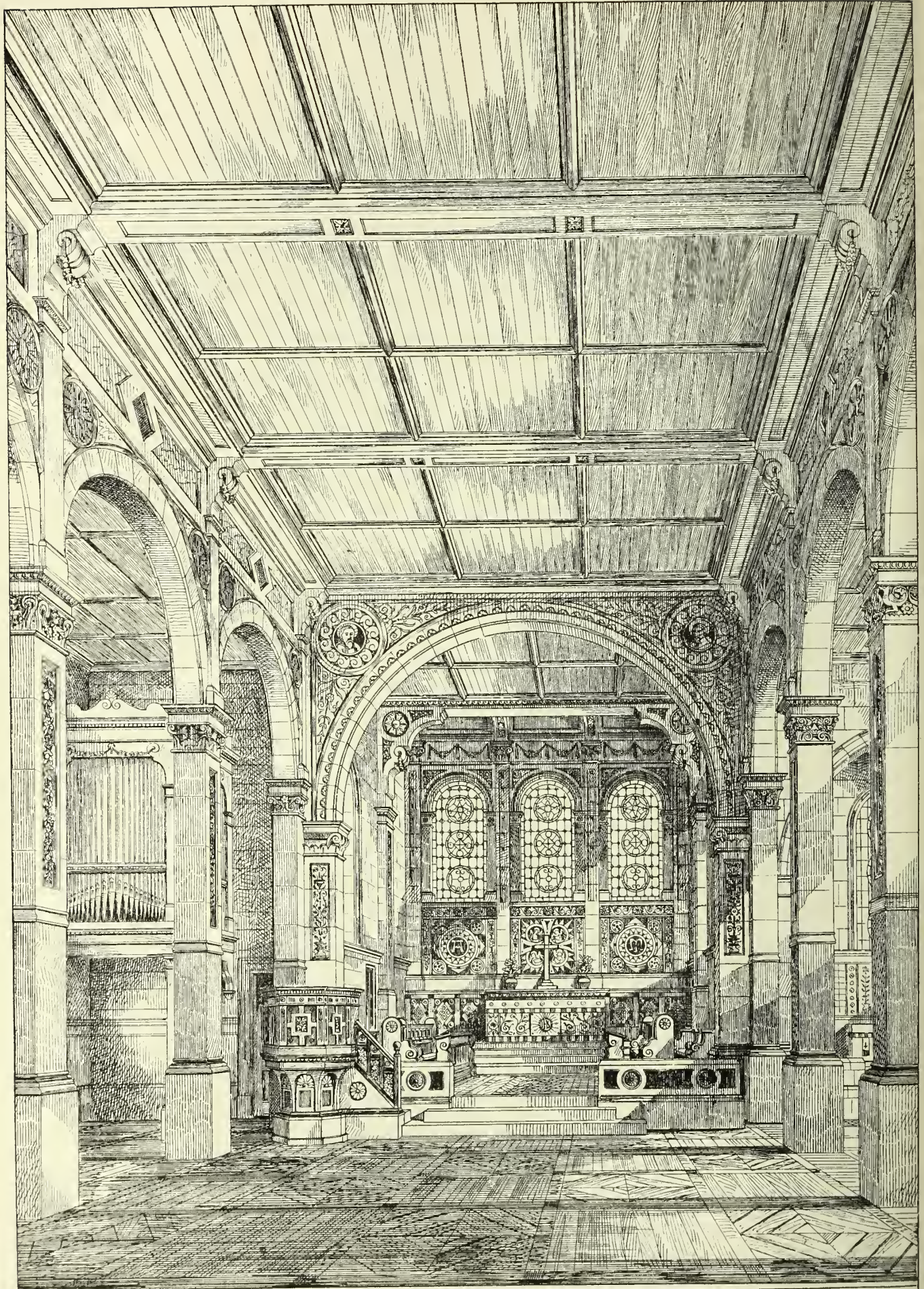
A new Congregational chapel, at Sibbertoft, was opened on Monday week. Mr. Adkins, of East Farnon, is the builder; the architect being Mr. W. Horton, of Mowsley. The premises are enclosed with palisades, and the building is of red brick, relieved with Bath stone dressings.

THE BUILDING JEWS, OCT 19, 1877.



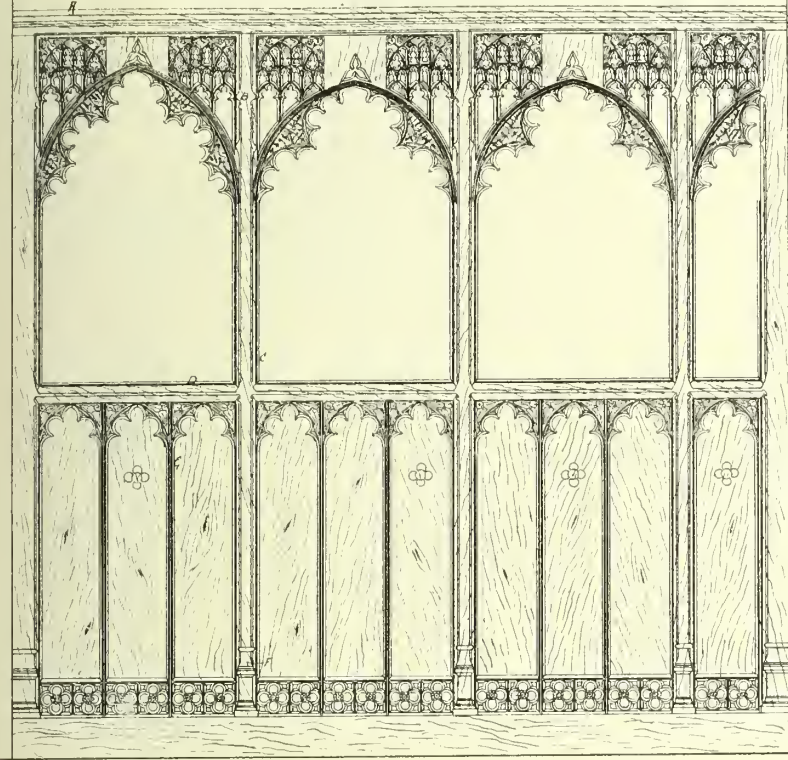
PONT DES MOULINS STRASBOURG

Photo Lithographed & Printed by James A. Merron & Co. Queen Square, W.C.

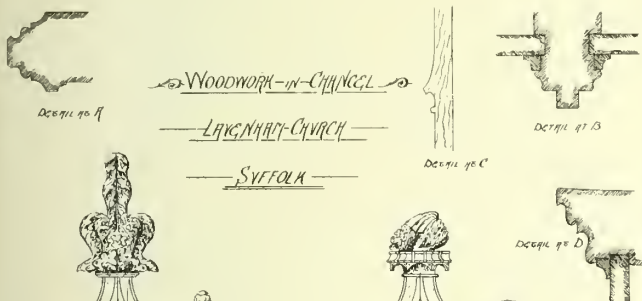
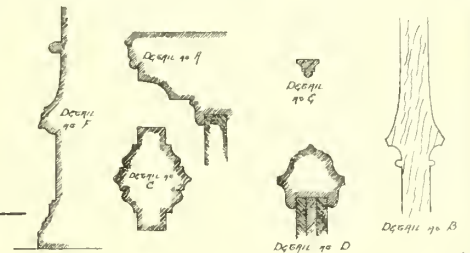
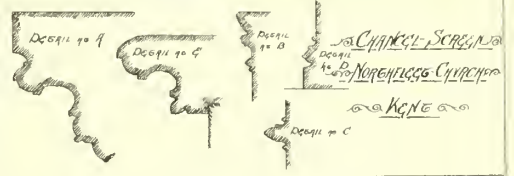
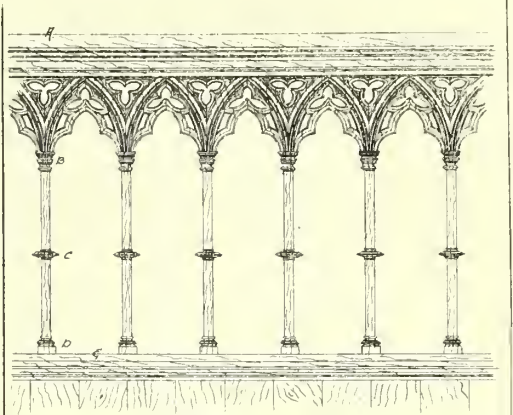


CHURCH OF S. PETER, REGENT SQ^R. *Proposed Restoration*. W. Scott, Champion, ARCHT.

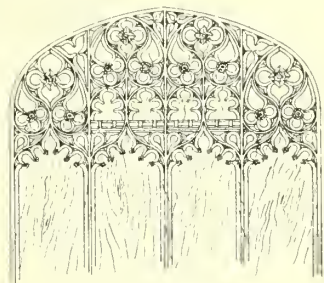
— Oak-Screened Chancel-Arcade —
— LANSHAM CHURCH, SUFFOLK —



Scale in inches to details
Scale for face



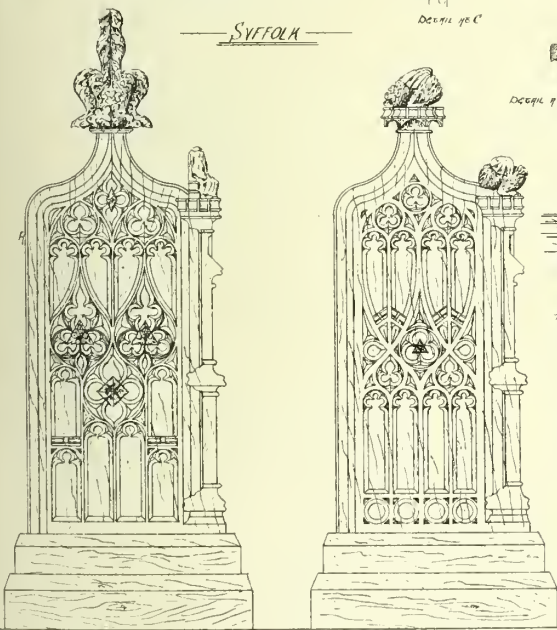
— WOODWORK-IN-CHANCEL —
— LANSHAM CHURCH —
— SUFFOLK —



HEAD OF DOOR BETWEEN
CHANCEL AND VESTRY

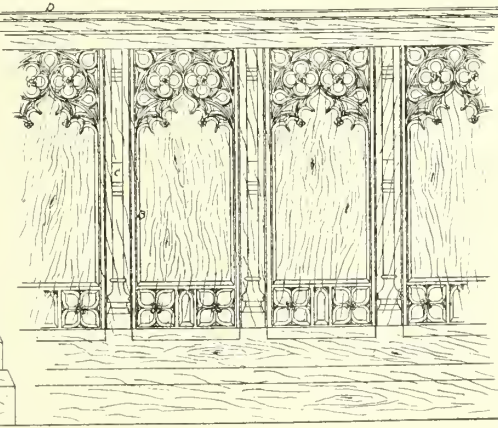


FRONTS OF CHAIR STALLS

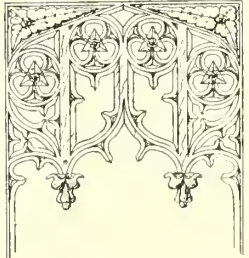


ENDS AND FRONTS OF CHAIR STALLS

Scale in inches to details
Scale for face

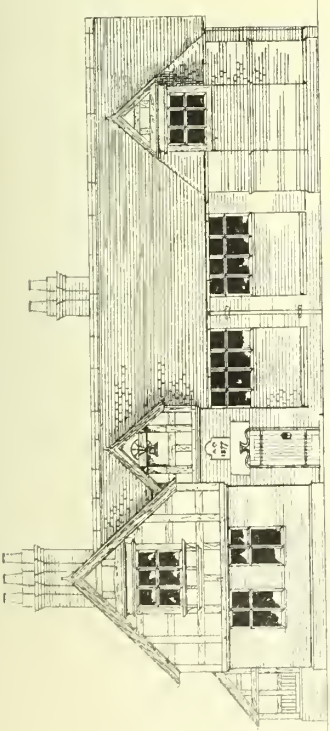


HEADS OF COLUMNS
IN SCREEN
SOUTH SIDE OF CHANCEL

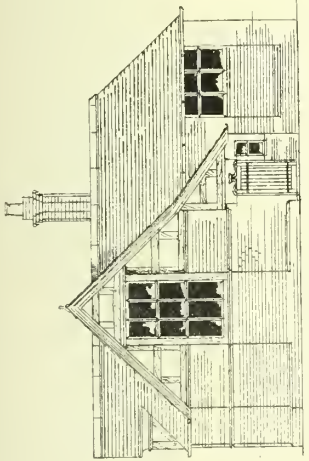


W. CALOUSE SCULPTOR
DEC 2 1877

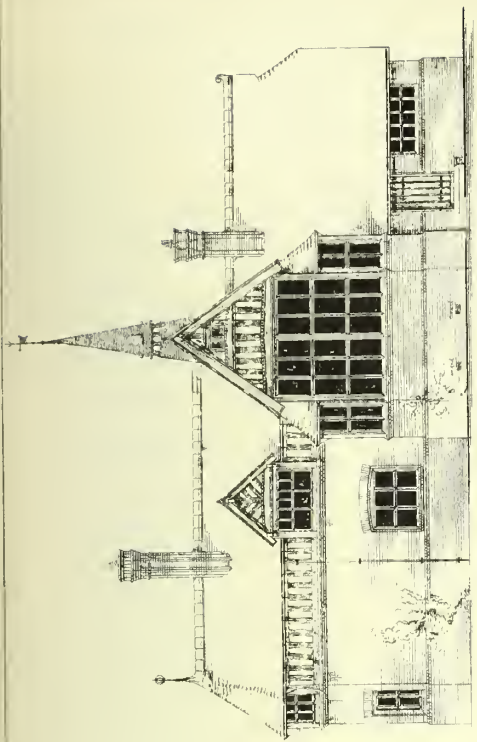
DESIGN FOR A MIXED VILLAGE SCHOOL. (B)1



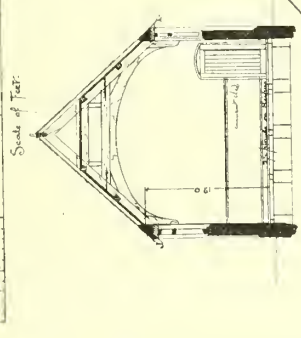
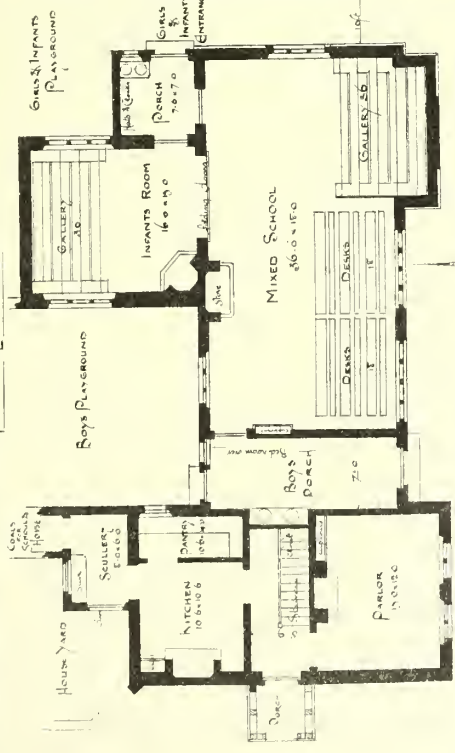
FRONT ELEVATION



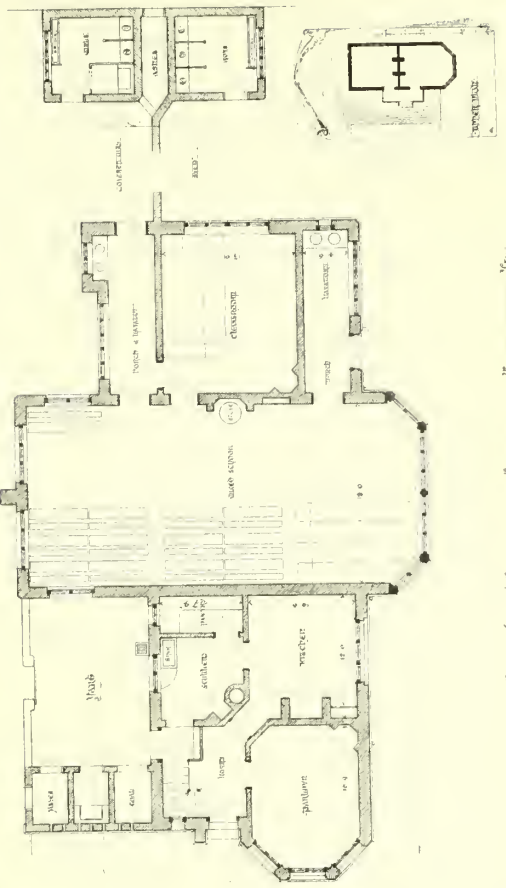
SIDE ELEVATION



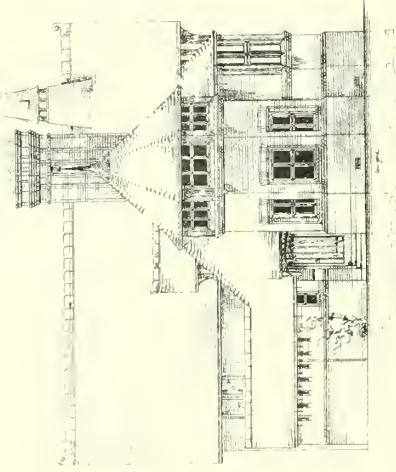
REAR ELEVATION



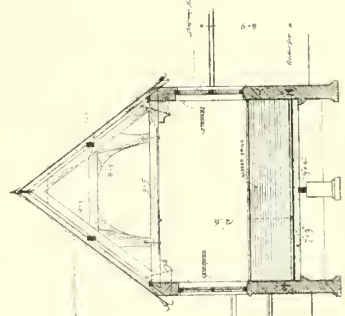
SECTION



PLAN



REAR ELEVATION

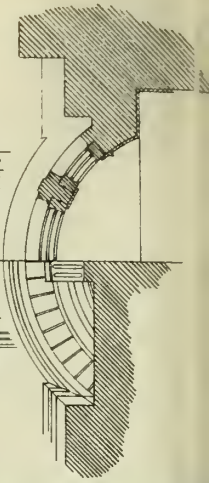


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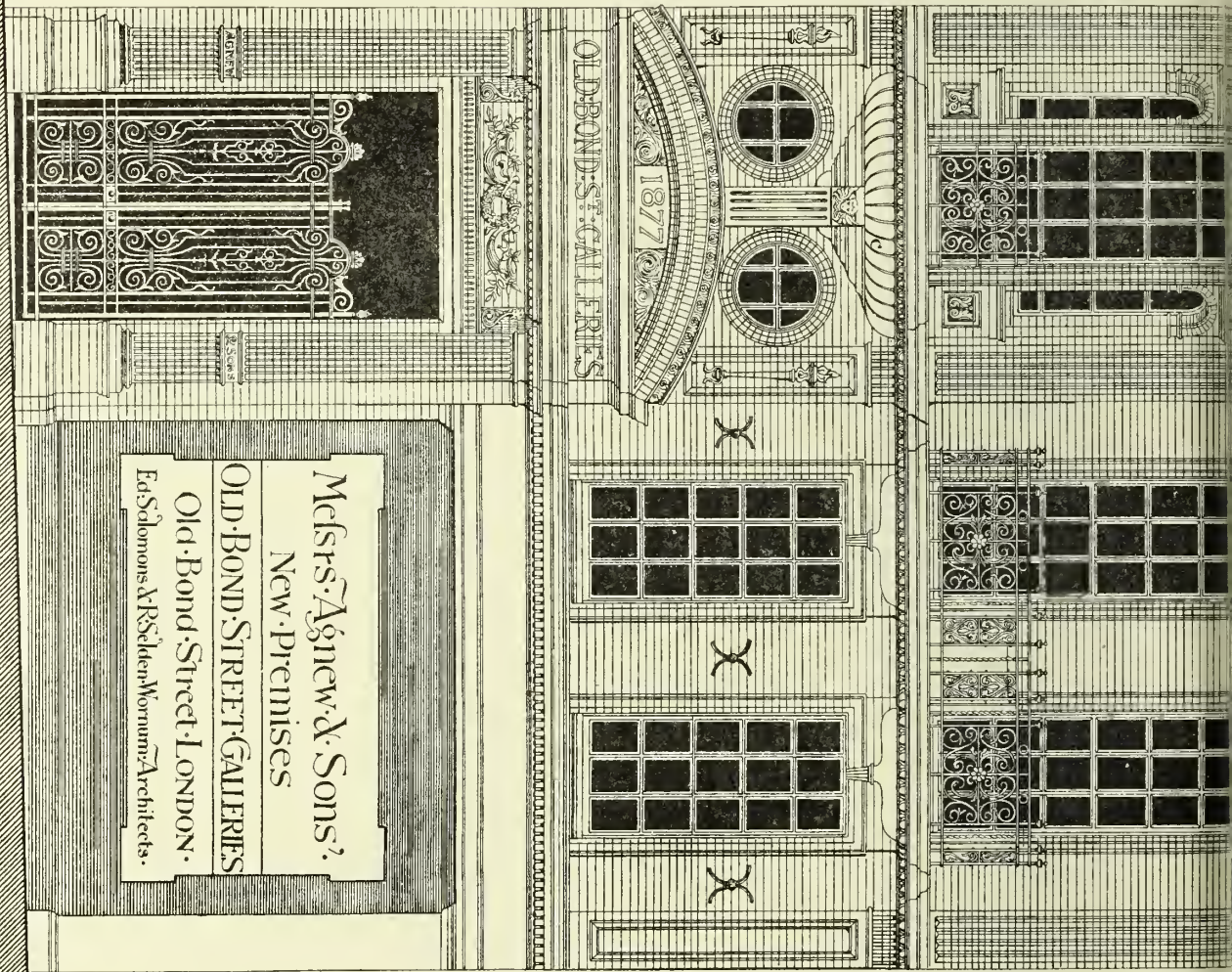
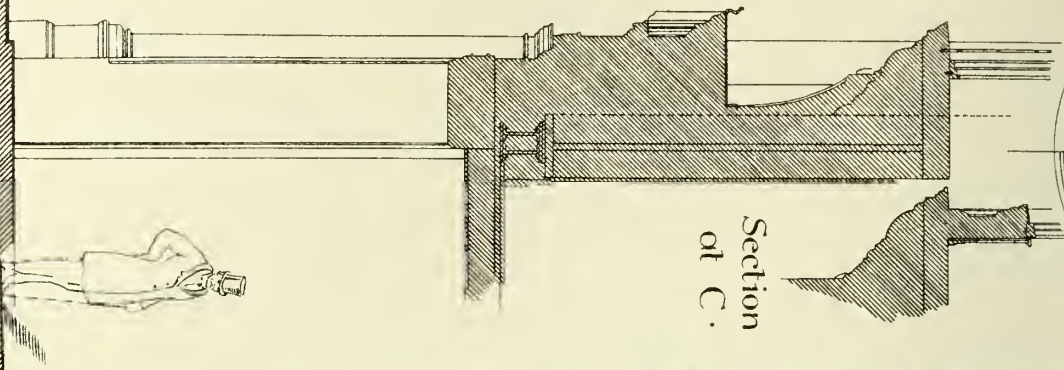
CONSTRUCTION:
 CHURCH SQUARE
 CLASS ROOM
 CLASS ROOM
 CLASS ROOM
 SCALE: 1/4" = 1'-0"

CONSTRUCTION: MIXED VILLAGE SCHOOL. SCALE: 1/4" = 1'-0"



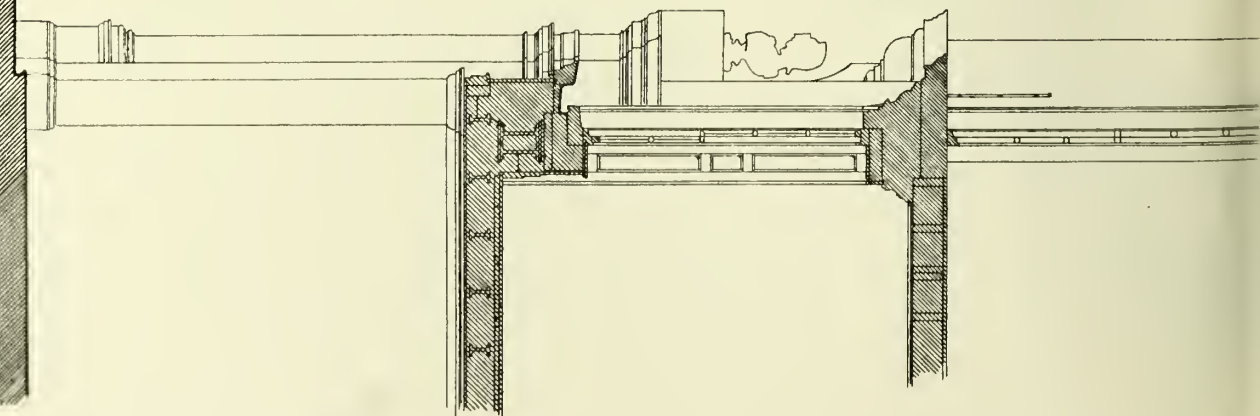


Section
at C.



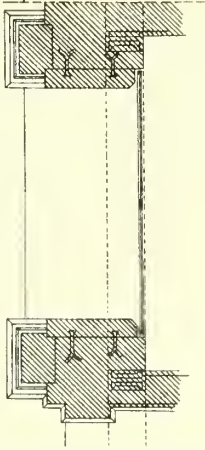
Section thro' Entrance

ELEVATION.

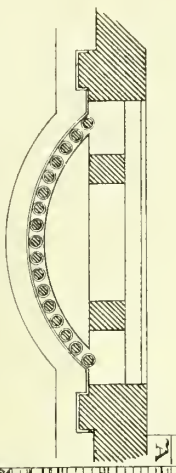


SECTION.

WORKING
DETAILS.

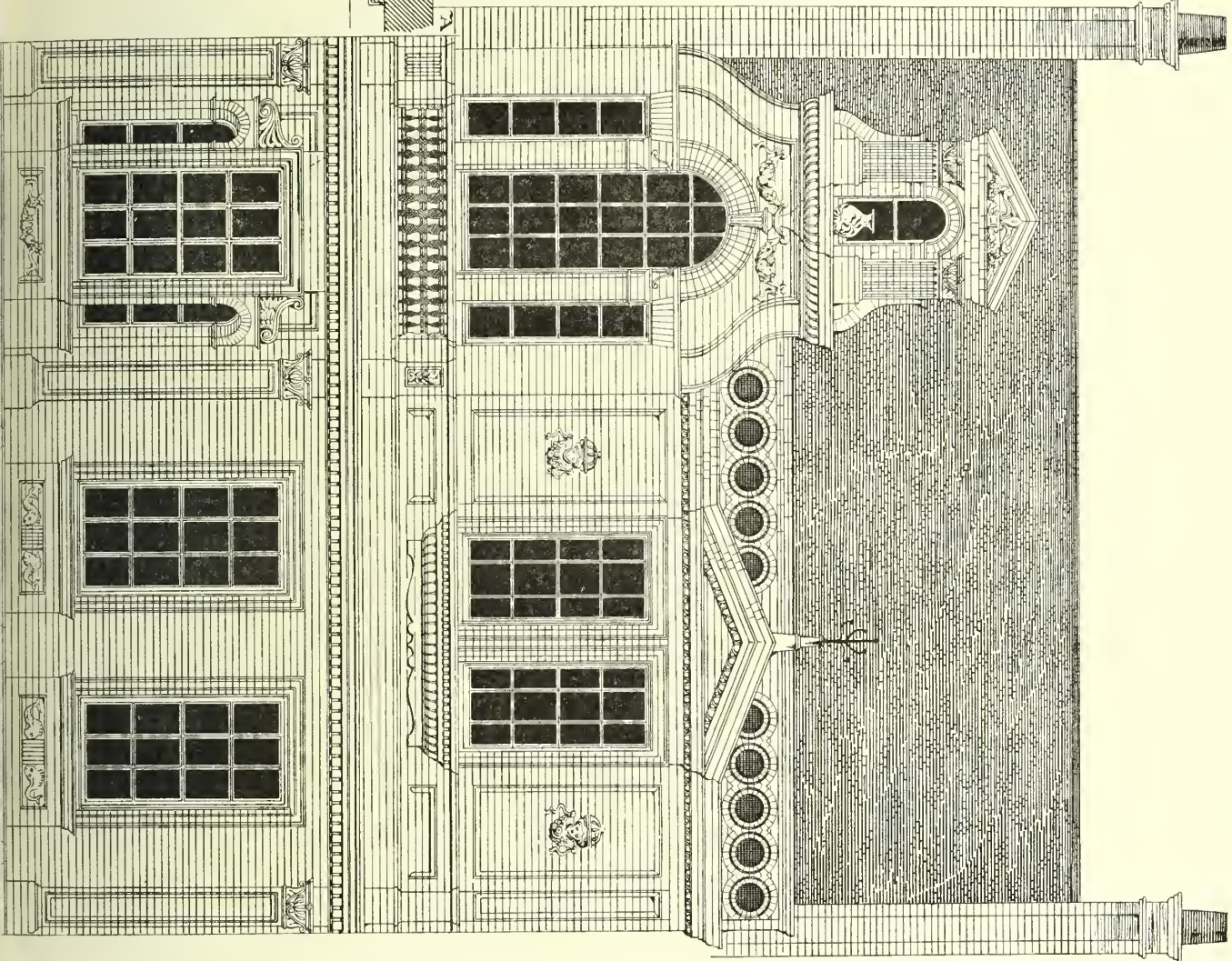


Plan through Entrance

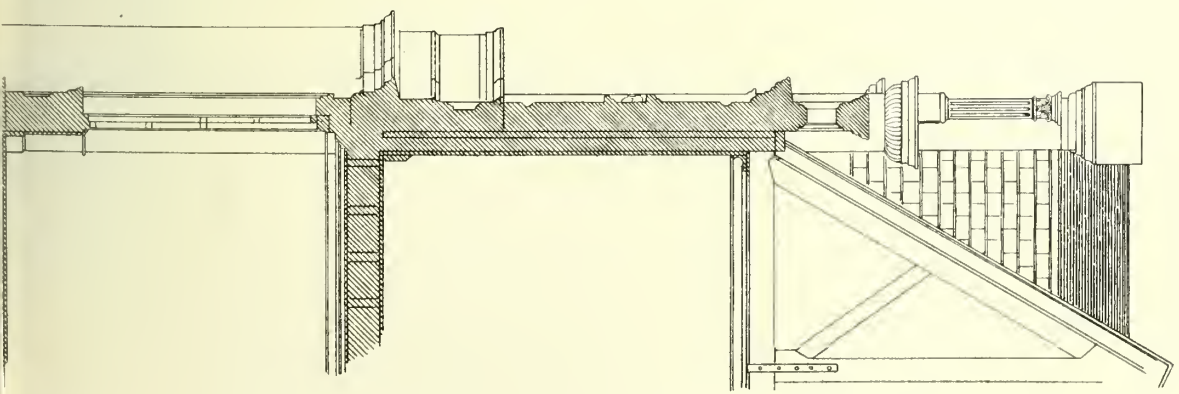


Plan of Balcony . A .

half Plan of . Ditto



Scale of Feet



BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XV.

A Conservatory.

IT is somewhat remarkable that so few have entered the list in this subject. We proposed a conservatory attached to a Gothic house partly because it is a problem few architects have satisfactorily mastered, and partly that it was one that left a good deal to the inventive skill of the designer. These reasons have, it would appear, been insurmountable obstacles, and have rather deterred than encouraged competitors. We are sorry for this manifest want of courage and resolution. The designs we have received certainly indicate a praiseworthy attempt to overcome the inertia of commonplace, and we are quite conscious of the difficulties in the way of harmonising a structure like a conservatory with a solid building. "Noah" sends the best sketch from an artistic point of view. One end is finished with a half-hip, with louvres at the top in the vertical part; the other end is supposed to stop against brickwork. The roof is span, with a lantern with pivot-hung lights at the sides for ventilation. There is a brick plinth about 3ft. high all round, except at the doorway at the end; above this is the framing, composed of sill, uprights about 2ft. 3in. in the clear, filled with pivot centre hung lights divided into four panes, with diamond intersections for ornamental glass. Above these runs a transom, the upper lights being subdivided by a centre upright, with metal pivot-hung lights and trefoiled heads, above which is a deep projecting cove of horizontal perforated boarding. We doubt the artistic value of a cove of such proportions, and we certainly cannot justify the manner this cove is formed. We can understand a plaster cove, with sgraffito ornament, but not one made up of boards cut into ornamental notches at the edges. The roof has an iron tie. No plan is sent. "Fleur-de-lis," whose design is only just to hand, sends a conservatory attached to wall at end, in which a French casement is shown. The other end has a projecting porch. The structure stands on a plinth, and is of eight bays, with wooden uprights and transom, but the mode of opening is not shown. The entrance porch is gabled, but on each side of it the roof is hipped back. The upper lights are alternately fixed, and open by quadrant lifts, and pivot ventilators are introduced in the plinth below the flower-stand. Thus the air is admitted, and passes over the hot-water pipes. The roof is framed with wrought iron T-section ribs of pointed form. The gabled end is somewhat fussy, and out of agreement with the flank. We place the design "Nil Desperandum" third. The author shows a plan 20ft. by 12ft. in clear, with a door opening into a drawing-room at one end, and an entrance-porch at the other. The conservatory is only attached at the end, both its sides being free. These are divided into five bays by punshons 6in. by 4in., placed 3ft. 8½in. apart, filled with sashes apparently fixed, having pointed heads. In front of these punshons are detached iron hexagonal pillars, standing on Portland stone bases, which project from a panelled dado of the same material. The stiff folial capitals of the pillars are badly drawn, and are devoid of any design. The conservatory is proposed to be heated by 3in. hot-water pipes, which traverse both sides, and are concealed by grating. A white marble fountain stands in the centre, and a flower-stand of three shelves is placed on one side, and beds on the other, the centre pathway being of best white Portland paving. In elevation the roof is hipped at ends, the centre part being carried up as a ventilator. The ridge and eaves' cresting, finials at ends of hips are flimsy. There is too much of the stereotyped greenhouse ornamentation to please us, and the detail is below par. There are no means of opening the lights indicated, though it is stated the sashes are to be hung on centres. We, however, commend the care evinced in the four sheets of drawing and the figuring of dimensions. "J. W. C.," in circle, shows a plan and elevation only. The doorway is placed in the middle of the side, but we cannot understand the value of the notch-like recesses on each side of doorway, unless it be to give the necessary *raison d'être* for domical roof

over the entrance, which has a pointed half-octagonal-hipped end, with square semi-domes on each side forming wings. The intention of the author is not so clear as it should be from the roof plan, but we imagine he intends to form a span roof, one side having the three domical hips already mentioned; 4in. piping is provided round the interior, with iron shelf for flower-pots, and two rows of stands dividing the plan into three bays. The elevation displays nothing original; the upper finishing of the lights is commonplace, and no detail is furnished showing the construction or mode of opening the lights. "Omega" in circle is a flashily got-up design, with two gables in flank, centre entrance between, chiefly of timber, with a brick filling in between studs in the plinth. The elevation reminds us more of a timbered cottage with gabled fronts than a conservatory. The framing consists of moulded mullions or uprights, a transom with fixed trefoiled lights, open-timbered gables above, and a sloping roof from the house between them. This is apparently fixed, as are the upper lights of gables, and the only lights that open in the upright framing are a range of circular-headed openings just above plinth. Stands for flowers are shown at the ends, and the heating apparatus and pipes are indicated. The author has certainly neglected the details for the elevations, which are over-timbered and wanting in simplicity.

A Mullion Window with Shutters.

We have received several carefully-prepared drawings for this subject, but only one that quite comes up to our anticipations. "Début," to hand just in time to be noticed, exhibits the only ingenious method of shuttering. A groove or hollow is formed between the external mullions, which are flush with the outside wall and the window, and the shutters are made to slide in this space. When open the shutters run behind jambs pierced with narrow openings, with transom and trefoiled heads on each side, forming, with the double-light and traceried window proper, a pleasing combination. The lights are filled with sliding sashes, and the shutters run on grooved wheels, and are each framed into four panels in height, filled in with narrow feather-edged panels. The tracery is of a late Flowing Gothic though Domestic character. "J'Espere" shows a neatly-finished drawing for a two-light mullion window, with enriched and moulded transom, above which is a row of four lights, with trefoiled heads and carving. The whole is enclosed under a pointed label moulding of double flexure. The shutters close the two-light window, and are made to fit in a square in the transom, allowing its outer members to run through. They are made with the ordinary horizontal slips, Venetian-blind pattern, fixed in a frame, and they are hung folding, and fall back into a recess on each side, formed in the masonry of wall, with bolt on the inside. The drawing is carefully executed, and there is a Flemish character in the design. "B.," in two circles, shows a double-light mullion window, divided by transom into four casements; the shutters fold back on the outside into moulded recesses, and are hung with triple-jointed strap hinges, which allow the shutter when opened to throw back over the jamb mouldings, and when shut to fit into a rebate or square close to the outer face of mullions. The shutters are Venetian in kind, but the slips are centre-hung to pivots in frame, and can be made to close or open to any angle. The details are clearly shown, and the casements are of plate-glass in iron frames, with borders of lead lights round. The design of "Mechlin" has a window of four lights, divided by a centre large and two subordinate mullions, with pointed cinquefoiled heads, with casements in ornamental panes opening outwards. The shutters are of oak, hinged with ornamental strap-hinges to the outer jambs, the external flaps being of four upright boards, and each with an inner leaf or back flap of the same width. No recesses are shown. When closed the leaves fit into the outside moulding. The defect of this arrangement is that there is no protection for the shutters, which are thus exposed to rain. "Discere Volo" shows a similar plan for a narrow two-light window, the shutters being framed and braced inside with upright match boarding, hung with

three strap-hinges on each, and folding back against the wall on each side. The fastener consists of a wrought-iron flat bar with hinged joint, with a centre bolt which passes through the sill, and fastened on the inside. We do not like the carved cusped head. "Torpedo's" design has framed shutters filled in with rebated and beaded boarding hung close to the casements and between the stone mullion and jambs. When open they fold over the jambs below moulded cappings. Details are below par.

An Organ Case.

The best design submitted for this is "B." in circle, who shows a pleasing case in three parts or bays, the centre one including the keyboard. This is projected on brackets, but the treatment of corner uprights is a little archaic for the rest of the design. The sides are recessed, and the angles are emphasised by square posts with the tops carved with tracery. A bold cove springs above the keyboard, and supports the centre row of pipes. There is simplicity and correct feeling displayed in the general framework of the case. "Josephus Orangeblossom" is a design of a more elaborate character, rather too pretentious for a small church. The lower portion is panelled, with centre doors hung in two. Above this the centre bay of organ pipes is set back, and is crowned by a flat cusped arch with gables above, but the angles protrude as square angular wings, and are filled with small pipes. The treatment is somewhat tawdry, but the detail shows some education and refinement.

LIST OF SUBJECTS.—XVII.

A. A cottage hospital for a dozen beds, 6 of each sex, with attendant's room, kitchen, and offices, showing means of ventilation, and dead-house, &c.; plans, elevation, and sections. Scale, 8ft. to the inch.

B. An oriel window, in stone, to a private building. Projection, 2ft. 6in.; height of room, 12ft.; plan; elevation, and details; ½in. scale, and ¼ full size.

C. An architect's drawing desk, with drawers, movable flap, and stool, in deal. Length, 4ft. 6in., exclusive of flap. Scale, 2in. to the foot.

A new chureh for the parish of St. Thomas, South Shields, built at a cost of £8,000, to seat 500 persons, was consecrated on Thursday week.

A new Congregational chapel was opened at Aveley, South Essex, on Tuesday week. It has been built from the designs of Mr. J. Sulman, of Furnival's Inn, W.C., and is Gothic in style, of stock bricks. It is 74ft. by 30ft. internally, and is fitted with open benches, stained and varnished, with an open platform pulpit, occupying one end of the chapel. At the rear is a schoolroom, planned for 150 scholars, and measuring 28ft. by 16ft., a minister's room, and vestry. The chapel seats 240 adults, and was built at a cost of £1,000 by Messrs. T. L. Wilson and W. Hook, of Uppminster. The site, in the centre of Aveley-street, was given by Sir T. Barret-Lennard.

A conspicuous site in the borough of Portsmouth has just been purchased by the Roman Catholics from the War Department, as a site for the proposed new cathedral.

It was reported to the Metropolitan Board of Works on Friday, that Mr. Charles Prout had withdrawn his tenders for sewage works, Gray's Inn-road, and New-road, Hammersmith, which were accepted a fortnight previously. The matter was referred to the works committee.

On Tuesday week the memorial stones of a new Primitive Wesleyan chapel were laid at Stretford, Manchester. The chapel will accommodate over 500 persons. It will be erected in the Early English style, of red brick and Yorkshire stone. The schools, which are to be erected in the rear of the chapel, provides accommodation for 70 infants and 360 elder scholars. The cost of the whole is estimated at £5,000. The architect is Mr. A. Morry, Moss Side, and the builder Mr. Gell, of Stretford.

A new church was consecrated at Swainby, near Northallerton, last week. The church seats some 300 people, is built of the native stone, and has been erected in the Early English style, from designs of Mr. T. H. Wyatt, of London. The plan comprises chancel, vestry, organ chamber, nave, and north aisle, with tower surmounted by a broad spire at the north-west corner.

The building for the proposed International Exhibition at Melbourne will cover 10 acres.

New Board schools and residence are about being erected for the united parishes of Lyston and Borley, Essex. Mr. Arthur Grimwood, of Sudbury, is the architect.

THE RESTORATION OF EXETER CATHEDRAL.

THE great work of restoring Exeter Cathedral, under the direction of Sir Gilbert Scott, has now reached its final stage. The work has cost about £40,000. The choir was opened on 29th June, last year. Since that time the nave has been undergoing a somewhat similar renovation, and the work being now almost completed, re-opening services took place yesterday (Thursday) and to-day. We condense a report that recently appeared in the *Western Morning News*:—The nave, as we now have it, was probably designed by Bishop Quivil (1281-1282), though Bishop Grandisson carried out the greater part of the work nearly a century later. Former generations had covered the whole of the stone wall with many washes. All this colouring has now been swept off, and the original surface of the stone exposed. The decayed portions of the Purbeck marble pillars, together with their beautifully moulded bases and caps, have been carefully renewed with the same kind of stone, and now contrast more effectively than ever with the light beerstone and sandstone of the walls and roof. The beautiful vaulted roof has been found to possess elegant moulded ribs of beerstone and freestone, with spandrels consisting of an intermixture of brown Thorverton stone and light freestone. On either side of the west door there are now to be seen remains of extensive frescoes; but they are very much decayed, and the subject is quite undistinguishable. Under the windows of the south aisle some heraldic bearings of a tolerably distinct character have been found; Mr. Robert Dimond, F.S.A., of Exeter, is bestowing his attention upon them. But the most striking piece of fresco "unearthed" is on the wall over the door of the north porch, where a figure of a cherub has come out with remarkable clearness. The walls of this north porch were found quite flush; but on removing the colour-wash, Mr. E. G. S. Luscombe, the son of the builder, found signs of an opening in the east wall, and on proceeding further he discovered a panel on which were some carved figures much mutilated, evidently the remains of an old rood; there is a crucifix as the central object, and standing on either side are the B. V. M. and St. John. On turning out the rubbish which filled the niche over the inside doorway of the same porch, traces were found of what is supposed to have been a Madonna, but the figure itself had entirely gone. The central "boss" of the roof has been found to be beautifully carved with a lamb and flag. There is not very much new work connected with the fabric itself. A south door, in the first bay from the west, has been opened up, and an oak door, with handsome mediæval fittings, corresponding with the original work in the great western door, has been constructed. Near this door has been placed a font, which was made specially to baptise Henrietta, the daughter of King Charles and Queen Marie, who, by a fortuitous circumstance, was born at Exeter in 1644. In this north-west corner of the nave, too, opening up under the first bay, is the chapel of St. Edmund, now known as the consistory court. Under the east window can be seen the remains of the altar slab of the old chapel. The chapel is divided from the nave by an oak screen, the doorway of which has been restored to its original position. After clearing out the incongruous fittings, which a recent but tasteless age had placed there, the remains of a tiled pavement were found under the wooden floor. This pavement has been reproduced, the new tiles being made from the old pattern by Mr. Godwin, of Lugwardine. A new oak door has been made to the famous minstrels' gallery, about the redecoration of which there is a certain amount of controversy. As at present "cleaned" the effect is certainly not so good as its elegant composition would make it capable of. Its redecoration is largely a question of money. The most striking feature, however, of all that is new is the pulpit, erected by subscription, at a cost of £700, in memory of Bishop Patteson. It was designed by Sir Gilbert Scott, and has been exquisitely sculptured by Messrs. Farmer and Brindley, of London, and Mr. Luscombe, of Exeter. It is in the Decorated style, and—with the exception of four Devonshire marble shafts among the

clustered columns of the base—it is composed entirely of yellow Mansfield stone; not a very effective material, especially when seen from any distance, but capable of most delicacy of outline, and light and shade tell well upon a closer inspection. The body of the pulpit consists of three elaborately canopied panels, and three similar niches. In the centre panel there is a representation of friendly natives bringing the body of Bishop Patteson, just after his martyrdom, to the boat, and the panels on either side contain respectively sculptures of the martyrdom of St. Alban, and the departure of Bishop Boniface from Britain to Germany. The niches between the panels contain figures of St. Paul, St. John the Baptist, and St. Stephen, and running round underneath are the words, with carved foliage between, "The noble army of martyrs praise Thee." The deal fittings, generously placed in the nave by Chancellor Harington, were all very well at the time they were given, for the choir fittings were then likewise of deal. But when those in the choir were transformed into magnificently carved stalls, and the screen was pierced, the deal in the nave became very much out of character. Then Chancellor Harington again came forward, and offered to defray the cost of refitting the nave with oak, and to provide a carved oak lectern. All this work is being executed by the contractor, Mr. Luscombe, of St. Sidwell-street, Exeter. A little work, not belonging to the nave, but being carried on at the same time, has been done in the Chapel of St. George (or Speke's Chapel) at the north end of the ambulatory—between the choir and the Lady Chapel. A stained glass window has just been placed here in memory of the late Archdeacon Bartholomew. The chapel is Perpendicular in style, and the window is a small one of five plain lights, the glass in which illustrates the text "Come unto Me, all ye that are weary and heavy laden, and I will give you rest." The work was executed by Messrs. Clayton and Bell, of London. This chapel of St. George should correspond with the chapel of St. Saviour at the opposite end of the ambulatory. They are both of about the same period. That of St. Saviour was in a comparatively good state of preservation, and has since been restored. The remains of a window and of an altar piece similar to those in St. Saviour's have been found in St. George's Chapel, and their restoration is contemplated. A large door occupies the place where there was originally a window with the altar underneath. The chapel of St. Gabriel, on the southern side of the Lady Chapel, has two new stained glass windows—or, at least, as good as new, the old glass, of no particular value, which was taken out of one having been very successfully re-arranged in pattern in the other by Mr. Drake, of Exeter. Messrs. Clayton and Bell have the east window of this chapel in hand, in memory of the late Archdeacon Freeman. The south window of the transept is also filled with stained glass in memory of the late Lord Coleridge; and a window in the eastern bay of the nave is to commemorate a member of the Devon family. Of the total outlay of £40,000, expended on the restoration of the cathedral, about £9,000 has been devoted to the operations in the nave described above.

BRABY'S SELF-ACTING EXHAUST VENTILATOR.

MESSRS. F. BRABY & Co., Limited, have just introduced a new ventilating apparatus, which they assert is superior to any other before the public. The principle, which is said to be the invention of Mr. Anderson, is undoubtedly a good one. The apparatus, which is meant to be attached to the roof externally, consists of a series of vertical pipes—two, four, or more—arranged at equal distances around a centre, and communicating at their lower end with the room or space to be ventilated. Each pipe is divided into two parts by a vertical partition set radially to the central point, around which the tubes are arranged. There are also, besides, four other partitions, each of which is situate midway between two of the pipes. Facing these partitions there are long vertical openings in the pipes for the escape of foul air, and the approach to each opening is guarded by inclines to direct the air in the

course most favourable to its escape, and to prevent the wind blowing into the pipes. The wind, no matter in what direction it blows, will pass between the pipes and the partitions; and just at the points where the space is more contracted, and the current consequently most rapid, there are openings in the pipes, and hence induced currents are set up from the pipes outwards in the same course with the wind currents between the pipes. In no possible situation where the apparatus can be applied will a down draught result. For railway ventilation the ventilator is especially applicable, as it can be so arranged that the draught will always be in one or other of two directions.

We are glad to notice that Messrs. Braby and Co. have sought the aid of a competent designer in preparing patterns of their ventilators. Those submitted to us are an agreeable contrast to the hideous excrescences which too often, at the plea of health, are allowed to offend the eye of all who behold them. Of course, other makers of ventilators, like Messrs. Braby and Co., will make to any design; but the majority of people buy these appliances as they find them, and it is a matter of congratulation that every thing erected or supplied by the makers of this ventilator will be an ornament, and not an eyesore.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

GLASGOW INSTITUTE OF ARCHITECTS.—The tenth annual general meeting of the Institute of Architects was held on Tuesday, Mr. John Honeyman, I.A., vice-president, in the chair. The committee of management for this year were appointed, and afterwards held a meeting, when Mr. John Burnet was re-elected president; Mr. John Honeyman, vice-president; Mr. James Sellars, jun., 266, St. Vincent-street, treasurer; Mr. James Thomson, St. Vincent-street, auditor; and Mr. W. McLean, 157, West George-street, secretary.

THE DORSET NATURAL HISTORY AND ANTI-QUARIAN FIELD CLUB made an excursion into Somersetshire on Tuesday week, Yeovil being the starting point for the day's operations. From thence they proceeded in carriages to the amphitheatre near Ham-hill, locally known as the "Frying-pan." On the top of the promontory Professor Buckman delivered an address, in which he contended that the encampment around them was originally a British one, before the Romans took possession of it and altered it to its present form. That an army was here for some time was certain from the Roman remains abounding in the neighbourhood. Near by was an extra-mural amphitheatre, made during quarrying in the corner of the camp, for the diversion of the army. Its name came from the fact that it was exactly the shape of the short-handled frying-pans and saucepans of the Romans, of which he had dug up specimens near the site. It was smaller than those at Cirencester and Dorchester. On proceeding to Stoke the members were shown over the ancient Chantry, now occupied by a farmer, and afterwards went to Stoke Church, which is in a dilapidated state, except the south transept, recently restored by Mr. J. W. Walters. In the Norman tympanum, over the principal door, is a carving of Sagittarius shooting at Leo, with a nearly-defaced inscription to that effect upon it. From thence the members proceeded to Montacute, where they visited the handsome cruciform church recently restored, and containing some Norman work, the beautiful gate-house of the Priory, and the fine collection of portraits in the Elizabethan mansion that has replaced on a lower site the famous Castle of Robert of Mortmain. Time was not sufficient to allow of a complete examination of these interesting fabrics, nor to more than glance at the quaint half-timbered houses in the main street of Montacute, and the party returned to Yeovil after a long autumn day's excursion.

The negotiations between the town council and gas commissioners of Haverfordwest for the transfer of the gas-works and undertaking to the former body have been completed, and at their meeting last week the town council appointed a committee to carry on the business of the works, and make all necessary orders.

Building Intelligence.

BREADSALL.—During the restoration works now going on in Breadsall Church, near Derby, several antiquarian discoveries have been made, including a "squint," in the south-east angle of the north aisle, the stairs of the roodloft, some stones sculptured with Norman mouldings, and a delicate piece of fifteenth-century sculpture in white alabaster, the subject being the dead Christ upon the knees of the Virgin Mary. This last, the most valuable find, was unfortunately broken by the workman's pick in removing it from beneath the floor of the west gallery; it is about 2ft. 6in. high, finely carved, and as sharply chiselled as when fresh from the sculptor's hands, with some traces of colouring and gilding upon it. The fragments of this very uncommon instance of a Pieta are to be carefully fitted and replaced in the church.

CALTON, N.B.—The memorial stone of the St. Clement's Established church, now being built in Brook-street, Mile End, Calton, near Glasgow, was laid on Saturday by the Lord Dean of Guild. The church is placed at the south end of the site, and occupies 52ft., the rest of the frontage being given to a two-story building, the lower part of which will be occupied as shops, and the upper part as a hall, 38ft. 6in. by 29ft. 6in., for meetings and Sunday-school purposes. This hall is entered by a gallery staircase from the church, and an external stair in the court behind. Externally the nave and aisle arrangement of the church is indicated, and at the north corner of the church the staircase is individualised by a bold corbelled cornice, above which there is to be a timber and slated belfry in two stages, rising in all to a height of 65ft. from the street. On the ground story the centre part of the building has a large deeply-recessed arched doorway, with small lobby windows flanking it; on either side is a gallery door, also deeply recessed, and finished alike with a trifoliated moulding. Above the central door are two slender windows filled with simple geometrical tracery, and in the gable above there is a large wheel window, with plate tracery. Internally the church follows the ordinary nave, and side-aisles' arrangement, with high open-timbered central roof. The buildings are being erected from the designs of Mr. J. K. Dempster, of Bath-street, Glasgow. The contractors are:—Mason work, Mr. Jno. Adam; wright work, Messrs. Allan and Baxter; slaters, Messrs. John M'Quat and Sons; plumbers, Messrs. Jas. Johnston and Sons; and plasterer, Mr. James Kemp. In the course of the proceedings on Saturday, it was mentioned that this is the fifth new church erected within the past ten years in Calton parish.

CHESTERFIELD.—On Wednesday the foundation stone was laid of the Stephenson memorial at Chesterfield. The plans have been prepared by Messrs. Smith and Woodhouse, of Manchester. The style is Gothic, and simple in detail. The buildings are divided into two sections—one comprising the free library, and science and art schools, and the other the public hall and its accessories. In the first section there are, on the ground floor, a reading-room, a library, a lecture-hall, and two classrooms, while on the floor above there are a number of good-sized rooms, fitted with all appliances for science and art teaching. The hall itself is 68ft. long, 47ft. wide, and 36ft. high. Including the gallery, which is continued along three sides, it will give accommodation for 900 people comfortably. In addition to the principal salons, there are a number of committee and ante-rooms. The exterior walls are to be constructed of brick-work, relieved with stone dressings.

CHRISTCHURCH PRIORY.—The Earl of Malmesbury has just placed in the chancel of this church a memorial to the late Countess, executed under his personal supervision by Signor Trentanove. The monument is of Caen stone, the lower part ornamented with carving. Upon it is a recumbent figure of the deceased lady. The likeness is considered to be exceedingly good, but it has not been explained why the Countess, who only died last year, should be represented in the attire of the 16th century.

CLUN.—The parish church of Clun, Hertfordshire, which has been rebuilt, was re-opened last week. Mr. Street, to whom the work was intrusted, has succeeded in preserving much of the old building, but it has been necessary to rebuild the whole of the columns and arches. The modern south aisle has been removed, and an aisle of the same narrow width as the original aisle erected in its place; and this has allowed of the clerestory windows on the south side being restored. The main roof has no less than eighteen arched principal trusses, with tracteries all along above the plates, and quatrefoil wind-braces between the purlins. The east end is quite new. It has an eastern triplet, immediately over which is suspended a fine tester or baldacchino, which existed, covered with whitewash, over the old vestry, and has now at last been restored to its old place. Of utterly decorative work in the church there is but little. The tower, with its low-tiled spire, is remarkable as being connected with the nave only by a small doorway. This has been left almost untouched, as it was the only part of the building which did not urgently require repair. The whole of the works have been executed from the designs of Mr. Street, R.A., by Messrs Fisher and Dyson, of Huddersfield, Mr. Chapelow having acted as clerk of the works under the architect.

EDINBURGH.—Part of the vegetable market at Edinburgh is to be devoted to the purposes of an aquarium, and the necessary works are to be commenced at once under the direction of Mr. T. B. M'Faden, architect. A triangular area has been reserved, which will, in the first instance, be screened off from the market by means of a wooden partition run up between the pillars which support the gallery. A width of about 12 feet of floor space is to be laid off as a promenade, this being carried from end to end of the semicircle, with a height of 11 feet, and roofed so as to present a rustic or grotto-like appearance. Alongside of the promenade, and opposite the mirrors, will be placed the aquarium tanks, eleven in number, each measuring 16 feet in length, by 6 feet wide and as many deep. At the third tank from the south end, a passage will lead from the promenade to the triangular space, now outside the market, but which is to be roofed over, and treated in much the same manner as the promenade itself. Here a central area, 45ft. long by 22ft. wide, will be available for walking about. Table tanks will be placed here and there, and while the north angle, measuring about 40ft. by 20ft., will afford space for a seal pond, the east angle, of rather smaller dimensions, will be turned to account for the exhibition of crocodiles.

EDINBURGH.—Trinity College Church, Edinburgh, was opened on Sunday. Mr. Lessells is the architect of the building, which has cost £10,000, and will seat 900 persons. The church proper is an oblong building. The front elevation shows, in the centre, a gable having its apex surmounted by a cross. Immediately under the cross is a circular cusped window, and below this again a large pointed window. Under it is the principal entrance, being an exact reproduction of the deeply-moulded doorway, with arch of Norman Gothic pattern, which formed a notable ornament of the former church. On the west side of the gable rises a square tower, the windows in the different stories of which are closely copied, as are also the crocketed terminals surrounding the buttresses that support the corners. At a height of 70 feet the tower takes the form of a broached spire, of octagonal section, which is relieved, half way up, with a row of dormer windows, and terminates at the height of 115ft. with a gilt vane and weathercock. The frontage, including the tower and turret, has a width of 62ft., with a height of 70ft. to the cross which crowns the central gable. The walls are 35ft. high, and to the apex of the roof, which is high-pitched and of a single span, the height is about 65ft.

LONDON SCHOOL BOARD.—On Wednesday last the following tenders were accepted by this board:—For a school for 792 children in Stanley-road, Deptford, that of Mr. J. Thompson, of Camberwell-green (£7,940); for one for 592 children in Vittoria-place, Barnsbury, Mr. T. Boyce, Eagle Works, Hackney (£8,169); for enlarging May-street school, Bromley, by

88 places each for boys and girls, Mr. Nightingale, Albert Works, Lambeth (£2,670); and for a school-keeper's house at Hornsey-road schools, Mr. J. Tyeman, Walworth-road (£397). The truant schools committee recommended the acceptance of a tender by Mr. Wilmot, the lowest received, for altering Upton House, Homerton, so as to adapt it for use as a truant school; this was referred to the works committee. For the enlarged school in Park-street, Peckham, £365 11s. was voted for additional furniture and fittings.

MANCHESTER.—A new Conservative club at Longsight, Manchester, was opened last Thursday by Mr. W. Houldsworth and Mr. Birley, M.P. The club buildings contain a reading-room, to be used when required as a concert-room, 54ft. wide and 19ft. high; a billiard-room, 58ft. 6in. long, 33ft. wide, and 24ft. high; card-room, 20ft. long and 16ft. high; and all usual offices, keeper's residence, &c. The building is Gothic, and the main feature of the work is the turret at the angle. The whole is warmed and ventilated in a most satisfactory manner by the apparatus patented by Messrs. Shillito and Shoreland, of Manchester. The architects are Messrs. Smith and Heathcote, Mosley-street, Manchester; and Mr. Thos. Shaw, of Longsight, is the contractor.

PILTON.—The parish church of Pilton was reopened on Tuesday week after restoration. The church consists of a nave and two bays of pointed arches, with an octagonal pillar in the centre, and small columnar responds at the east and west ends, the latter standing upon a stone bench; a small aisle, font and chancel are mostly of 13th century work, with some later (14th century) additions. The works now carried out refer mainly to the nave, aisle, and porch. The whole of the roofs are new, of framed deal, covered with grey slate. The walls have been restored and a new west window inserted, which is a great improvement internally, the great thickness of the wall adding much to the effect. The work has been done by Messrs. Halliday and Sons, under the direction of Mr. James Fowler, of Louth, architect.

RAWDON.—A new convalescent home at Rawdon was opened last week. The building is designed to accommodate 120 persons. The central block is apportioned to entrance and dining halls, conservatory, the culinary department, serving and waiting rooms, and a number of small sitting-rooms. The two wings forming the southern front are divided into sitting-rooms and dormitories for the men, and for the women and children respectively. With the exception of the dining-hall, the building is two stories high. The building is designed after the style of the domestic architecture of the seventeenth century—flat pitched roofs, projecting eaves and corbels, mullioned and transomed windows, being its prominent features. The architects have been Messrs. Andrews and Pepper, Bradford; Mr. F. Haley acting as resident agent and clerk of works.

SALISBURY CATHEDRAL.—A meeting of the Cathedral Restoration Committee was held on Tuesday week, at the Palace, Salisbury. The financial statement showed that for works about executed £1,000 was now owing, and that the following sums were required:—Pavement of nave, £1,000; restoration of north porch, £1,200; to complete Bishop's throne, £300; architect and clerk of works, £360. Other works contemplated were gates to choir aisles, canopies to stalls, organ case and polychromy of organ case, and stained glass for windows. It was stated that the dean and chapter are settling with Messrs. Crossley and Co., of Manchester, for the blowing of the organ by an Otto silent gas engine. The great work of restoration of nave is progressing satisfactorily, and it is hoped that the walls and marble shafting will be finished in August next, and that, provided funds come in for the new pavement, the entire cathedral may be re-opened next Michaelmas.

The Town Council of Leicester decided on Tuesday week, by a majority of 33 to 2, to purchase the waterworks from the present company at 7 per cent. premium, this being 1 per cent. higher than has hitherto been obtained on the shares of the company.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.O.

To OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASKOVÉ EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—A. L.—Looker-on. — R. P.—D. J. M.—J. T. P.—J. H. B.—C. B. A.—G. G.—E. W. H.—J. P. S.—H. H.—Semper.

H. E. J. (We gave an illustration of the tower of St. Nicholas Church, Newcastle-on-Tyne, March 4, 1870.)—J. M. MURPHY, (Drawing of tower to hand and returned with thanks, unsuitable.)—J. PUGH, R. L. BUILDING NEWS DESIGNING CLUB.—Drawings received: Leizlad, A. L. B., Laborator, J. E. C., A. L. B., J. Wilson. (They teach architectural drawing at the "Architectural Museum," Westminster.)

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published October 19 contains articles on Habitual Female Drunkards, The Philosophy of Play, Sanitary Law, The Mechanics of Ventilation, Missing Links in the Sanitary Administrative Service, The Consumption of Smoke, Braby's Self-acting Exhaust Ventilator, House Drainage Regulations, Birmingham Association of Medical Officers of Health, Dr. Deville and the Harrogate Commissioners, Aston School Regulations for Prevention of Infectious Diseases, Public Health Reports, Legal Intelligence, Water Supply, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c., &c. Price Two-pence. Annual Subscription, Post-free, Eleven Shillings. 31, Tavistock-street, Covent-garden, W.C.

Correspondence.

SHARP PRACTICE.

To the Editor of the BUILDING NEWS.

SIR,—Although the writer of "Sharp Practice" (Mr. Keith D. Young, in your last issue) shields himself by not openly informing your readers of the particular criticism he is referring to, it is evident, from one of the circumstances mentioned, to which competition he is referring. It is also clear that Mr. Young is an interested party. But Mr. Young does not content himself with exposing what he considers to have been a trick by one of the competitors, but charges the writer of the critique with complicity in regard to "A.'s" design. He says the critique "contains almost unqualified praise of 'A.'s' design, whilst the other drawings are disposed of summarily, or merely described." Now, this charge would be unworthy of notice were it not that the writer places himself in the position of an independent critic, and talks about a state of things little calculated to raise a much-abused profession. But your readers, by referring to the article mentioned (page 221 *ante*) will be able to judge for themselves of the correctness of this assertion. Neither "A.'s" design nor any other design has had praise bestowed upon it, as I considered that there was no one that combined a well-studied hospital plan with an exterior suitable for the locality of Hampstead. Further, your readers will see that every design has had its need of merit given to it. In fact, no one reading the article could conclude the writer had a predilection for any of the designs. If by "A.'s" design the design with

the motto "Hampstead" is meant, it will be noticed that the recommendation is confined mainly to the picturesque style its author has adopted, and that another design is spoken of in equal terms of commendation. As the writer of the critique I may say that I know nothing either personally or indirectly of any of the competitors, and if Mr. Keith Young, or any other of those interested in the selection, thinks they can throw disparagement on a brother professional's work by implying a want of independence in the writer of the article in the BUILDING NEWS, they are for once in their lives sadly mistaken. No one values that quality in criticism higher than

THE WRITER OF THE CRITIQUE.

[After a long experience of journalism we never knew any one put himself more hopelessly and ridiculously in the wrong than Mr. Keith D. Young. On the 2nd of October last he wrote us a letter on this business. After a sentence or two of introduction, he said:—"A gentleman, connected with the professional press, whom I will call 'B,' unless I am misinformed, assisted 'A,' in the preparation of his drawing. 'B,' I am further informed, next proceeds to write a detailed criticism of the drawings for his employers. This criticism appears in due course, and contains almost unqualified praise of 'A.'s' design, whilst the other drawings are either summarily disposed of or merely described." As neither the name of the architect, the name of the supposed draughtsman and critic, nor the name of the professional journal was given, we dropped Mr. Young a note, saying we would publish his letter if he would mention the journal referred to so that it might have an opportunity of vindicating itself. Finding that he was probably misinformed, he withdrew his letter, and wrote another, which we inserted last week, and which has now been answered by the writer of the article, and "A," the architect referred to. Mr. Young appears to have a very low opinion of architects, draughtsmen, and literary critics, and he might make a pretty good critic himself if he understood what he was writing about, exhibited a greater respect for facts, and was less disposed to think ill of others. We will let architects and draughtsmen defend themselves, and if they never meet more formidable opponents than Mr. Young their dreams need never be disturbed. We beg, however, to inform him, and others whom it may concern, that as far as the BUILDING NEWS is in question, we have never yet permitted any writer in our pages to criticise competitive designs who was in any way interested in them. We have in this matter been scrupulously particular. When Mr. Keith D. Young leaves the region of art, and descends into the critical arena again, we trust, for his own peace of mind, that he will take a little more trouble, exercise a little more caution, be less disposed to deal in insinuations which he cannot substantiate, and be a little less distrustful of his neighbour's honesty.—ED. B. N.]

SHARPER PRACTICE.

SIR,—In reply to Mr. Keith D. Young's "friendly" epistle in your issue of the 12th inst., I will try to put him, and all whom it may concern, right in the matter on which his mind appears to be so much exercised and his indignation so righteously aroused.

In the competition to which he refers there were no written or printed instructions of any kind, each competitor being left to get what information he could verbally from the secretary of the institution. As no stipulation about mottoes was ever made to me, I naturally concluded the drawings were to bear their authors' names, and sent mine in duly signed accordingly. On calling to ask if the designs would be exhibited, I was surprised to find them bearing mottoes, and learned, for the first time, that an advertisement had been inserted in a local paper requesting this, but which I had neither seen nor heard anything about. As the committee had not yet seen the designs, I then and there covered up my name with pieces of ordinary note-paper—the only thing available—and wrote thereon a motto. In doing so the address from which the report is dated was overlooked. The perspective does not bear my

initials, the assertion to the contrary being simply untrue. This is the whole story, rather a contrast to Mr. Keith D. Young's "fair and temperate statement of the facts of the case;" but though it disposes at once of his tissue of accusations, I am not so sure it clears him from the "sharp practice" with which he is so anxious to charge me.

There may be two opinions about the wisdom of criticising designs that are still sub judice, but there can be only one about the animus displayed in writing letters such as his while a competition is undecided. If it is not to directly damage the subject of them, then I am at a loss to know what is intended. Indeed, so much is this object seemingly in Mr. Keith D. Young's mind, that he even goes so far as to charge your critic, by imputation, with writing a one-sided article, and me with "endeavouring to injure" my opponents when writing to correct an error in the said article. Thus, through all his letter, runs the base insinuation that the whole proceedings form a premeditated attempt to gain a dishonourable advantage "in a competition ostensibly anonymous!"

"Save us from ourselves!" may be the prayer of every architect who finds one of his professional brethren only too ready, without the slightest inquiry, to charge him with the most contemptible motives, and rush into print to injure him if he possibly can. Does Mr. Keith D. Young think this "a state of things calculated to raise our already much-abused profession in the public esteem?" It is, indeed, "time he should take some steps to set his own house in order," and begin the "reform" he craves for by reforming himself. It seems to me his conduct in this case savours of much "sharper practice" than even he, in the "purity" of his heart, has been able to impute to me.—I am, &c.,

THE COMPETITOR WHOM MR. YOUNG DESIGNATES "A."

CONCRETE.

SIR,—In view of the importance of concrete and of its eventual popularity as a material for house construction, it may not be out of place to offer a few comments upon the terms, aggregate and matrix, which are sometimes applied to its solid constituents—the pieces cemented and the cementing medium respectively—so that, if possible, through the agency of your columns, their use or disuse may be determined upon; for, doubtless, many of your readers may and do consider the terms in question somewhat puzzling and singular from having no clear idea of their derivation and meaning.

It may not be generally known that the term aggregate was formerly used in physics to denote either an undivided body formed by the direct union of other smaller bodies of the same sort, without the intervention of any uniting substance, or else it signified an integral homogeneous body as opposed to one that was compound; that is to say, it was used in a sense that implied oneness in constitution and body, and was not applied to masses or heaps of unconnected pieces, or to anything of the kind. The use of the word, however, in this sense is nearly obsolete, but the correct and accepted meaning of aggregate (the substantive) at the present time is a sum, mass, or collection of items of anything whatever. Aggregate is, in fact, an abstract noun, and applies equally to animals and vegetables, mineral, and artificial productions. Does it not seem, therefore, quite at variance with custom to single out a word of such wide and comprehensive range, and attach it by way of significance (to the exclusion of all the incontestable glories of nature and art), simply to broken pottery and drain-pipes, clinkers, brick-bats, gravel, slag, and a few other lowly products of catastrophe or carelessness?

Inappropriate, however, as this term appears to be for the purpose under consideration, it is surpassed in incongruity in the application of the word matrix to the cementing medium of concrete. Matrix or matrice, besides being a term met with in anatomy, in mining, and in dyeing, has been incorporated into the English language as meaning a mould or cavity, in the sense of something which gives form and shape to something else, and it is a word in use amongst moulders, letter-founders, coiners, &c. Now, in concrete it is not the cementing ingre-

ient which imparts shape; on the other hand, it receives or takes a certain form or figure in setting, which is of course dependent upon the configuration and disposition of the loose materials that it bonds together. As concrete appliances, however, give definite form to concrete, they may with propriety be called matrices; but there is here, at all events, no authority for employing the word in association with the cementing substance. Again, apart from technical usage, the word matrix denotes a place favourable for the generation of any natural product as, for instance, the earth is said to be the matrix in which seeds germinate; but where is the imagination that an picture lime or cement, when once mixed up in concrete, and bound up for ever with their fast friend water, giving nourishment and living energy to any compound, or calling out of their dull and inanimate fixedness the faintest approach to a distinct organism or element? In this sense, therefore, of matrix, there seems a total want of analogy in the employment of the term for the bond of union in concrete, but those who avour its use fancy that there is sufficient agreement between the matrix in mining and the so-called matrix in concrete, to countenance its adoption in a building vocabulary. Prof. Hunt, in Weal's "Dictionary of Terms," says, under the head "Matrix," that it is "that portion of the contents of a mineral lode which holds the metalliferous matter. It may be quartz or carbonate of lime, or any other such substance. It is sometimes used in the sense of being the original (the parent) from which the mineral ore has been produced. Schorl is a lode is spoken of by many miners as the matrix, or the mother of tin." Also, in the same book, vein-stuff is described as "the non-metalliferous matter found in a vein or lode, or, more strictly speaking, the matter which is no use to the miner. Veins have been formed by the filling up of cracks or fissures in rocks with metalliferous and non-metalliferous matter, or matter rather which contains no metal the object of extraction to the miner. Such matter is termed vein-stuff, matrix, or gangue." Now, taking a lump of properly prepared concrete, with one of its sides rubbed smooth to show its constitution, and attempting to apply this explanation of matrix to the sample, the first thing that strikes one is that real matrix would make a capital aggregate. Also the term matrix would be seen to be more appropriate to the so-called aggregate than to the cementing substance because if the cement, which is palpably the most valuable, is looked upon as the metalliferous matter, the aggregate becomes the stony matrix in which it lies embedded, whereas if the cement is assumed to be the matrix it is metaphorically worthless. Again, if the concrete is made of chalk or ballast, the so-called cement matrix is enveloped by carbonate of lime or quartz, both of which are common natural matrices; or if the small, but comparatively valuable, quantity of cement is a second time viewed in the light of the most important ingredient, the so-called aggregate must be the matrix, for like the schorl it would contain it. Again, if the cementing medium, which appears in streaks or veins in the concrete, is called matrix because of its resemblance to the filling-up of cracks or fissures in rocks, the mining matrix refers only to the non-metalliferous matter, and not by any means to the whole contents of the vein; and, finally, if the cement is called matrix because it holds the stones or brickbats, like the mineral matrix holds metal, then the natural order is reversed, because in the best concrete the artificial holds the natural product, whilst in nature the natural produce or outcome of the mine holds what, by artifice, becomes useful metal. I know of no sound reason, not even one arising from the chemical composition of concrete, to establish the right of either cement or lime to the title of matrix in the artificial conglomerate from any analogy to the matrix of the mine, and I think enough has been said to show that there are *prima facie* grounds, if not better ones, for giving new general terms to the two distinct descriptions of solid matter which are required to make concrete.

Generally, it is easier to find fault with existing words than to propose fitting equiva-

lents; but in this case the word concrete, if divided into its two syllables, appears to afford all that is desired. If any specific name at all is necessary for the nuclei or particles which the cement agglomerates, none is more simple than the first syllable—con. Not only may it be taken to stand for congeries in the congeries of pieces now called an aggregate, but, having regard to the peculiar force of the inseparable preposition *con* in Latin, which in composition often signifies together, it might by fair license be made a new word, used separately as a noun, and adopted as the name of the non-cementing fragments that are to be cemented together. The second syllable, crete, is manifestly just the word for the uniting substance, or so-called matrix. The name creta was in ancient times given to chalk, and certain kinds of clay, and when it is considered that the vast strata of chalk consist for the most part of soft earthy limestone, or carbonate of lime, that lime is the basis of all cements, and that Portland cement is manufactured from chalk and clay, it will, I presume, be considered that creta altered to crete furnishes an elementary and peculiarly suggestive appellative in lieu of the scarcely applicable matrix in concrete. But this of course is merely a proposition.—I am, &c.,

W. J. CHRISTY.

40, Green-road, Southsea.

THE PRINT ROOM OF THE BRITISH MUSEUM.

SIR,—I trust you will allow one who has used the print-room, British Museum, for nearly thirty years, and constantly worked there for about ten years, to say, in the least mistakeable way, that the assertions contained in your notice (No. 1,188, pp. 350-1) of this department of the museum, to the effect that it is inaccessible to students, "only to be enjoyed by officials and their favourites," the treasures being "imprisoned" and so on, are simply unfounded in facts, or anything approaching to facts.

The fact is that which any person may prove, that by the unvarying courtesy of the officials in carrying out their instructions, and those instructions themselves, the print-room, and those treasures which are even more precious than you describe them to be, are constantly available, and readily accessible to any one who chooses to apply for admission to inspect them; if for a temporary occasion immediately, and if for lengthened and often-repeated visits, on obtaining a student's ticket, of exactly the same kind as that which is required for the reading-room, the various artistic and scientific collections in the Museum, at the National Gallery, at South Kensington, the India Museum, at Kew, and, in short, at every other public collection of works of art, books, and the like materials for study and research.—I am, &c.,

F. G. STEPHENS.

Oct. 15, 1877.

THE MASONS' STRIKE.

SIR,—So much misunderstanding appears to prevail on the part of architects and their clients as to the circumstances of this dispute that I beg the favour of being allowed through your columns to repeat what, no doubt, to many of your readers, will be rather stale. Several master builders have received letters from architects to the following effect—"The masons are but a small body as compared to other building artisans, and it would be much better to accede to their demands than to stop so many important buildings." But in thus writing it seems to be forgotten that the masons made two demands—one for a reduction in the hours of labour, and another for a uniform rise of wages to 10d. per hour instead of 9d. It is obvious, and indeed generally admitted, that these changes could not have been confined to masons, who, of necessity, must work the same hours as bricklayers, &c., and it was distinctly avowed that if the masons obtained a rise of wage the carpenters were prepared immediately to strike for the same. The question, therefore, before the masters was a general reduction in the hours of labour and an increase of 12½ per cent. in wages throughout the trade.

The masons' union sent a deputation to the master builders to talk over the matter in dispute, but the discussion turned very much on the rules and practices of the masons' union. The masters stated that there is a great difference in the skill and ability of masons, that many of them, if unrestricted by their own rules, could easily earn 10d., 11d., or even 1s. per hour, whilst other masons were so unskilful or idle that they were not worth half. What was the answer of the union men? "Our principle is that the strong must support the weak," or, in other words, that the skilful and intelligent man must eke out his time so as not to surpass the most unskilful man on the same work. And this principle has for some time past been most assiduously carried out, so that the cost of mason's labour has been brought to such a pitch as to defy all calculation of the most experienced estimators. I need hardly say that if such foolish, arbitrary, and immoral principles were made a part of the law of the land a revolution would ensue.

During the last few days symptoms appear to show that many masons are dissatisfied. Two or three men at a time have been taken on at various jobs, and it is stated that the strike fund is very much lowered, while the demands on the same are very much on the increase, and that within the next week or two the strike may be at an end. There are vast numbers of masons unemployed in America, and it is only a question of cost as to getting them over. The masters have also letters from different parts of Germany from piecemaster masons, who offer to bring over men, and execute stonework by contract, and in one way or other the master builders hope to bring about a reform of a system of rules which they believe to be a disgrace to the intelligence of the age, and at the same time to defeat demands which they know to be only a beginning of demands for a still further reduction in hours of labour, and a much larger increase in wages than is now sought to be enforced.—I am, &c.,

A MASTER BUILDER.

THE KENSINGTON VESTRY HALL COMPETITION.

SIR,—It has come to my knowledge on good authority that in the late Kensington Vestry Hall competition a most important *sine qua non* was omitted in the instructions given to competing architects—namely, that the grand hall should be placed on the ground floor, and I am informed that all those plans showing this hall on the upper floor (where it is placed in the best modern vestry halls) were at once without further examination, and, irrespective of all other merit, thrown out of the competition.

I ask was it fair or even honest that the members of an honourable profession should be asked to expend their time and money on a venture where the plans would not have a chance of being even looked at, and this owing to a culpable omission in the instructions given to them?

Every one may not be aware of the great cost incurred in the preparation of designs for such a purpose, and for the information of the uninitiated I can say that I know of one architect who spent no less than £100 on this competition; therefore I argue that it is unfair that the instructions for the guidance of competitors were not more full and complete.

I would also ask if it is true that the architect selected by the arbitrator, Mr. Whichcote, as being the best, was shelved with the paltry sum of £30, in favour of the three other prize-holders, one of whom, I am led to believe, was the son of a vestryman, and another associated in the work with the surveyor to the vestry board. I vouch for the truth of none of these statements. I simply ask, through the medium of your columns, are they true?—I am, &c.,

F.R.I.B.A.

The Local Board of Frome have agreed to pay Lord Cork £1,000 for 2½ acres of ground for a reservoir and well-boring; should the experimental well fail, no liability will be incurred by the board, except to make the ground good.

It is proposed, at Greenock, to build, by public subscription, a school and laboratory for scientific and art instruction.

The Prussian Government has resolved to expend fifteen million marks (about £760,000) in the improvement and enlargement of the port of Pillau—an undertaking which will add greatly to the commercial importance of Königsberg.

The organ of Lyme Regis parish church was reopened on Sunday, after repair and enlargement, by Mr. Vowles, of Bristol.

Intercommunication.

QUESTIONS.

[5151].—Registration of Plans.—If I make a plan of a township, or parish, or local board district from actual survey or other sources, and register it at Stationers' Hall, how far does it protect my plan, and if any one copies it on the same or another scale and publishes it for sale, what is my remedy, and how do I proceed? Is the registration really a protection?—BUCHANAN, Yorkshire.

[5152].—Plaster of Paris.—Can any of your readers inform us of a mixture which will dissolve or render soluble plaster of Paris after it has once become set? Any information on the subject will be esteemed by—E. B. B.

[5153].—Damp Ceiling.—To my house I have under the garden a cellar, which is covered with what are known as rag landings; on the top of part of these there is a flagged path, the remainder being gardened. In wet weather this ceiling is very wet, constantly dropping down. This, I imagine, comes through the joints, though the whole surface of the ceiling is wet. I should be very thankful if some practical person would kindly point out how this might be remedied without very much cost. I may say that I could not do with the path raising.—J. A. C.

[5154].—Ironmongery.—A villa residence, which will cost about £8,000, is being put up from plans by me, and has now reached that stage of progress when the ironmongery for doors and windows needs to be selected. I have a difficulty in this matter, and like all who find themselves at a loss in such matters, I have come soliciting your advice, and trust to have the favour through the well-known channel in your very valuable issue. The woodwork of dining-room, billiard-room, and entrance hall is pitch pine. The drawing-room is furnished with the same wood, but will be painted in light shades, perhaps white enamelled paint with gold relief. The bedrooms will be in pitch pine, and, like the dining-room, varnished and stained. The practice at Glasgow is to use ebony or buffalo with the pine and white china in the drawing-room.—JAMES FERGUSON.

[5155].—Projecting Perspectives.—In the "Intercommunication" column of a previous number (I believe some time last year) some correspondent mentioned that a large perspective might be projected from a small scale plan by projecting the rays backwards. I have thought something on the subject, and cannot quite understand how it is done. In the first place, I presume there is some definite limit decided upon and a line drawn (I should suppose parallel to the plan) for the projected lines to finish at and be carried down. If I am thus far correct I am perplexed how the heights are obtained. Is it by the use of the proportional compasses, setting them at the proportions one plan bears to the other outline, and so setting off the heights, or how? I myself, and no doubt many others, would be greatly obliged if some of your more efficient contributors would fully elucidate the method, as my own impression is that if it can be done, and correctly, it will save much time.—A PERPLEXED STUDENT.

[5156].—Glazed Tiles.—Can any of your readers recommend a good book upon the manufacture of glazed tiles for wall linings, hearths, &c.?—H. L.

[5157].—Slates.—Will any one kindly tell me how to judge between good slates and bad ones, more especially when they are fixed on the roofs?—A. B. C.

[5158].—Castings.—How can I tell a good casting?—A. B. C.

[5159].—Perspective.—What system is generally adopted in placing buildings in perspective? Is it either of those described by Burchett in his "Linear Perspective?" If so, which? I have gone through the above, but do not know which system to adopt, both appearing intricate, and not knowing whether there is some better and simpler method, shall be glad to hear some one's experience. Also, are the perspective sketches of portions of buildings which sometimes appear in this paper—as font, &c., Oct. 5; details of St. Giles's Cathedral, Sept. 7, and others—drawn according to the rules, or sketched by free-hand at place?—STUDENT.

[5160].—Queen Anne.—Could you or any of your readers (through your medium for "Intercommunications") kindly inform me where the best specimens of Queen Anne architecture, in or about London, may be found, as I wish to study the ornament of that style? I should also be very grateful for the titles of the best illustrated works upon the subject.—CARVER.

[5161].—Fixing Lead Lights.—Will some kind being explain the mode of getting in and fixing lead lights in stone frames and mullions? also, at what stage of work are they fixed?—F. K. S.

[5162].—School Grate.—Can any kind reader inform me the best grate I can adopt of an inexpensive character for a schoolroom about 37ft. x 17ft., and its cost and advantages?—CALOR.

[5163].—Testimonials.—Some time ago I was a candidate for the surveyorship of a large town, and my board gave me testimonials for it. If I apply for a similar appointment in another town, would it be legitimate to alter the dates and names, so as to suit the testimonials to the more recent appointment? For instance, suppose Liverpool to be vacant,

and I apply with testimonials addressed to Liverpool, and dated, say, June, 1876, would it be legitimate to use the same testimonial for another town, supposing I was unsuccessful at Liverpool, and address them, say, to Manchester, and date them October, 1877? In short, would it be a forgery to alter dates and name of town?—A. F. G.

REPLIES.

[5140].—Bath Stone.—I have seen so much Bath stone decay that I am very averse to its employment unless the proper quarry-bed can be selected—a point few architects have the time, if they possess the ability, for detection. The only remedy likely to be of any use is to apply several coats of boiled linseed oil to the work after the exfoliated parts have been cleaned off. I have adopted this plan on one or two buildings. Some very good patent liquids are sold—the "Petrifying Liquid," and other silicate paints—particulars of which may be seen on referring to any number of the BUILDING NEWS. These may arrest decay for some years.—G. H. G.

[5147].—Translation of Term "Quantity Surveyor" into French.—Quantity surveyor, verificateur; specification, devis descriptif; quantities, devis estimatif.—E. P. S.

[5149].—Plans for the Laying-out of New Streets.—The local authorities have no powers under public Acts of Parliament to compel adjoining owners to lay out their streets so that they shall be continuous or communicate with each other. (2) The local authorities have no power to disapprove a street terminating in a *cul de sac*.—BOROUGH SURVEYOR.

The plans for the new municipal buildings at Portobello, prepared by Mr. Paterson, Edinburgh, have been approved of by a committee of the town council, and estimates will soon be invited. The new building will consist of two stories in the Scotch baronial style. The cost of the building is not expected to be under £5,000.

The ceremony of laying the foundation stone of a new harbour at Burnmouth was performed on Tuesday. The present extension will cost £9,000, and has been contracted for, for that amount, by the Messrs. Morrison, contractors, Edinburgh. The design is by Messrs. Stephenson, C.E., Edinburgh.

Mr. Raphael Brandon, whose death we recorded in our last, was buried on Monday, at Brompton. 1840 was mentioned as the date of the erection of the Irvingite Church, Gordon-square—it should have been 1850.

A new Congregational church was opened at Leyland, near Preston, Lancashire, on Tuesday. It is a Gothic building, of stone, 52ft. by 39ft., accommodating 500 persons. The principal external feature is a saddle-backed tower. Handsome brick-built schools adjoin. The cost has been about £4,000. The church was built from the designs of Mr. Grant, architect, of Preston, by local contractors.

A Congregational church is being built at Yeovil from plans by Mr. Lewis Banks, of London.

The Local Government Board has sanctioned the borrowing by Baenp Local Board of the sum of £2,500 and £5,500, to be expended in paving and sewerage works, and in street improvements.

Drainage works are being carried out at High-bridge for the Axbridge rural sanitary authority, in accordance with the plans of Mr. Estridge, C.E. Mr. Robert Lee, of Barnham, has been appointed clerk of the works by the committee.

The local board of Hucknall Torkard have accepted the tender of Mr. McPhail, of Newark (the lowest received), for the supply of Yorkshire flagging.

A new Primitive Methodist chapel and school-room are being built at Orich Carr, near Belper, from the designs of Mr. Willis, architect, of Derby. The chapel will be 33ft. by 24ft. within, and will seat 180 persons; the schoolroom will be 25ft. by 24ft., and is planned for 120 scholars and teachers. The entire cost will be about £800.

The Academy states that Prof. Moritz Thausing has acquired for the Albertina Collection at Vienna Michael Angelo's rough sketch for his "Soldiers Surprised Bathing." The sketch is declared to be undoubtedly authentic.

The parish church of Dunnington, Yorks, has been reopened after restoration, at a cost of £1,200, from designs by Mr. C. Hodgson Fowler, Mr. John Brown, of York, was the contractor.

A correspondent of *La Semaine des Constructeurs*, who has been troubled by the condensation of moisture on the inner faces of stone or plastered walls of houses built near large forests or damp places, has overcome the difficulty by interposing between the air and the impermeable wall a permeable substance. This he effected by furring off upon the damp walls with laths, and nailing upon this furring a lining of stout lincu. The wall-paper was pasted upon this; and the walls no longer reek with moisture.

At the annual meeting of the Bingley Mechanics' Institute, on Monday, it was mentioned that two students of the school had taken away both the prizes offered by the Leeds Association of Master Builders for the best designs for a modern town cottage and an ornamental frieze decoration.

Our Office Table.

At the quarterly meeting of the New Town Council, last week, it was stated that new municipal buildings would not be completed before Lady Day if the work went on its present rate. One of the council inquired whose monogram it was that appeared between the county and borough arms over principal entrance. It was stated by the M. that it was the monogram of the architect, Money. The councillor who had made inquiry then declared that the architect overstepped the bounds of common sense, any monograms were carved on the building they should be those of aldermen and councillors, and he thought the architect ought to be censured and ordered to remove objectionable inscription. Nothing definite, however, was resolved upon, and two of members of the council pointed out that it was a customary thing for architects to refer their connection with the buildings they erect by inscribing their monograms thereon.

At the Art Exhibition held at Croydon last week, in connection with the Church Congregational Messrs. Chubb and Son, who have opened St. Paul's-churchyard premises for the sale of this class of work, exhibited, in addition to specimens of ornamental brass and iron work, some cartoons executed in tiles, to which briefly alluded last week. The subjects were copies of the prints issued by the Wesleyan Sunday School Union, illustrating the life of Christ, and their clearness and beauty attracted much attention. They are designed either to be mounted in a frame, or to be built into wall in the ordinary way of tile decoration. Arrangements are being made to produce a series of the cartoons in this form, and as they are reasonable in price, and adapted for a great variety of uses, we think they will prove very popular.

The trustees and judges of the Taylor Scholarship and prizes bequeathed by the Captain G. A. Taylor, for the promotion of art in Ireland, announce that £90 a year will be awarded for two scholarships and one prize for students. These are open to all students of art, male and female, not exceeding 25 years of age, who shall have attended for 12 months at least a school of art in Ireland, or who, being of Irish birth, shall have attended for a period a school of art in Great Britain or elsewhere. The sum is divided into two scholarships of £40, each and one money prize of £10. The exhibition of works of art in competition, therefore, is fixed to be held on Thursday, April 18th, 1878, the subjects being this time for figures "Courage" and for landscape "Eventide." Works may be executed either in oil or water colours, but must conform to stipulated size—3ft. by 2ft. 4in.—and be sent in to the Royal Dublin Society, at Leinster House, in that city, not later than Saturday, April 13th, 1878. The trustees further explain that the prize of £10 is for the best work, without regard to subject, and that this prize can be awarded to either of the works which have gained the £40 scholarship.

The parish church of Langham has been restored at a cost of £2,000, from the designs of Mr. J. Hakewill.

On Saturday afternoon four memorial stones for new chapel and school for the Methodist New Connection Society at Hanging Heaton, near Dewsbury were laid. The new building will be in the Italian style, the school being beneath the chapel. The latter will contain about 350 sittings. The estimated cost of the structure is £2,500.

The corporate seal has been affixed to an agreement between the Limerick Corporation and the United General Gas Light Company, whereby the undertaking and works will be transferred to the former body at a valuation of £26,000. The company shares have been purchased at par, and the transaction is said to have been managed on very favourable terms for the municipality.

A meeting was held at Steynton, Pembrokeshire, on the 4th inst., to consider the desirability of restoring the parish church, which was stated to be in a disgracefully dilapidated state, the walls being in a very imperfect condition. A committee was appointed with power to consult an architect, and should be requested to report on the state of the church.

STATUES, MEMORIALS, &c.

ADAM BLACK.—The colossal bronze statue, 10ft. gh. of Adam Black, cast by Messrs. Cox and Sons, Thames Ditton, from a model by Mr. J. Hutchin-

DAVID LIVINGSTONE.—The bronze statue of the missionary explorer, Dr. Livingstone, has just been successfully cast by Messrs. Cox and Sons, of hames Ditton, from the model by Mr. J. Mossman,

CHIPS.

The rural sanitary authority for Dungarvan, nty Waterford, have adopted plans by Mr. Frazer a water supply for Villierstown.

Premises are being fitted up and altered in Gont-ne, Swansea, for the reception of the free public rary. Mr. David Morgan is the contractor.

The Town Council of Aberavon, Glamorganshire, ve adopted the plans of Mr. Waring, C.E., for air new waterworks.

A vestry meeting was held at St. Michael's, wes, on Thursday, the 11th, for the purpose of ariing the report made by Mr. Philip Currey, chitect, of London, for the improvement of the nrch. Mr. Currey recommended that new seating open benches be provided throughout, with gang-ys in centre and next side walls of church, so as economise bench ends; that a new pulpit in oak, tar rail, gas standards and brackets are necessary, d the choir stalls ought to be rearranged. These tations would cost about £550, and increase the mber of sittings from 231 to 276. Mr. Currey also ge the desirability of removing the unsightly leries which disfigure this ancient church. The eting accepted the report, and appointed a com-tee to assist Mr. Currey in carrying it out. The leries will be removed if the consent of the occu-rs of sittings therein can be obtained.

The Boston Court of Sewers met on Saturday to nsider tenders for the repairs of the sea banks, ich are in a highly dangerous state, it being feared at they would succumb to a heavy gale from the rth-east, when the whole district near Boston uld be inundated. Three tenders were received, ounting, respectively, to £503 3s. 6d., £346 4s., d £291 8s.; the lowest was accepted, and proved e from Mr. John Leverton, of Haven Bank, ningsby. The estimate of the surveyor (Mr. mes Lancaster), who has prepared the contract ns, was £335, exclusive of soil, for which two er tenders were accepted.

A drinking-fountain, which has been erected over e "Bonnie wee well, by the breast of the Brae," out three miles from Paisley, to the memory of uph Macdonald, author and poet, was dedicated on turday. It is a grey granite structure of Roman pe, rising in the form of a little temple, from a sticated base, to a height of 10ft. Below the urn, hich the fountain is surmounted, is a bronze dhalion, showing the profile of the poet, and scribed, "Hugh Macdonald, 1817-1860." Round e water-tap is carved a verse by Macdonald, riptive of the well. Mr. J. Mossman, of Glas-ow, designed and executed this very appropriate mento.

Land has been acquired at Braehead for the pur-ose of a public park for Kilmarnock, by the trus-ees under the late Mr. Kay's will, who will pay the ke of Portland £9,000 for the plot of 41 acres. e Town Council of Kilmarnock have undertaken maintain the area as a public park on condition at they are to be the sole judges of the way and le in which it is to be kept up.

Balby parish church was reopened on Monday by e Archbishop of York, after the addition of a rth aisle, and the erection of a new organ; the ter was built by Messrs. Brindley and Foster, of efield.

The Corporation of Waterford have adjourned the rther consideration of the proposed purchase of e gas-works for a period of twelve months.

The foundation stone of new Roman Catholic ools was laid in East Shaw-street, Greenock, on turday afternoon, by Archbishop Eyre. The ools are being built from designs by Messrs. ram, of Glasgow, and will accommodate nearly 00 scholars.

A grant of £2,000 was made at the Wakefield ichaelmas Quarter Sessions, on Monday, towards e widening of the Engine Bridge at Huddersfield.

The annual meeting of subscribers to the Water-rd School of Design and Art was held on Wed-riday week, when a report was received, stating at the school is in excellent working order, and at the prizes and numerous certificates awarded e students by the Department testify to the icency of the instruction and the industry of the idents. It appears that the school is in need of eater pecuniary support.

A new chancel is about to be added to Orton parish urch, near Peurth. Mr. Bland is the contractor. The Halifax School Board have accepted the rder of Mr. Joshua Wormald, amounting to 200, for works of drainage and asphaltating at een's-road Board School.

An obelisk, provided by subscription, as a memorial over the grave of John Kane, the late operative secretary to the North of England Iron Trade Arbitration Board, and secretary to the National Association of Ironworkers, has been completed this week. It is 10ft. in height, and is of polished red Peterhead granite, standing on a fine-axed base of grey Aberdeen granite. The monument is the work-manship of Messrs. Priestman and Sons, of Birmingham.

A bust of the late Dr. Morton, of Crosshill, has just been executed by Mr. J. F. Gilmer, of Glasgow.

The Liversidge Local Board accepted, on Monday evening last, the plans of Mr. W. Ellis, architect, for the proposed public offices at Hightown.

The Dublin Exhibition Palace is about to be con-verted into a place of public amusement.

A new free library was opened at Wigan on Tues-day. Mr. A. Waterhouse is the architect.

The Wilts magistrates, at Tuesday's Michaelmas session, authorised the erection of an additional building on the female side of the county lunatic asylum, at a cost not to exceed £4,500.

The second annual exhibition of modern pictures has just been opened at the Gordon-street galleries, Glasgow, and includes about a hundred works. An additional feature this year is the display of a collection of antique works of art, including china, bronzes, ivories, and plate.

The prizes and certificates, 40 in number, awarded by the D-partment to students in the science and art classes at Motherwell, N.B., were distributed on Monday evening.

The first annual meeting of No. 7 section of the Sheffield United Building Society was held on the 9th inst. The statement of accounts shows that £32,650 has been advanced during the year on satisfactory mortgage securities, and that after setting aside £1,348 19s., as a reserve fund, being £3 per share on the 449 advanced shares, a gain was declared of £2 0s. 2d. per share on the 879 shares taken up by the members.

SLATES — SLATES — SLATES.

Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each;

25ft., 2s. per foot; 35ft., 2s. 6d. per foot.

DEALS—BATTENS—FLOORING.

Send for price list.—R. MAY & SON, Timber and Slate Merchants Acorn Wharf, Old Kent-road, London, S.E.

Epps's Cocoa.—Grateful and Comforting.

"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Dr. Service's Gazette.—Sold only in Packets labelled "JAMES EPPS & Co., Homoeopathic Chemists, London."

Trade News.

WAGES MOVEMENT.

MANCHESTER.—On Wednesday, at the meeting of delegates representing the General Union which is now being held in Manchester, it was unanimously resolved that the support given to Manchester should be continued until an honourable settlement shall, in the opinion of the local trade committee, have been arrived at. This seems to point to a prolongation of the joiners' strike. The body which passed this resolution is composed of upwards of 40 delegates from all parts of the United Kingdom, representing the whole membership—about 12,000—of the General Union of Carpenters and Joiners. It is the supreme court of the carpenters and joiners of Great Britain, and meets only once in about ten years. The last delegate meeting was in 1866.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenhire.—ADVT.]

Holloway's Ointment may be relied upon in cases of inflammation or irritation of the internal mucous membrane. When it is diligently rubbed upon the back and chest it relieves shortness of breath, fluttering of the heart, stitch in the side, cures colds, asthma, bronchitis, and protects the delicate against consumption.

CHURCH METAL WORK.

Altar Rails, Alms' Disbes, Coronas, Candlesticks, Communion Plate, Medieval Gas Standards, Lecterns, Screens, Trowels, Yanes, Gates. SOLE AGENTS for Powell Brothers' Stained Glass, &c., Doulton Ware, and Architectural Terra-cotta, Ornamental Tiles, Lambeth Faience. Estimates Furnished for Special Designs.

CHUBB and SON.

57, ST. PAUL'S CHURCHYARD, E.C. LOCK and SAFE WAREHOUSE, 128, Queen Victoria-st., B.C.

TENDERS.

BARNBURY, N.—For the erection of a school to provide seat accommodation for 529 children on a site in Victoria-place, Barnsbury (the accommodation on the 9ft. and 8ft. basis being for 597 children), for the London School Board. Mr. E. R. Robson, architect:—

Table with 2 columns: Name and Amount. Includes Hobson, J. D., Perry and Co., Scrivener and White, Pritchard, G. S., Brass, W., Grover, J., Williams, G. S. S., and Son, Lawrance, E., Boyce, T. (accepted).

[The new building has been designed with a view to future extension. The site is small, and the school has, therefore, been planned on arches, at an estimated additional cost of £713, in order to save a still larger expenditure for the purchase of additional land. A provision of £262 has been made for extra foundations, and £252 for boundary walls and gates.—Cost of site so far as purchased (area 10,052 sq. ft.), £4,963 7s.; school buildings, including teachers' rooms and closets, £7,292; tar paving, playground, &c., £125; boundary walls and gates, £252; schoolkeeper's house, £400; foundations for ditto (provision), £100; cost per head of school buildings only (calculated on seat accommodation), £13 15s. 8d.; total cost per head of buildings, including boundary walls, schoolkeeper's house, &c., £15 8s. 10d.]

BENFIELDSIDE, CO. DURHAM.—For new Board Schools for 500 children, masters, &c., at Benfieldside, for the Benfieldside School Board. Messrs. John Smith and Son, Shotley Bridge, architects; quantities by Mr. G. D. Irwin, Sunderland:—

Table with 2 columns: Name and Amount. Includes Stephenson, R., Glaister, G., Elliott, J., Middlemiss Bros., Bell, J., Snowdon, J., and Son, Armstrong, C. D., McAdam, T., Knox, W., Westgarth, G., Westgarth, W., Eltringham, J., Sbell, W. (accepted).

Bow.—St. Paul's Church, Bow. Messrs. Newman and Billing, architects:—

Table with 2 columns: Name and Amount. Includes Forrest, Colls and Son, Bangs and Co., Dove Bros., Perry and Co., Wood, F., and F. J. (accepted).

BRACKLEY.—For hunting stables, Mr. R. J. Russell surveyor, Brackley:—

Table with 2 columns: Name and Amount. Includes Franklin and Sons, Deddington, Oxon., Hawkins, W., Kimberley, A., Banbury, Claridge, C., Banbury, Wootton, A., Brackley.

BRIXTON.—For the finishings to 12 houses (in carcass) in Brailford and Arlingford-roads, S.W., for E. G. Chapman, Esq. Mr. J. W. Brooker, architect, 2, Railway Approach, London-bridge, S.E.:—

Table with 2 columns: Name and Amount. Includes Croaker, W. and F., Battley, Cullum.

CANNING TOWN.—For fire brigade station, Canning Town, for the West Ham Local Board. Mr. Lewis Angell, architect; quantities by Messrs. R. L. Curtis and Sons:—

Table with 2 columns: Name and Amount. Includes Charlton and Mansell, Rivett, North Bros., Atherton and Latta, Abrahams, Boyd, Wood, Hart, Judd and Hawkins, Sheffield and Prebble, Horlock (accepted).

CANNING TOWN.—For engineer's residence at the sewage pumping works, Canning Town, for the West Ham Local Board. Mr. Lewis Angell, architect; quantities by Messrs. R. L. Curtis and Sons:—

Table with 2 columns: Name and Amount. Includes Boyd, Wood, Atherton and Latta, Abrahams, Horlock, Charlton and Mansell, Rivett, Hart, North Bros., Sheffield and Prebble, Judd and Hawkins.

CHELSEA.—For alterations, &c., at the Fountain public-house, Lower Sloane-street. Messrs. Drury and Lovejoy, architects:—

Table with 2 columns: Name and Amount. Includes Shurmur (accepted).

DEPTFORD, E.—For the erection of a school to provide seat accommodation for 792 children, on a site in Stanley-road, Deptford (the accommodation on the 9ft. and 8ft. basis being for 845 children), for the London School Board. Mr. E. R. Robson, architect:—

Table with 2 columns: Name and Amount. Includes Perry and Co., Sewell, J., and Son, Wood, F. and F. J., Brass, W., Johnson, F., Downs, W., Atherton and Latta, Kirk and Randall, Newman and Mann, Tongue, W., Thompson, J. (accepted).

[Cost of site as far as purchased (area 20,212 sq. ft.), £3,171 16s.; school buildings, including teachers' rooms and closets, £6,900; tar pavement and playground, £390; boundary walls and gates, £600; adapting house for schoolkeeper, £50; cost per head of school buildings only

(calculated on seat accommodation), £8 14s. 3d.; total cost per head of buildings, including boundary walls, tar pavement, &c.), £10 0s. 6d.]

HACKNEY.—For building a Mission Hall in Morning-lane. Messrs. Parr and Strong, architects:— Hanley ... £665 Bays Bros. and Allen ... 656 Shurmur (accepted) ... 639

HOLLOWAY.—For the erection of a house for the school-keeper of the Hornsey-road school, Holloway, for the London School Board. Mr. E. R. Robson, architect:— Mark, F. ... £590 Roberts, L. H. and R. ... 517 Williams, G. S. S., and Son ... 486 Grover, J. ... 478 Hobson, J. D. ... 456 Tyerman, J. (accepted) ... 397

HOBERTON.—For the conversion of the building known as Upton House, Urstwick-road, into a truant school for the London School Board:— Wilnot (recommended for adoption) ... £630 [Lowest tender received.]

HORTON, NEAR EPSOM, SURREY.—For the erection of a gardener's residence. Mr. Hatchard Smith, architect, 44, Ebury-street, Chester-square, and Epsom:— Chuter Bros. ... £354 Jeal (accepted) ... 345 Laundry ... 200

HULL.—For the erection of the Lime-street school for the Kingston-upon-Hull School Board. Messrs. W. Botterill and Son, architects; quantities supplied:— Including old buildings upon site. Excluding buildings upon site.

Sergeant, R. ... £3,050 0 0 ... £8,250 0 0 Skinner, J. T. ... 8,025 0 0 ... 8,225 0 0 Drury and Harper ... 7,893 0 0 ... 8,026 0 0 Haddershaw and Son ... 7,778 0 0 ... 7,905 0 0 Brown, A. ... 7,715 0 0 ... 7,832 0 0 Barry, J., Scarbro' ... 7,670 0 0 ... 7,850 0 0 Stamp, A., Barton ... 7,650 0 0 ... 7,855 0 0 Hoekney and Liggings ... 7,518 17 0 ... 7,868 17 0 Jackson, G., & Son (acc.) ... 7,260 0 0 ... 7,530 0 0

KENT.—For the erection of school in rear of Baptist Chapel at Tunbridge. Mr. J. W. Brooker, architect, 2, Railway Approach, London-bridge, S.E.:— Austin ... £560 10 0 Eason ... 557 0 0 Battley ... 518 0 0 Wickham ... 485 0 0

MIDDLESBOROUGH.—For the construction of a tank at the gas works, for the town council:— Mr. Livesey's plan. Mr. Cail's plan. Pearson Bros. ... £2,550 0 0 ... £11,928 0 0 Brunley, H., Sheffield ... 1,350 0 0 Johnson, Jno., and Sons, Middlesbro' ... 6,945 0 0 ... 5,637 0 0 Inglis, F., Middlesbro' ... 5,685 0 0 ... 8,255 9 0 Doewra & Son, London ... 8,255 9 0 Wilkinson and Pounder Middlesbro' ... 7,900 0 0 ... 9,100 0 0 Johnson, J., Middlesbro' ... 8,900 0 0

MIDDLESEX.—For the erection of 20 houses on the Chiswick Glebe Estate. Mr. Fred. Beeston, architect:— Downs and Co. (accepted)

NOTTINGHAM.—For stabling for 54 horses, coach-house, dwellings, &c. Mr. S. Dutton Walker, F.A.S., architect:— Messom ... £3,109 0 0 Fish and Son ... 2,999 10 0 Hodson and Facon ... 2,995 0 0 Vickers ... 2,940 0 0 Wheatley and Maule ... 2,930 0 0 Bell and Son ... 2,897 0 0 Hind ... 2,893 0 0 Jelley ... 2,885 0 0 Wool ... 2,875 0 0 Stevenson ... 2,870 0 0 Scott ... 2,817 0 0 Clarke ... 2,822 0 0 Daubeny ... 2,817 0 0 Doughty ... 2,800 0 0 Bailey (accepted) ... 2,765 0 0

LONDON.—For rebuilding the Yorkshire Grey Tavern and Restaurant, Gray's-inu-road, W.C., for Messrs. Legge and Chapman. Messrs. J. W. Brooker and Isaacs and Florence, architects:— Lawrance ... £5,650 Croakes, W. and F. ... 5,390 Wagner ... 5,183 Downs ... 5,045 Tink ... 4,983 Morter, J. ... 4,878 Oxford, J. B. (accepted) ... 4,795

NOTTINGHAMSHIRE.—For villa residence, stabling, at Burton Joyce, Nottinghamshire. Messrs. Robt. Clarke and Son, Nottingham, architects:— Hodson and Facon ... £1,236 12 0 Key, W., Carlton ... 1,166 0 0 Vickers, H. ... 1,137 0 0 Welley, John ... 1,077 10 0 Jolly, C. ... 1,050 0 0 Bradley and Barker ... 1,035 0 0 Clarke, A. B. (accepted) ... 997 0 0

SHOREDITCH.—For the erection of shop premises in High-street, at corner of Gt. Eastern-street, E.C., for A. Ewin, Esq. Mr. J. W. Brooker, architect, 2, Railway Approach, London-bridge, S.E.:— Sub-structure. Super-structure. Crabb ... £420 ... £1,985 Morter, J. ... 375 ... 1,670 Oliver ... 366 ... 1,669 Lawrance ... 360 ... 1,640 Axford, J. B. ... 318 ... 1,625 Downs ... 333 ... 1,536 Cullum ... 273 ... 1,525 Wagner ... 295 ... 1,465

SHOREDITCH.—For repairing and dividing into two compartments the large water tank, and supplying and fixing connections and valves thereto, at Shoreditch workhouse. Mr. J. Wallace Peggs, civil engineer:— Ellis, James, ... £695 Jeakes and Co. ... 512 Pontifex and Wood (accepted) ... 350 [Engineer's estimate, £400]

SPITALFIELDS.—For alterations at The Queen's Head, Commercial-street, for Mr. J. S. Cakebread. Mr. Edward Brown, architect:— Eaton ... £948 0 0 Onthwait and Son ... 885 0 0 Kiddle and Son ... 883 0 0 Anley ... 850 0 0 Marr (accepted) ... 831 0 0

Warne, J. (accepted) ... 103 0 0 Paddon ... 88 13 0 Gasfitter's work:— Winn ... 48 0 0 Christian (accepted) ... 40 13 0 Steadman ... 40 0 0

STAFFORD.—Lycæum Theatre improvements, Martin-street, Stafford, for the Committee of the Mechanics' Institute. Mr. George Wormal, architect:— Accepted tenders:— Building and decorating:— Moss ... £435 0 0 Upholstery and mirrors:— Sproston ... 48 19 0 Gas:— Gardner ... 37 6 0

Total £521 5 0 STRATFORD, E.—For the erection of 12 houses and a shop, Leyton-road, for J. Dowsett, Esq. Mr. J. W. Brooks, architect, 2, Railway Approach, London-bridge, S.E.:— Cullum ... £3,675 Sheffield and Prebble ... 3,483 Cardoza ... 3,404 Reed ... 3,225 Charlton and Mansell ... 3,180 Smith (accepted) ... 2,850

STRATFORD, E.—For fire brigade station at Stratford, for the West Ham Local Board. Mr. Lewis Angell, architect:— Rivett ... £576 Charlton and Mansell ... 560 North Bros. ... 550 Norton and Sons ... 417 Sheffield and Prebble ... 375 Hart ... 325 Judd and Hawkins (accepted) ... 287

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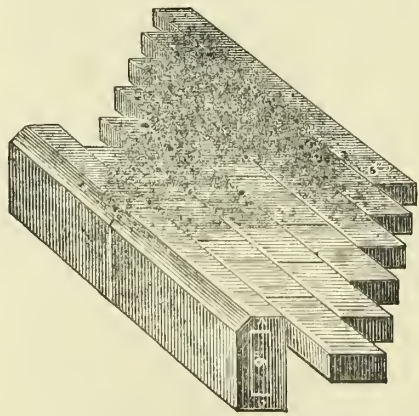
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THE BUILDING NEWS.

LONDON, FRIDAY, OCT. 26, 1877.

BUILDING AT CHELSEA.

STILL true to its tradition, the modern architecture of Chelsea is a revival of the old Classic of the 17th century, and the visitor seems to realise the old "Chelchey," which Stow describes as "a town not large, but graced with good well-built houses;" or be can imagine the aristocratic Chelsea of the days of Charles II., so graphically described by Macaulay in his history, when it possessed a college for the theology, and when Wren had built its well-known hospital. Proceeding up the river the steamboat passenger, as he passes in front of the advancing wings of that old structure of pristine English Classic, sees an extensive row of large, new-built red-brick houses fronting the river, and recalling in their features the style of the Stuarts. We have thought it worth while to jot down a few remarks on these new buildings, which present more than usual interest to the architect. Few travellers by the river boats passing Chelsea can have failed to have noticed also a block of bright red houses in a massive vernacular style of brick, with narrow windows, small panes, and white sashes, putting one in mind, but for its spick-and-span freshness, of the old brick farm-houses and town residences of William the Third's era, with their tiled roofs, white-painted dormers, and sturdy English unimaginative plainness. We seem only to want the periwigs, laced coats, or spreading hoops of the time. There is an almost Dutch look about this building, yepeled "Old Swan House," which has been erected from a design of Mr. Norman Shaw, A.R.A., the drawing of which attracted much notice in this year's Academy, and a view of which we gave in the BUILDING NEWS, Vol. XXIII., p. 592. Now, it is an executed reality we can speak of it in more decided terms than we did in our review of the drawing in the Royal Academy. It has perhaps lost a little by realisation; the front oriels of the first floor have a rather flat look, and appear to be rather crushed by the overhanging stories of red brick above, with their picturesque narrow sash windows, and octagonal bracketted oriels. With this exception, Mr. Shaw's picturesque combination is highly telling. He has at least, as we have had occasion to remark before, displayed a wonderful and almost captivating *naïveté*, which strangely contrast, with another example to be spoken of by and bye; but we realise the best and most pleasing grouping when viewing it from the western side. It seems indeed a pity its author had not selected this point of view for his drawing. The group of buildings looked at from this direction is far more striking; we see the canted end, which forms so pleasing an object from the embankment opposite Cheyne-row, with its white lofty pedimented and galleried dormers, while the octagon-ended bay and square masses unite with the front and form a highly agreeable *ensemble*. The diversity of the two treatments is well kept in subordination; the plain lofty chimney stacks help to separate them, and to break the roofs, while the dormers set back with their white balconettes, and the deep cove of the cornice of the western block, do not embarrass. A closer inspection reveals other qualities; the moulded features are exceedingly quiet and devoid of grotesqueness, and there is nothing far-fetched. The three oriels below the sills have dados of carved parge-work, in which are characteristic ornaments of bold design in relief, but the ground story looks dwarfed under them. Indeed one failing quality is

the want of proportion observable in the east part of the block, and the disconnection of the horizontal lines of the two structures. The interior has been treated in the same spirit, the wall papers are rich of subdued Queen Anne patterns, and we notice rich coved side recesses in blue pattern tiles within the centre oriel. This story contains the drawing-room, which extends the whole frontage. Of the plan we may say that it shows a skilful adaptation of the space, and that artistic ingenuity has been evinced. The frontage towards Cheyne-walk is of red brick, treated in a massive style, without ornament or breaks, and the redeeming point of this *rechauffé* of an old style is to be found in the honest working out of plan, and the avoidance of fritter. Adjoining Swan House are two plots, the first about to be occupied by a large house, to be built by Messrs. Gillow for Mr. Holt, who has a large collection of Japanese art at Bethnal-green; while on the second a house is to be built for Mr. E. Armitage, R.A., from Mr. Norman Shaw's design. Next we come to a house being built by Messrs. Lucas and Son, of St. James House, Kensington-square. It has a plain front, with square bay, surmounted by a well-moulded red-brick cornice, with dentils returned at each end. The architects are Messrs. Goldie and Child. The materials are stock and red brick. A few yards farther down the embankment we come to a second batch of houses by different architects. Messrs. Gillow and Co., of Oxford-street, are building, for speculation, three or four large residences, the peculiarity of which consists in recessing, so to speak, above the ground floor, the bay windows, which are canted—that is to say, the canted returns are obtained inside by setting back within the frontage line of wall. The effect is striking, if not agreeable, but we fail to see any advantage of the plan, as the square parts must interfere with the main intention and value of a bay window in such a front—namely, that of getting side views up and down the river, and the angular recesses made are perhaps questionable. The end or return house has its corner canted, the entrance being obtained in front in an angular recess. The ground story has the entrance on one side in the square bay, and an arcade of two arches unites it with the adjoining entrance. Within this two-arched screen are the windows, arranged in two lights to each arch; the centre mullion, which forms also the outer pier between the arches, rather awkwardly, we should say, interfering with the side views from the windows. The arches are elliptical, and have keystones, and the centre pier sustains a deep-red Mansfield corbel, which helps to carry a balcony to the first floor windows. The houses have already reached 3 stories, and a well-designed red brick dentil cornice runs round the top. The windows are plain, with moulded jambs and segment heads, the recessed bays and arcades being executed in red bricks, and the square bays in stock. The exteriors are not far enough advanced to enable us to judge of the result, but what there is evinces taste and some refinement. There is evidence of a judicious blending of material, the red brick is not scantily applied, but appears to preponderate over the stock work, and the work is at least removed out of the category of commonplace. There is a rather clever treatment of cast iron in the dormers to imitate plaster—that is to say, if we can honestly make one material represent another. Lifts are provided. There are five reception-rooms and ten bedrooms. The lease is for 85 years, and the ground rent is £90.

We next come to a block of three houses. The first is unfinished, and presents nothing striking except that its windows and arches are slightly set within the stock brick front,

and enclosed within a moulded brick reveal. A projecting window and balcony, upon large corbels of tasteless design, occupies the centre of the front. These corbels are bolted down to an iron plate some 6ft. below. The architects are Messrs. Bodley and Garner, of Gray's-inn; and Messrs. Gillow are the builders. Following is a front, displaying an agreeable front of red brick, with a tile roof treated in a somewhat dignified and monumental manner. It has a centre canted bay window to the first floor, which, in the upper story, sets back on the straight, and is emphasised by three brick pilasters and a high pediment of brick, enclosing a carved tympanum of the same material. On each side are narrow wings with single lights, and the ground floor has a square centre bay of the same width as the octagon-fronted one above. A red sandstone cornice runs above the bay of first floor, above which the façade is treated as an attic with the usual members. Though there is nothing particularly original in the composition, the design is bold, and partakes of the Italian, with the breadth of treatment of the seventeenth century brick style. The architect is Mr. Arthur Blomfield, M.A.

But the most interesting house of this group is that built for Sir Percy Shelley from the designs of Mr. Joseph Peacock, of Bloomsbury-square. We have here a building conceived in a Late phase of Gothic, with a decided touch of Elizabethan. Externally it presents towards the river a wide frontage, broken by an ornamental gable, with octagonal bay window in front, and from two angles project oriels of different design. The building is isolated, and every advantage has been taken of the fine views its situation commands. The west angle has a square oriel placed angle-wise upon a stone-moulded corbelling, with weathered stone capping, and the east angle has an octagon-shaped oriel of two stories, also corbelled and capped with a conical roof of stone. The materials are red brick in the walling, with a liberal use of Tisbury stone in the windows, dressings, and cornices. There is a low stone porch of semi-Classic character. The roof is tiled. The interior of this residence is more than ordinarily sumptuous. The entrance on one side is through a vestibule, with a flight of steps at its inner end, the ceiling of which is enriched with cross beams of pitch pine varnished, on ornamental cut brackets. Ascending the steps we reach an inner hall, transversely placed, from which we enter the front reception-rooms, a dining-room of handsome proportions, and a drawing-room; the latter having the octagon-angle oriel, previously described, commanding a view down the river. It would be difficult to convey to the reader the costly workmanship of these rooms. The windows are executed in cherry-wood; the linings, mullions, elbows, backs, and jamb mouldings being entirely of that material, finished in the highest style of joinery, and polished. In the dining-room the window, a flat bay, occupies the entire end of the apartment; the whole being finished in polished cherry; the shutters and wall linings being framed in small panels of various proportions, enriched by beautifully executed stop chamfering and moulded edges. Few could realise, without seeing, the labour and finish bestowed in these window finishings, which, despite certain incongruities of design, are models of joiners' work. The builders, we understand, are Messrs. Lathey Bros., and great praise is due to them for the execution of these features. The octagon oriel at the corner of the drawing-room is a *chef d'œuvre* of artistic finish. A circular-framed dado in small panels, each elaborately worked by hand, supports the moulded and polished mullions, above which is a flat ceiling, with radiating

panels of the most delicate design entirely of polished cherry-wood—the very acmé of the joiner's skill. This oriel, indeed, may be pronounced unique. The two upper rows of lights over the transoms are filled with subjects in grisaille glass in rich tints, and the circular dado is surrounded by a low seat. The doors are also framed in small panels, with stop-chamfered edges, and are surrounded with flat incised and moulded edged architrave members, framed with intersecting ends, in what we may call the "prettiesque" type of Victorian Gothic. Opening from the drawing-room is a small conservatory behind. In the hall there is an arch of pitch pine separating the staircase from the front hall. This is segmental-pointed, with pierced tracery, spandrels, and panelled soffit—the outer mouldings of which die against splayed jambs. The stairs, of two flights, are of pitch pine varnished; the stair soffit is of the same material, panelled; and the walls are lined with panelled dado. On the first floor a centre shaft of the same material divides by a double arch the landing from stairs. We first enter the smoking-room over the drawing-room; here we have the angle oriel made a useful feature and lounge—the woodwork being of pitch pine, simply varnished. The visitor here is struck by the corners of the room being filled with what appears to be fancy pieces of furniture or whatnots, but which are part of the appointed fixtures. In one corner is an unique circular-shaped cigar stand, with dish for tobacco, and shelves for pipes, &c., with glass panels. The fireplace is of the Queen Anne type and simple—scarcely in unison, however, with the other parts. Entering Lady Shelley's room or boudoir we find similar kinds of furniture fixed to the walls for paintings and bric-à-brac. In the corner is an angle bay, square on plan, which forms a pleasing lounge, and commands an extensive view up the Thames. But what are the lessons to be learnt? Exceedingly elaborate and rich, we confess there is a want of unison and purity in the design; the ceilings seem to mar the furniture; the cornices are neither Gothic nor Classic in some of the rooms, but a peculiar kind of mixture; the profuse stop-chamfering and notching is offensive, and inharmoniously blends with the semi-Classic features; the linen panelling is quite out of place in rooms whose ceilings are plain to a degree, and where the cornices run up against the woodwork in the most awkward manner, and the woodwork exceedingly nice in parts, seems to quarrel in style. We cannot fail to observe a want of care in combining and harmonising. For such costly fittings panelled ceilings were demanded, and parquetry borders to the floors, and we think a great deal of labour has been injudiciously lost. Architects, we know, have to suffer for these blemishes from the tastes and whims of their employers, and we are fain to think the architect in this case is not answerable. Those who visit Chelsea will do well to obtain, if possible, a glimpse of this house, and after that pay a visit to Swan House, where the extremes of architectural taste may be met with, where the devotees of two styles, which cater for popularity, have employed every device which art can bestow to enthrall the eye, and where the two opposite tastes of the day may find ample gratification. To the close observer of architectural taste and its constantly shifting tactics, the contrast will be interesting as indicating two very opposite art policies.

BOAT AND CLUB-HOUSE COMPETITION AT PUTNEY.

THE Thames Boat-house Company are about to erect a boat and club-house at that favourite boat-racing locality—Putney. In response to their advertise-

ment, seventeen designs have been sent in, from which a design by Mr. H. Townley Sugden, architect, of Buckingham-street, Strand, has been selected by the committee. We have made an examination of the designs which were on view last Monday at the Star and Garter Hotel at Putney, and the result of our notes we now lay before our readers. The conditions were for a boat-house, club and committee-rooms, besides steward's and secretary's apartments, a refreshment-bar, and the necessary conveniences, the cost being limited to the rather low sum of £1,500. The design selected for the premium of £25 by Mr. Townley Sugden bears the motto "Stroke." We are not prepared to say it is the best design in an architectural point of view, but we must unhesitatingly award it a high place for the essential requisites of appropriateness and economy. Looking round the room of drawings, we confess that only two or three of them are capable of being realised for the sum named, and we find the majority of competitors have boldly estimated the work at a more reasonable figure. The plot of ground faces the river, and the plans generally show a boat-house on the ground floor, averaging an area of about 70ft. by 60ft., with the club-room, bar-saloon, and residential apartments above. The author of "Stroke" shows on ground floor a boat-house of 72ft. deep and 60ft. wide, with four entrances in front, and divided into four parallel bays or divisions by iron columns, with a row of four windows at the end. On the left side, a small projection is obtained, the front part being a lobby-entrance and staircase to the club-room, &c., on the first-floor, and the back portion being utilised for w.c.'s and urinals. On the right side, a similar projection contains the steward's apartments, entrance, kitchen, bedrooms, &c. The first-floor has the club-room and committee-room, occupying the entire front, behind which is a middle landing or hall, forming the chief entrance to the club-room, a lounge and bar with counter, and the stores, with lift, at the right-hand side. In the rear of these is a large dressing-room, leading from the other side of hall, and at the back a lavatory. The dressing-room is well-lighted at both ends over roof of boat-house. The principal entrance is thus kept distinct from the boat-store, and a flight of stone steps in easy flights gives access to the club-room; the steward is well located to exercise command over the building, and the lavatory and conveniences appear to occupy positions that would least interfere with the chief apartments. The elevation towards the river, shown by a pen-and-ink sketch, is simple, a covered balcony on iron pillars being carried round the front and return sides to the projections, above the roof of which the club-room is lighted and ventilated by a row of clerestory quatrefoil-shaped lights. Four large windows, and two end windows, with casements and mullions, open on the balcony, which is about 10ft. wide. The interior is weak in design. The club-room, with its balcony, forms a span-roofed building, and the dressing-room behind another parallel range, between which the landing, bar, &c., are covered by a low lean-to roof. The estimate is £2,000, and the plan exhibits economy with a careful study of the requirements. Another plan by the same author, motto, "Bow," has a very similar arrangement below, a club-room 45ft. by 22ft. above, the only apparent difference being that the steward's rooms are got above the club-room in front, partly in roof. The treatment is plain brick, with a curved roof, and red terra cotta is introduced as frieze panels above the club-room windows. Taking the other designs, we may briefly describe their peculiarities. "Stroke Oar" is the motto of a rather feeble attempt. The club-room

is 45ft. × 22ft., with balcony opposite towing-path, a committee-room at end, a steward's room, bar-room, lavatories, and dressing-room at back. The estimate is £1,700, and the material is yellow stock and red stock dressings with tiled roof. The elevation with two end hips and centre gable, has a tawdry effect. A design exhibiting some study and artistic merits is signed by Mr. E. L. Swatman, of Wimbledon-common. The boat-house—68ft. 6in. × 58ft. 6in.—is divided into parallel rows by iron pillars, with sheds 58ft. × 19ft. in rear; on the first floor is the club-room, 44ft. × 30ft, a committee-room at the left-hand corner, behind which is the secretary's room and landing of stairs, with a bar. The dressing-room, &c., is behind. The author places the principal entrance and stairs to club-room on the left. Red brick and half-timbering are combined somewhat picturesquely, but we might easily imagine we were looking at a country school-house with gables, the corner tower adding to this impression. Another design, with motto "Stroke," in a Queen Anne style, is shown by a vigorously drawn ink perspective, its salient features being a large centre bay window, carried up above the eaves as a dormer, and a lofty gable at one end cut up a good deal. The plan shows a very confused idea of the requirements. "Economy" is a well-considered idea, expressive of a boat-house, and simply treated. The boat-house, with four entrances, occupies the entire area of ground floor, and forms a brick basement to a superstructure of iron, concrete, and wood. The club-room is 44ft. × 23½ft. along the front, with a balcony treated simply. The hall and bar are in the centre, the steward's rooms, dressing-room, and lavatory being in the rear. The author has worked out his estimate of £1,576 very carefully. He shows that a boat-house 8ft. high, at 6d., of this area, would cost £364; but if the walls are not plastered, and the floor is of concrete, it may be done for 4d. = £576. He works the club-room floor out at £1,274. The roof is shown mainly as a flat of concrete and iron adapted for seats to view races from. The iron columns of boat-house are utilised by collars to hold the boats. The design is half-timbered, and has a tower over entrance. "Well Considered" sustains its motto in the plan, but its elevation, conceived somewhat after the stock pattern of a waterworks station in an Italian style, with flanking campaniles over the entrances, is an expensive idea. The ground-floor space is 72ft. × 60ft., and is divided into nine rows of stands for boats and sculls; above is the club-room, 45ft. × 26ft., with centre bar, dressing and steward's rooms behind, and secretary's on the right side. On a second floor at the back the rooms for steward are obtained, and the front space or flat roof over the bar and club-room is intended for grand stand for race-days. A bracketed balcony surrounds the front and return sides. A sliding partition is shown between club and committee-room, which we deem a desirable arrangement. The bar is perhaps too large, and the campaniles over side staircases are useless. There is a pretentious and monumental character in the design which is beyond the requirements of the Boating Company at present, and much beyond their proposed expenditure. "Luff" is a timbered, ornamental, and highly-tinted design with two flat gables, in a kind of fancy pleasure-garden style. It shows three stories, but the plans are expensive and uneconomical. One of the most picturesque and pleasing designs is that of "Go." The boat-store is 71ft. × 41ft., and does not occupy the entire width of land. Along the left side is an entrance-hall, a staircase, a steward's room, &c. The boat-house is divided into three rows of stands, with three entrance-gates in front, and one

centre one at back, with end windows. On the first floor, the club and committee-rooms are in line, the bar-saloon is in the centre, lighted from side lights, and having its independent stairs. The steward's apartments are in the rear, but we do not see any separate entrance. This floor is of stud-work of Memel framing, the boat-house forming a red-brick basement, with bracketed posts, and verandah along the front. The entrance stairs and steward's rooms are pronounced externally by a high gabled end. There is, perhaps, too much of the domestic type about this design to suit a boat-house, but the timbering and detail exhibit good taste. Estimate is £1,985. "De Mieux Je Pense en Mieux," estimated at £3,500, is artistic, but has too much of the Domestic Gothic character to please us, and it might be mistaken for a rectory or a residence. A monastic air pervades the narrow slit-like openings of the boat-house, the massive red-brick walling and timbered gables, and the corner oriel and roof. In plan, the store is divided into two sheds, 72ft. x 22ft. 6in., each, with octagon stairs at the side. The club-room is placed the wrong way on the left side, the stairs lead to the balcony in front as well as to the club-room, through which latter the bar is reached. The external and independent stairs to balcony is judicious, but we object to the separation of committee and club-rooms by the passage between them. The other rooms appear ill-planned. "Charon" is another villa-like building, shown by a coloured perspective. The boat-house is divided into three aisles or racks. The serving-bar and stairs are contracted and awkward, the winders in the latter being sufficient to overthrow the plan; style, Italian. Design, with "Architect" for motto, has a plain treatment, not without character, of red brick with dormers and tiled roof. The boat-house is canted at corners with four ranges of racks, and side entrances and stairs. On first floor are the club and committee-rooms, with a narrow passage to bar, a dressing-room with lockers, and a washing-room behind. In a second floor the steward's rooms are placed. "Enterprise" has more the appearance of a grand stand from the poor-etched drawing which accompanies it. The boat-house is in four ranges, with a narrow stairs to club-room and bar, the latter being lighted through the former. Another misconception is "Cincinnatus;" it reminds one uncommonly of an engine-house; the stairs are ludicrously small, the bar is equally so, and the arrangement ill-considered. "Isis" (in triangle) is little better; the bar-room is contracted, and is lighted through steward's room. Besides the requirement of a convenient boat-house, the points of most importance in selecting a suitable plan are—1st, an independent and easy approach to the club-room and balcony, so that ladies or visitors may use it, and the best mode of doing this is obviously to project the entrance and staircase, or make it form an ornamental feature externally. We believe a separate access to the balcony would be found useful; 2ndly, the bar should be conveniently placed near the landing and club-room, with a serving door in the latter; 3rdly, the dressing-room, lavatories, &c., should be well-placed, but not obtrusive, in the rear, or at the side, and be well-lighted and ventilated, and have lockers for the "jerseys" and other dress occasionally left by the members; 4thly, the steward's apartments should have a separate entrance and a private stairs, and his room and stores should be as central as possible, to enable him to control the wants of the club; lastly, the club-room should be near the committee-room, and be well-lighted and ventilated by upper lights in the roof or above the balcony-roof. We think, also, the conveniences should be placed outside

the building, if practicable. Externally, the building should express its use—it should make the boat-store, club-room, and balcony the main features; the stairs should be pronounced, and the treatment should be dictated by adopting the main features of the ordinary boat-shed and stand. A massive basement, as a boat-house, in brick, may be surmounted by a brick and timber superstructure of a lighter design; the balcony should be spacious, well-supported, and covered by a roof, and an additional stand for race days seems to be an essential auxiliary. It would be absurd to adopt the features and style of a dwelling-house or villa, and it appears to us the shed type, with balconies on the front and sides, might be architecturally adapted, so as to render the building a pleasing object from the Thames, and worthy alike of the club and the boating community. We shall illustrate the selected design.

COMPETITION DESIGNS FOR BOARD SCHOOL, HOVE, NEAR BRIGHTON.

WE have deferred giving the results of the competition for the Ellen-street Board Schools at Hove till we had made an examination of all the designs that had been sent in. The collection on view on Wednesday and Thursday last was an interesting one. The plans, as a rule, display considerable merit, and the selecting committee must have had a task that required some judgment to perform with impartiality. As we stated in a recent issue, the special committee appointed to consider the thirteen designs have selected, as best adapted to meet their requirements, the design with the motto "Mens," the authors being Mr. Thomas Simpson, of Brighton, architect of the School Board in that town, and Mr. Frederick W. Roper, of Adam-street, Adelphi. As might be expected, this decision has caused some opportunity for dissent, and there appears to be a strong feeling that justice has hardly been meted out evenly. However this may be, let us at once disarm those who entertain the idea that favouritism has influenced the scales by saying that this design, if not perfect, yet so closely fulfils the required conditions that the most biassed competitor must admit it possesses considerable merit. But let us take the plans in the order of hanging, and confine our attention to points of importance. These may be briefly enumerated, as convenience and separation of the entrances for the infants, girls, and boys, ample hat and bonnet space and lavatories, easy staircases, division of departments, lighting and ventilation, arrangement of desks, &c. We may just recall to our readers' minds that the instructions required a school for 150 boys, 250 girls, and 400 infants; two class-rooms to be provided for boys, three for the girls, and two for infants, with playgrounds, and a careful study of ventilation and light, besides other requirements of the Education Department as to rows of desks, &c. The site is a long parallelogram, facing Ellen-street, 200ft. in length by 44ft. in depth. In looking over the plans we were agreeably struck with the care which the authors, as a rule, have shown in calculating the areas of their rooms, and in giving the dimensions and other particulars. "Hova Villa et Hova Ecclesia" is the first design we note. The author provides two blocks of buildings, one for infants, one story high, and the other adjoining it of two stories for boys and girls. This arrangement is open to the charge of being rather uneconomical. The infants' large room is 63ft. by 22ft., with a recess for galleries; the class-rooms are 17ft. by 20ft. each, placed as a projecting wing at one end, with entrance and cloak-room in the angle. The babies' room projects on the east side, and is 37ft. 6in. by 25ft. The author works out

the area per child at about 8ft., or rather over. On the west side stands the other block raised on an arcaded basement, which forms a covered playground. The block plan of the general building is somewhat the same. The girls' school is on the first floor, 62ft. by 22ft., and is well lighted, has dual desks, and three class-rooms, two over the wing adjoining the infants' school, and one over the other wing. The entrances and lobbies are large, with a mistress's room near, opening from school-room. The area per child is stated as 10ft. The boys' school is on second floor, over the girls', with class-room at each end, the entrance to both these departments being obtained in the arcaded basement. The plans are well got up, with clear statement of areas, &c. We notice also a master's room near lobby, with conveniences attached. Size of school is 43ft. 6in. by 22ft. Externally the design is in the London School Board style, and shown in a well-prepared line elevation, the features picturesquely handled. "Compact" shows a rather confused ground plan. The girls and infants are in one two-storied range to the right, and the boys on the left; the entrance to girls and infants are at one end; the infants' school has a gallery recess and two groups of desks, the two class-rooms being in front, on each side of a projection of the infants' room. Coming to the first floor we find the girls' school-room over the infants', 65ft. by 22ft., in three groups for forty each (dual system), lighted at back and ends, with fairly planned class-rooms. We do not like the awkward protrusion of infants' school recess behind, shown in back elevation. The drawings are carefully prepared and worked out. The style is Queen Anne, shown in a large coloured elevation, and a detail of gables; but it is bad architecture to place the red-brick angle pilasters to gable on the pipping quoins of ground story. There is, we think, a tawdry use of yellow and red stocks in quoins. A detailed table of areas, cubical contents, &c., accompany this set. We next come to "Mens," which the committee have placed first. We mark a compactness of plan and a well-considered distribution of the departments. The authors found nothing to restrict them as regards site, and have wisely adopted a symmetrical disposition. As the infants numbered 400, and the girls and boys combined, 400, the authors have met this by giving them each a floor of the same area, the infants being below and the girls and boys on the first floor. The plan is a long rectangle, with end cross-wings; the infants are divided into two, the larger room being 46ft. by 22ft., with end galleries in front; a babies' room behind, 29ft. by 17ft.; and another, for advanced infants, 38ft. by 22ft., is placed at the left end, also with a babies' room. The entrance is in the centre at the back, with babies' cloak-rooms, lavatories, &c., right and left. The girls' and boys' entrances are at the extreme ends in the rear of the building, the girls and boys passing through the arcaded stories of the two wings, which thus form playgrounds below and class-rooms above. The stairs are in short flights. Cross-ventilation is adopted by having lights over the lavatories, the height of the ground floor being 16ft. A class-room for thirty advanced infants is arranged at the western end, and well-lighted galleries are shown. Covered ways lead from the back doorways to the conveniences in the yard. We consider the breaking up into two sections of the control of 400 infants a desirable point. On the first floor is the girls' school, 62ft. x 22ft., for four classes or 130, with the cross-wing divided into two class-rooms about 20ft. square, and another at the west end of the same width as school, each accommodating 40 pupils. The remaining end of this floor is devoted to the boys' school-room, 33ft. x 22ft., accommodating 70,

the two class-rooms being arranged in the end cross-wing, as on the girl's side. The conveniences are compact; a kitchen for teaching girls cooking is provided in the rear, easily approached from either stair or school-room. The ground floor being 16ft. high, a mezzanine floor is obtained for the master and mistress, below the cap and bonnet-rooms respectively of the first floor. These additional rooms have separate lobby-entrances. Externally, the authors have adopted a long frontage in a quiet expressive Queen Anne style, with slightly projecting wings; the middle portion is broken by four gabled windows of red brickwork, which rise above the eaves' line, each of which has two lofty segment-headed lights the tympana of the gables being ornamented with carved and moulded brickwork. These dormers project slightly from the front of the first floor, though they are flush with the wall of the ground story, a moulded brick cornice separating the two stories. The wing-gables are broken, but devoid of grotesqueness. Their lower portion is arched with semi-circular arches, the space being utilised as playing grounds and lobby approaches. We notice in the section the panels below the first-floor windows are pierced, and fresh air is introduced through vertical flues over the heads of the children. Boyd's ventilating stoves are also introduced. The material is picked stocks, the wall faces being relieved by quoins, dormers, and strings of red brick. An almost equal division is preserved, and an external balance in the elevation has therefore suggested itself. We have described the features of this design in detail, for the benefit of those who have not seen the drawings. Cost is estimated at £6,000. "Fleur-de-lis" contrasts rather noticeably with the last in style—a kind of Victorian Gothic—the elevation being highly coloured. In the plan, the author has chosen a symmetrical disposition. The boys' school is on one side, and the infants' on the other, the girls' forming a centre two-storied block with centre entrance. The infants are in two divisions, junior and senior, the large room being 60 × 25ft., with a smaller one, 45 × 16ft., running crossways, and forming half the centre block. The boys' division, on the left side, is a corresponding wing, 60 × 22ft., with end entrance, lobby, and class-rooms at each end, the babies in the rear part of centre. The infants' and boys' schools thus form one-story wings. Covered playground and approaches are formed at back. The centre tower over girls' porch, with curved cupola, has a screw ventilator. Boyd's grates are proposed, and the set of plans are well detailed. Another well-studied plan is that with motto "Salome." The blocks are arranged with a centre and two cross-wings. The infants' entrance is in centre, the girls' to the left, and the boys' to the right. A centre lobby from the infants' entrance leads to right and left wings respectively for senior and junior infants. This centre is made a projecting feature in elevation, and contains hat and cloak room, lavatories, &c. The junior school-rooms are each 41ft. 6in. × 21ft. 3in., the babies' and class-rooms being made projections at each end. The girls' school for 130 (61 × 22ft.) is placed over the larger half on the left, and the boys', for 80, over the right part of the building. Three dual groups are shown in the girls' schoolroom, and the rooms are, perhaps, rather over-lighted. A mistress's room is arranged at one end from stair lobby, and a master's corresponding on the boys' side. The Gothic is poor and vapid, and the elevations are weakly tinted. The plans indicate ingenuity, however, and the author is the only one who shows hollow walls. We next come to a design, "Spero," with infants' school arranged in a confused

way. The girls and babies' entrances is at the left side, under covered approach, but with a tortuous access to junior infants' school. Boys enter at right side. The class-rooms are straggling and disconnected. The upper floor is far better. The boys' school is for 90, its end class-rooms forming a projecting wing on the right. The girls' school-room for 130 (66ft. × 22ft.), forms a parallel front range to the left, but set farther back, with projecting class-rooms at end. Mezzanine floors are provided for cloak-rooms, teachers' rooms, &c., under the stair lobbies, which are arranged in the angles made by class-rooms with school-rooms. The tinted elevations show a Jacobean treatment in red brick, expressive and feelingly rendered, though rather cut up in front, with expensive roofing over the latrines and yards at back. The playgrounds are in front. Another design, "Griffin" (Messrs. Holford and Clayton, of Brighton), places the infants' school for 240 in one long range in front, and the junior infants' at the end in a receding wing to the right—the advanced class being at the other end. The school-room is 88ft. × 22ft.—too long for management; it is lighted on both sides, and has galleries in three groups. The boys' school is placed over the double advanced infants' classroom in the left wing; the girls' school-room is over the large infants' room and wing on right, with entrance in the rear of the latter. The other entrances are, for the infants, in front of right wing, and for the boys at the side of left wing, and are narrow and wasteful to our minds. The elevation of a Gothic character, with red brick arches, but the design might have been better. "Intersecting Triangle," in circle, is the motto of an elaborate set of drawings. In one of the alternative plans we have a long infants' school for 400, in one range, with end class-rooms as cross-wings, and two others behind in centre. The entrances are at the back, the boys' porch on left, the girls' on right side. No. 2 plan shows a reversal of this arrangement, the entrances being turned towards the south. There is a carefully-planned first floor arrangement. The boys are located over one end—the left—and the girls over the other part. We prefer the elevation to that in plan, No. 1. It is a well-balanced composition, with long front and end wings, treated classically, in a Jacobean spirit, with high-slatted roof and broken-end gables. The elevation of No. 2 is more intricate in parts, but still pleasing, with a double gable in centre. The elevation is feelingly drawn and coloured, and large details are sent. We cannot approve, however, of the front blocks of latrines between the wings. Another set, with "Intersecting Triangles" as device, divides the infants' school into senior and junior departments, each with two galleries for 60. The infants' entrance and mistress's room are in the centre, with the babies' room detached behind; this is undesirable. The class-rooms are at end. The girls' and boys' entrances are on right and left, respectively, as large porches. The first floor seems well grouped, and the boys' and girls' divisions are well lighted. The master and mistress's rooms are provided over the porches, and near the lobby and stairs. A mezzanine floor for cloaks, &c., is obtained. The exterior, in a mechanical-looking, stereotyped species of Gothic, is not improved by the ugly bell-turrets over porches. "Fiat," in triangle, is an imperfectly-finished set of plans. The infants' department is divided, but a large useless lavatory is placed as a centre apartment, and entrances as well. The class-rooms are arranged in wings. The upper plan is much better, the boys being on the left and girls on right. The author has at least a good idea, but he has not worked it out with care. The elevation is common-

place Gothic, of a stereotyped school type, with red-brick arches and strings. Another arrangement is shown in which all the departments are in one story, the infants' school being placed transversely, and dividing the boys from the girls. There are three front entrances. The plan is clever, and the author is the only one who shows an acceptable single-story arrangement. This elevation is broken by gables and a *fleche*, and is happier. "Lux" shows a confused-looking plan, arranged more after the Lancasterian principle, in which the infants are placed in a room, 59ft. by 40ft., transversely arranged. The entrances, cloak-room, kitchen, &c., form a projecting block on the right, and a smaller gable projection on left is arranged as classroom and boys' entrance. On the first floor the boys and girls are over the infants' school, divided by a centre wall, with three stacks of fireplaces back to back; thus each room is lighted entirely on one side. A straight-arched style of Gothic is adapted, shown in effectively-tinted elevations, with half-hipped dormers. Last of all we come to "Fiat Justitia in Loco," a single-story arrangement. Here the author arranges his school and class-rooms in parallel ranges, divided by a centre wall. The infants' school is made the centre, and is placed transversely, projecting considerably behind, with gallery recesses. It is a spacious room, but awkwardly planned in the front. The entrances are well located. A babies' room is arranged at the side of infants' entrance hall in front. The girls' and boys' departments are intermixed, the boys being on the right and the girls on the left, but the infants' school dovetails rather undesirably into both sides. The girls' lobbies are wasteful, and there is a decided want of classification. Ventilation has been indicated. The boys' playground is below the infants' school, which rests on an arched basement. The elevations are picturesquely treated, with gabled wings in a Queen Anne spirit; but we cannot see the object of the large tower, striking though it be, which rises over the infants' entrance. A board-room is, we find, obtained in it over the porch. The sections are piquantly handled. We notice a shifting screen is adapted in the infants' school to divide the classes.

Altogether the collection of drawings is creditable to the authors. The degrees of merit between many are very few, and as Brighton is now full of visitors, we hope the designs will receive their fair share of attention. The plans show a considerable development of school architecture, for which we are indebted chiefly to Mr Forster's Education Act, and to the scientific classification and systems of building brought into notice by the efforts of the School Boards. It is obvious to any one who takes the trouble to look at plans of this sort, that the system is beginning to dawn on England that schools must be planned and built for children of varying age and sex, in lieu of trying to squeeze children into buildings of inadequate design.

THEORIES OF RESISTANCE.

IT is amusing to see how scientific theorists, in certain well-worn branches of construction, borrow from and repeat each other in the elaboration of new theories. Engineers, as a rule, have to deal with subjects that are pretty well exhausted, yet we are constantly seeing a fresh *réchauffé* of some well-understood principle. Few subjects have admitted of diversity of treatment to a greater extent than that of the resistance of materials. Every now and anon we have a paper on the subject viewed in a new aspect, but virtually throwing little or no light on the question. There are in all these instances two classes of readers—those who read to learn, and those who read

from an interest in the question, or to pick up anything new. For the first large class, comprising all students, we can only say the value of these speculative essays is small, as we would much sooner advise the young architect or engineer to study Tredgold, or Barlow, or some recognised compilation of their labours; while to the other class who are seeking for extended investigation, the results of experiments have more value. In *Van Nostrand's Magazine* a paper by Mr. William Kent, M.E., discusses the "Relation of the Resistance of Materials to Transverse Stress to their Resistances to Tension and Compression," a matter that has received a great deal of attention lately. Mr. Kent alludes to a paper by Mr. John D. Crehore, in the same magazine for August, in which that writer gives a formula for transverse stress, and adduces experiments to prove its correctness. Mr. Kent has found that Mr. Crehore's formula for the relation between transverse resistance and tensile and compressive resistances is substantially the same as the one discovered by himself about two years ago, and communicated by Prof. Thurston to the American Society of Civil Engineers. That formula assumed that resistances vary each way from the neutral surface proportionately with their distance from that surface. For a beam fixed at one end and loaded at the other, $M = \frac{1}{2} RBD^2$. The values of the modulus of rupture, R , being as under:—

Cast Iron. Wrought Iron. Ash.

R (theoretical) ... 32,280 ... 60,000 ... 12,120
R (experimental) ... 35,000 ... 60,000 ... 12,000

In this formula B represents the breadth as unity, D the depth of beam. The author remarks the true theory of rupture by transverse stress has probably never yet been given; and the conclusion that the sum of the moments of compression is equal to the sum of those of tension has been disputed by some writers. A complete theory, says the writer, must include the effect of the "flow" of the material after it has passed its elastic limit, and this will modify the proportionality of resistance to the distance from the neutral axis for every material. The author next, in referring to recent theories, mentions Mr. D. K. Clark's theory given in his "Manual for Mechanical Engineers," called "diagonal resistance," a theory which he says "is far from being a correct theory." We believe we were the first to take exception to the theory alluded to, in noticing Mr. Clark's otherwise excellent treatise. Since Galileo's time the true theory has been a doubtful question, but it seems to us that the hypothesis of equal resistances above and below the neutral axis cannot be set aside so readily, and that the proportionality of resistance varies with every material; or, in other words, the neutral axis accommodates itself to the nature of the material under stress. An equilibrium of the forces must take place—a point where the extending and compressing forces neutralise each other.

THE ANNUAL REPORT OF THE SCIENCE AND ART DEPARTMENT.

THE twenty-fourth annual report of the Science and Art Department of the Committee of Council on Education has been issued. A substantial increase during the year 1876 in the number of schools examined in scientific knowledge is reported—the total number being 1,426, containing 57,988 children; and the results of the examinations are generally of an encouraging nature. The number of competitors for Whitworth Scholarships was 51, and of these 19 were admitted to go forward to the examination in practical workmanship. The facilities for advanced scientific instruction afforded by the Royal School of Mines, the Chemical Schools at South Kensington, and the Royal College of Science, Dublin, continue to be appreciated.

Under the head of the Art Division it is stated that, during the year 1875-6, 36 students in training to become art teachers, and 16 national scholars in training to become designers or art workmen, received allowances to enable them to study in the school and the museums, 20 students were admitted on payment of half fees, and 100 others, including the

students in training, the national scholars, and 21 men of the Royal Engineers, received gratuitous instruction. Three students in training were appointed to masterships in schools of art. New schools of art were established during 1876 at Bolton, Elgin, and Plymouth. The total number of schools of art in operation throughout the kingdom was 141, and the total number of students therein 27,973. The annual increase in the work done in these schools continues to prevail. At the annual examination in April, 1876, 17,069 students submitted 122,553 drawings or models. The number of works selected for the National Competition was 1,230. The number of students in art night classes was 31,158, in 883 classes; 3,797 of these passed the examination of the 2nd grade, 663 obtained 2nd grade prizes, and 465 obtained prizes for works sent up for inspection. In 3,335 elementary schools 450,961 children were taught drawing, and 331,348 were examined at the annual examination in March, 1876. At the examination of school teachers in training colleges 609 obtained certificates for drawing. The grand totals of persons taught painting, drawing, or modelling through the agency of the Department, during the past three years, were as follows:—In 1874, 345,382; in 1875, 449,689; and in 1876, 530,412.

At the South Kensington Museum the acquisitions by purchase during 1876 were more numerous and of more importance than usual. Among them may be noticed the very interesting collection of Japanese pottery formed by the Japanese Government for the Museum, and first exhibited at the Philadelphia Exhibition. Among gifts and loans, the collections of drawings and books bequeathed or presented by the late Mr. Forster, Mr. William Smith, and Sir Digby Wyatt, and the Athorp paintings lent by Lord Spencer, some articles of gold and silver plate belonging to the Barber-Surgeons Company, and a reproduction in plaster of the Tabernacle in the Church of St. Léau, near Brussels, are amongst the most noteworthy additions made to the collection of reproductions. The Special Loan Collection of Scientific Apparatus, which was visited during the year by 275,813 persons, is referred to at some length. The purchase of oil and water colour paintings during the year was confined principally to works required as examples for study. Some valuable drawings have been bequeathed to the museum by the late Mr. William Smith, a fresco painting was presented by Mr. J. F. Austen, and some oil paintings by Baron de Ferrieres and the late Mr. S. Redgrave. The system of circulation of art objects among provincial schools and museums has been kept up, but not, it would appear, in anything like a sufficient response to the demand. Very few books have been bought for the National Art Library during 1876, but several handsome donations are recorded. The total number of readers was 24,033. Courses of public lectures were delivered during the year by Mr. Ernst Pauer on the Pianoforte, and on the Human Form and Ornamental Art by Mr. Bellamy and Dr. Zerff. The total number of visitors to the museum during the year was 1,173,351. The Bethnal-green Museum has also marvellously increased the number of its visitors during the year—938,794, as compared with 416,696 in 1875; but the exhibition of the Prince of Wales' Indian presents probably accounts for many of the new comers.

BOOKS RECEIVED.

House Drainage, by M. Ogle Tarbotton, M.I.C.E., C.E. (London: E. and F. N. Spon), is a cheap and most useful guide to the regulations which should be observed in the drainage and water supply of town and country houses. The author, who is the well-known borough engineer of Nottingham, has turned his long experience to valuable account, and has given us a reliable and simple manual, which should be read and kept by everybody. Five sheets of illustrations accompany the pamphlet, in which are shown the evils of the old system of drainage into cess-pits without disconnection or ventilation, and the methods by which the same may be remedied, together with various details of house drainage and sanitary appliances. Mr. Tarbotton's book is, and will, in

our opinion, long remain one of the best handy guides to house drainage published. It ought to sell by thousands.—*A Handbook for Young Brewers*, by H. E. Wright, B.A. (London: Crosby Lockwood and Co.), is a popular but scientific outline of the art of brewing, combined with some directly practical hints on points of importance. We are not competent to express an opinion as to the technical value of the information, but the author seems familiar with his subject, and expresses himself clearly.—*Building Societies, not as they are, but as they should be*, by Samuel E. Platt (London: E. W. Allen), is a very sensible inquiry by an actuary of building societies into the operation of building societies as at present managed. The author comes to the conclusion which, it was generally agreed, was arrived at some years back after an exhaustive correspondence on the subject in the pages of this journal—viz., that the interest charged to borrowers is, in nearly every society, too high, and the consequence is, that not half the business is done that might be done by them. A prejudice does undoubtedly exist in the public mind against building societies, and no one who really knows anything about the matter can assert that borrowers are fairly dealt with. The interest is not only too high, but it is almost invariably calculated in such a manner as to render it almost impossible for the borrower to know what rate he is paying at. The result is, want of confidence, decline of business, and ultimately a reduction of interest to the investing members. Building societies generally are just now in anything but a flourishing condition. There are, of course, exceptions. Some of them are unable to continue the issue of subscription shares, nearly all have large capital lying idle, which the most persistent advertising fails to float, and only those who have managed to add other business, such as banking, to their original work, are able to pay anything like a good return to investors. We believe, with Mr. Platt, that a new society established in London on fairer principles betwixt the society and the borrower, would receive a very large amount of support, and would effect a salutary work for the whole community.

CHIPS.

The foundation stone of a new wing to the Mechanics' Institute at Jarrow was laid last week. Mr. Edward Shewbrook, of Newcastle, is the architect, and Mr. John Smith, of Jarrow, the builder.

A new church, to accommodate 150 persons, is approaching completion at Nether Silton, Yorks. The altar rails are carved from part of the timber of the old Dreadnought.

Mr. Facon, architect, of Mexborough, has been instructed to draw plans for a new Board School of three departments, with master's house, for that town.

The foundation stone of a new convalescent hospital, at Belfast, was laid on Thursday week. The architects are Messrs. T. Jackson and Sons, and the builders Messrs. H. and J. Martin.

The restoration of Christchurch, Warley, near Brentwood, which is fast approaching completion, was celebrated by the builder, Mr. Hammond, of Warley, by giving a dinner on Saturday week to the workmen engaged on the job; Mr. W. Cudby, foreman of works, took the vice-chair.

The footpaths of Barking, Essex, have just been tar-paved by Messrs. Wright and Sheardown, of Great Queen-street, Westminster.

The tender of Mr. Lewis Shrubsole, amounting to £4,900, has been accepted for the erection of a school and residence for 40 boys at Westgate-on-Sea.

Mr. Waring has been appointed deputy county surveyor of Glamorganshire.

Works of restoration and repair are being carried out at St. Mary's Church, Ely, by Mr. Brown, builder.

The organ in Bridport parish church has just enlarged and improved by Mr. Vowles, of Bristol, and the organ case altered and decorated in gold and colours so as to harmonise with the prevailing tones of the stained windows in the church, by the Brothers Grant, of Frome.

The parish church at Bolton, recently restored at a cost of £65,000, has just been further enriched by the addition of a reredos from designs by Messrs. Paley and Austin. The material used is English oak, elaborately carved, the panels being filled with painted subjects. The carved portion was entrusted to Mr. Roddis, of Aston, for execution. The cost of the whole work was £1,200.

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ILLUSTRATIONS.

HOUSE AT DATCHET—MR. J. O. SCOTT'S DESIGN FOR THE NEW KENSINGTON VESTRY HALL—SECOND PREMIATED DESIGN FOR NEW SPA BUILDINGS AT SCARBOROUGH—"BUILDING NEWS" CLUB DESIGNS FOR ESCRITOIRE, STAIRCASE, SOFA, AND EASY CHAIR.

OUR LITHOGRAPHIC ILLUSTRATIONS.

HOUSE AT DATCHET.

This house is erected for T. E. Howe, Esq., by Messrs. Haward Bros. of Old Quebec-street, from the design of Mr. F. P. Cockerell. The walls are of concrete, the dressings are of brick. Boards were used for the casing of the concrete, instead of any of the patent apparatus. This method offers the advantage that the casing being adjusted to the brick dressings, and the latter not being enclosed in it, their projection offers no difficulties, and the smearing of the brickwork by the cement or the concrete avoided. The surface decoration consists of rough cast in plain panels, with the cement margins, and here and there an incised pattern. The house being placed close to the water, the plan is arranged with special reference to the enjoyment of the views up and down the river, without exposing the principal rooms to the glare of the sun from the water, or to the sight of the numerous passers-by. A principal feature in the S.E. front is a spacious and deep verandah, with a lead flat above. The verandah is paved with marble mosaic by Messrs. Burke and Co. The interior of the house offers no special features worthy of notice.

SCARBOROUGH SPA.

Our illustration this week is the preliminary sketch submitted in the first competition for the above by Messrs. S. Crosby, Hetherington, and George Dale Ourer, A.R.I.B.A., architects, of Carlisle. Their design was one of the four chosen for final competition, and eventually their elucidated drawings were placed second by the referee, Professor Cockerell, and awarded a premium of 60 guineas. The ground plan explains itself. On the first floor, over the refreshment-rooms, were placed an exhibition-room, suitable also for small concerts, and a reading or newspaper room. Over the kitchen department at the back were placed the keeper's residence. An important point in the "instructions to architects" was to provide largely-increased promenading space, and it was suggested that this should be done by throwing back the building an average of 20ft. Messrs. Hetherington and Ourer, however, for reasons of economy, and also as their scheme was to adapt, as far as possible, the existing buildings and foundations, and to avoid cutting into the cliff, met this condition by removing the tower and extending the present promenade to the south in the direction of an estate adjoining, belonging to the company, and divided by a tramway, with a view of opening out this estate to meet future requirements. They also suggested to form a quadrangle at this end by enclosing a portion of the sands, as shown on the plan. The winter garden or covered promenade was considered by the architects a most important accessory to the Spa, for the following reasons:—1st, by prolonging the season; 2nd, by rendering the Spa independent of wet weather; 3rd, economy in working expenses. The area of the concert-hall was not proposed to be permanently seated, so that in wet weather, by throwing open the door

between the winter garden and concert-hall a fine indoor promenade was provided. Another feature in Messrs. Hetherington and Ourer's design is the flat roof over the buildings, being easy of access both from the Cliff-bridge and the Esplanade above for Bath-chairs, and commanding a fine view of the sea and all around. The buildings present an extensive frontage to the sea of over 400ft., and are designed in harmony with that portion of the old building designed by the late Sir J. Paxton. The cost of carrying out this scheme was estimated by the architects at about £38,000.

KENSINGTON VESTRY-HALL.

We have already published one of the most notable designs* prepared for the new Vestry-hall, Kensington, and to-day we publish another, consisting of two illustrations of Mr. John O. Scott's design, which, under the motto, "Kensington," was awarded one of the premiums by the official referee, as will be seen by the award which we published at the time. The selected designs of this report were, however, set on one side by the committee, and others chosen. Mr. Scott's design has already been very favourably spoken of in our review of the whole series, leaving nothing to be said here excepting perhaps the author's description:—"The style is Classic, with a studious avoidance of so-called Queen Anne Barbarities."

BUILDING NEWS 'CLUB DESIGNS FOR ESCRITOIRE, STAIRCASE, SOFA, AND EASY CHAIR.

We illustrate this week a selection of designs contributed for a hall staircase, an escritoire, a sofa, and an arm-chair, the critical remarks on which appeared on pages 327-8, on the 5th inst.

SCHOOLS OF ART.

AYR.—The annual distribution of prizes to the students of the Ayr School of Science and Art took place on Saturday, at the Assembly-rooms, the walls of which were hung with selections from the works executed during the year. The report showed satisfactory progress. In the science classes 60 papers had been wrought, and 50 passed—18 first and 32 second-class. In art 28 students obtained full grants. The number of art students (who are under the tuition of Mr. Black, of Kilmarnock) had been greater than in any previous year.

BROMLEY.—The annual distribution of prizes to the students of the Bromley Science and Art Classes took place last week. The report stated that there were 61 art students, and 44 presented themselves for examination, 19 being industrial. 23 passed the examination, and obtained certificates (double the number obtained last year), 12 with the remark excellent. Work for competition had sent up 36 students as against 28 in 1876, with the result of 1 third-grade and 5 second-grade prizes. Two obtained the full grant of 15s. each for the teachers. The amount awarded for the work of the others, was £5 17s. Three science classes were taught during the session. Four local prizes had been presented to the industrial students who passed with the remark excellent. Prizes had also been given to the students who obtained the highest number of marks in the chemistry and mathematical classes.

NORTH LONDON SCHOOL OF ART.—The Lord Mayor presided on Monday evening at a meeting held for the purpose of presenting the prizes gained in the classes of the North London and Hackney School of Art. The annual report, recorded the continued prosperity of the school. Opened nine years ago with a roll of 17 students, the attendance had progressively increased until last year the numbers reached 276. The present year showed a slight decline, but the increased income of the school might be taken as an evidence of greater regularity of attendance, and this was reflected in the additional number of honours earned. It was a matter for regret that a considerable disproportion existed between the number of students attending the art classes and those who devoted themselves to the technical and scientific subjects of the course. Whilst there were 250 in the former, only 30 had entered for the science classes.

* BUILDING NEWS, September 28, 1877.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LIVERPOOL ENGINEERING SOCIETY.—This society held its usual fortnightly meeting at the Royal Institution, Colquitt-street, on Wednesday evening, the president, Mr. C. Graham Smith, A.I.C.E., in the chair. Mr. C. J. Tisdall, B.A., read a paper on the "water supply of large towns," in which he laid before the meeting—1, the geological and hydrographical features upon which the supply depends; and 2, the means adopted for drawing water from various sources. After briefly alluding to various historical waterworks, the author proceeded under the first head to point out the qualities that must be possessed by water for domestic use, and then showed from what sources a supply of suitable water might be procured. The chalk, lower greensand, and red sandstone formations were considered at some length as water-bearing strata—the two former in relation to the supply of London, and the latter as a source of supply for Liverpool. The chalk undoubtedly contains an unlimited supply of good water, but wells sunk in it have often proved to be unproductive, owing to the presence of faults. The sandstone around Liverpool is peculiarly permeable, and acts as a vast reservoir, containing an enormous quantity of good though rather hard water. At present about 6,000,000 gallons per diem are procured from the red sandstone for the supply of Liverpool. Under the second head artesian, reservoirs, and other wells were considered, and the principles upon which they are constructed explained. In conclusion the author described the formation of filter beds, and the manner of using and cleaning them.

SUSSEX ARCHEOLOGICAL SOCIETY.—The autumn excursion of this society took place on Wednesday week, when Forest Row and the ruins of Brambletye, near East Grimstead, were visited. In a meadow at Forest Row the proceedings of the day commenced with the inspection of a cist discovered near a streamlet in September. It is of sandstone, 4ft. 6in. in length, by about 3ft. 6in. wide, and was embedded in charcoal. Within it, when dug up, were some bones and lime, but the former crumbled to dust. Mr. Slack said the cist was one of the Romano-British period. One or two of the bones had been preserved and one had been identified as part of a sheep's trotter—an anatomical revelation which provoked much laughter amongst the members, who, after some discussion on the alleged Roman custom of placing burial cists near streams, proceeded to Brambletye, where the ruins of the old house of the Compton family were examined, and addresses were given by the Rev. W. Powell and Mr. G. Somers Clarke, jun., of Brighton. The latter speaker drew attention to the plan and arrangement of the premises, which seemed to have been rebuilt in 1631. Brambletye House was based on a square, with the main front towards the north. A tall square tower containing small rooms stood at either end of this front, and another tower of which the lower story formed the porch projected from the centre, with a bay on either side. This front was two stories in height. The tower was three stories high, and crowned with square domes of ogee outline—a feature not often seen in the southern counties. The basement of the house was once vaulted, for the springers yet remained in several places.

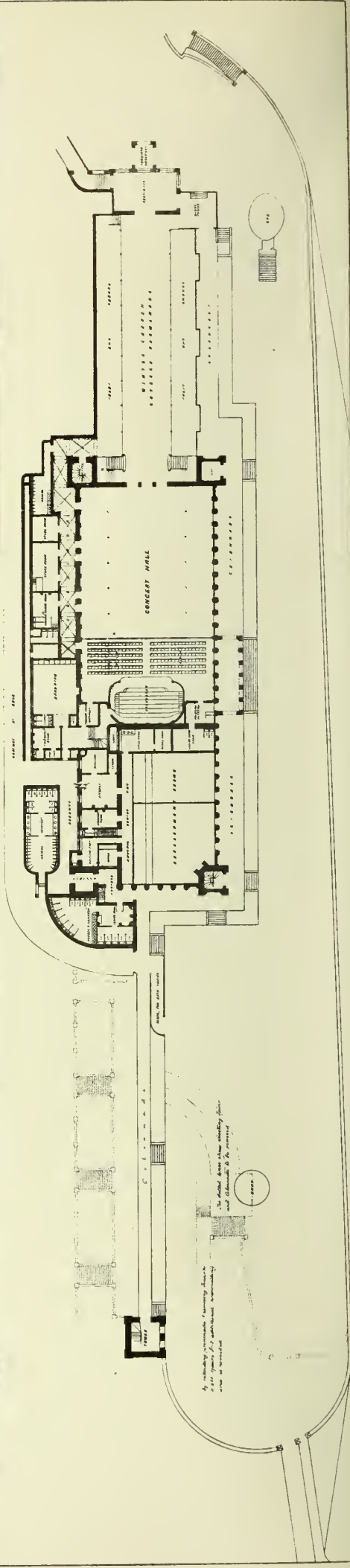
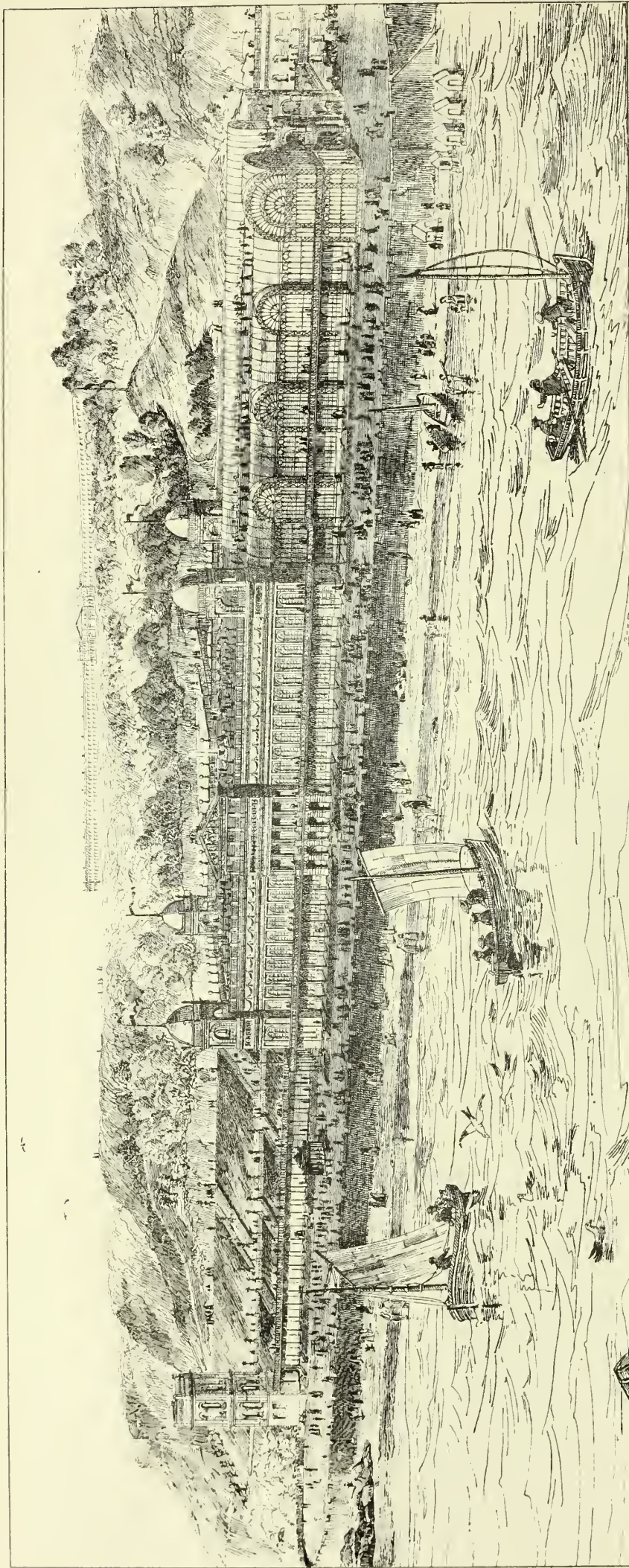
The parish church of Barningham, Suffolk, was re-opened last week after restoration under the care of Messrs. Satchell and Edwards, of 37, Norfolk-street, Strand.

A new reredos has been erected in the Church of St. Barnabas, Bristol, from designs by Messrs. Pope and Paul, architects, of that city.

The Stockton-on-Tees Town Council have elected Mr. James Hall, late surveyor to the South Stockton Local Board, as borough surveyor, vice Mr. Edwards, resigned. There were 91 applicants for the post, to which attaches a salary of £300 a year. Mr. Edwards has been retained as consulting engineer at a salary of £100 per annum.

Mr. Hawes has been elected bridge-surveyor for the county of Norfolk at a salary of £100 per annum. There were 28 candidates for the appointment, which has previously carried with it a salary of but £50 per annum.

THE BUILDING DEWS, OCT 26. 1877.

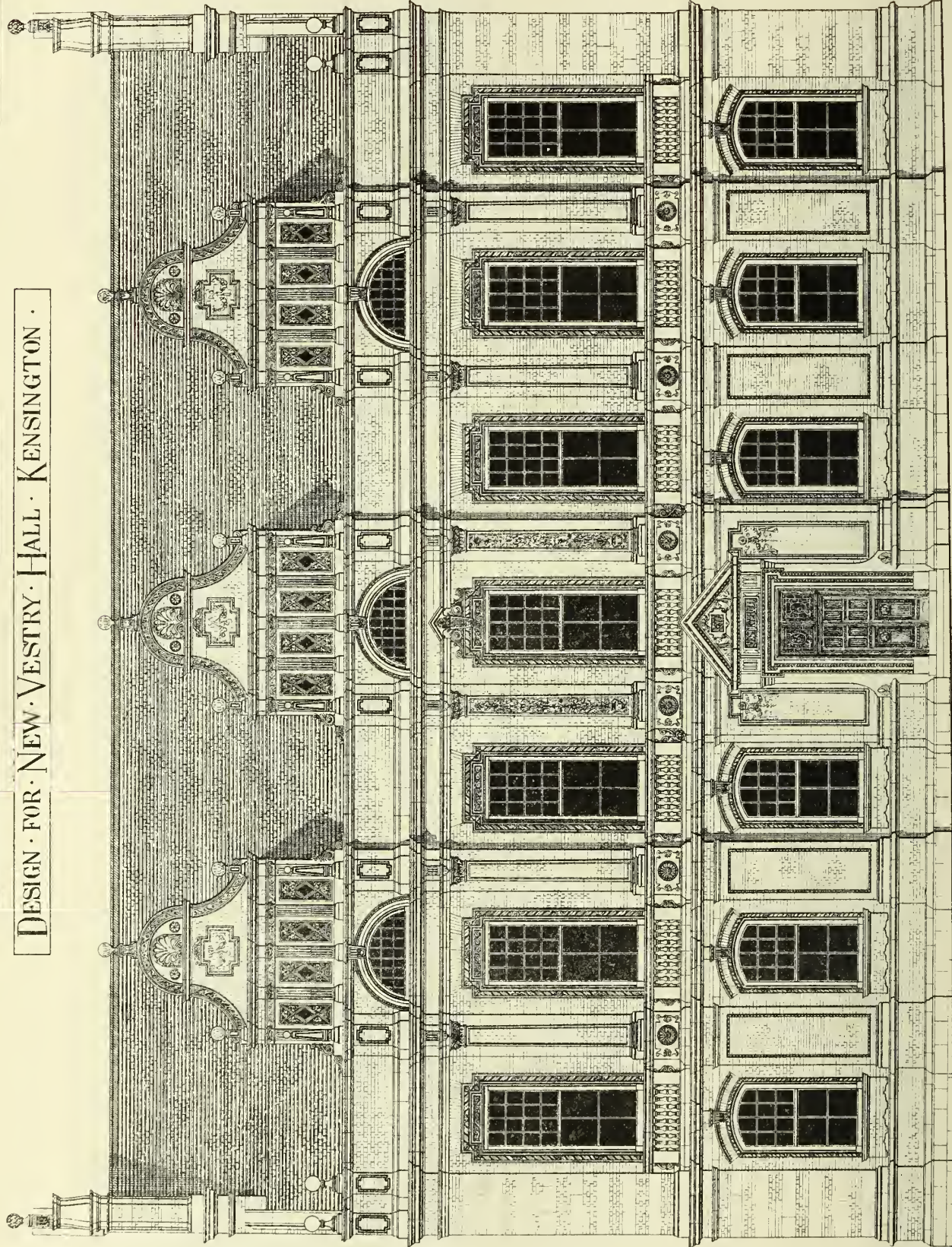


SECOND PREMATED DESIGN FOR NEW SPA BUILDINGS SCARBOROUGH

Photo Lithographed & Printed by James Akerman 6, Queen Square, W.C.

THE BUILDING PEWS, OCT 26, 1877.

DESIGN FOR NEW VESTRY HALL KENSINGTON.



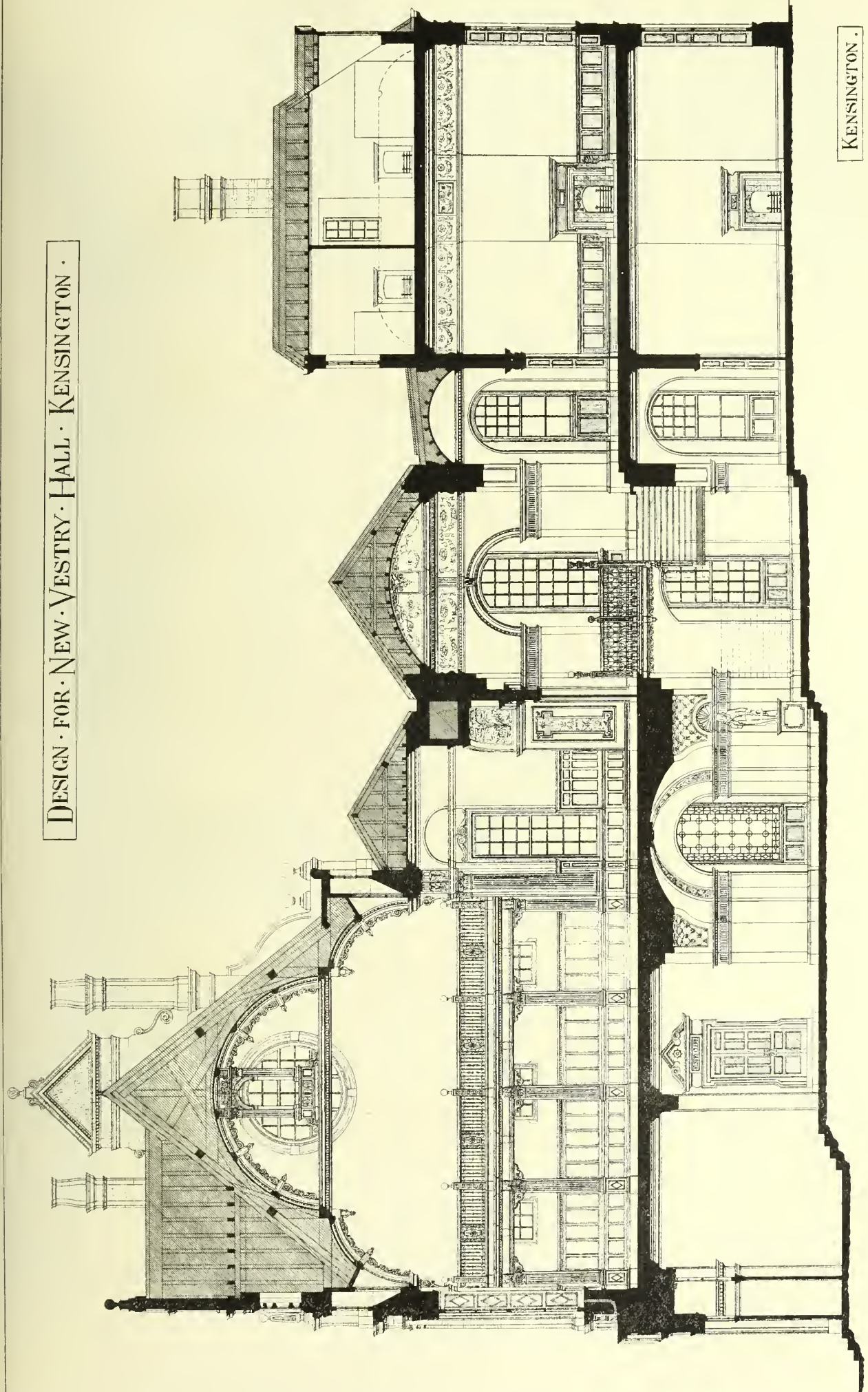
KENSINGTON.

HIGH STREET FRONT.

John O. Scott, Archt.

Photo Lithograph & Printed by James Abernethy, 6 Queen Square, W.C.

DESIGN FOR NEW VESTRY HALL KENSINGTON.



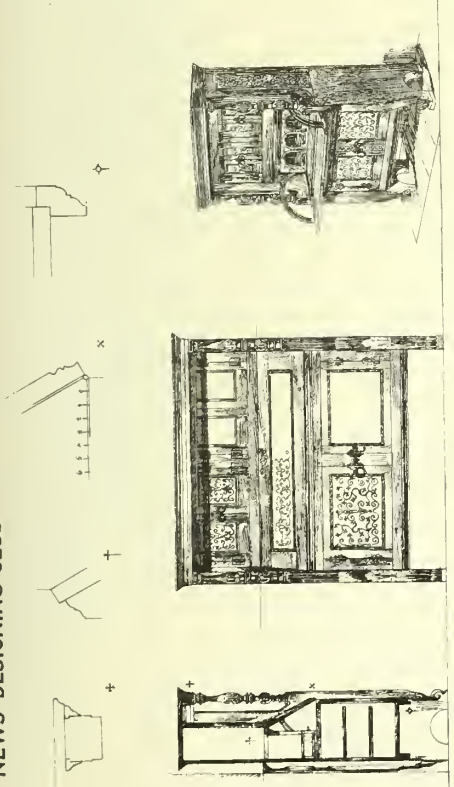
KENSINGTON.

SECTION ON LINE C D

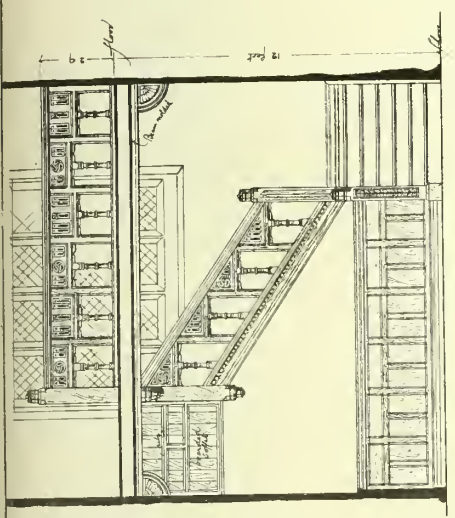


John. O. Scott Arch^{ts}

"BUILDING NEWS" DESIGNING CLUB



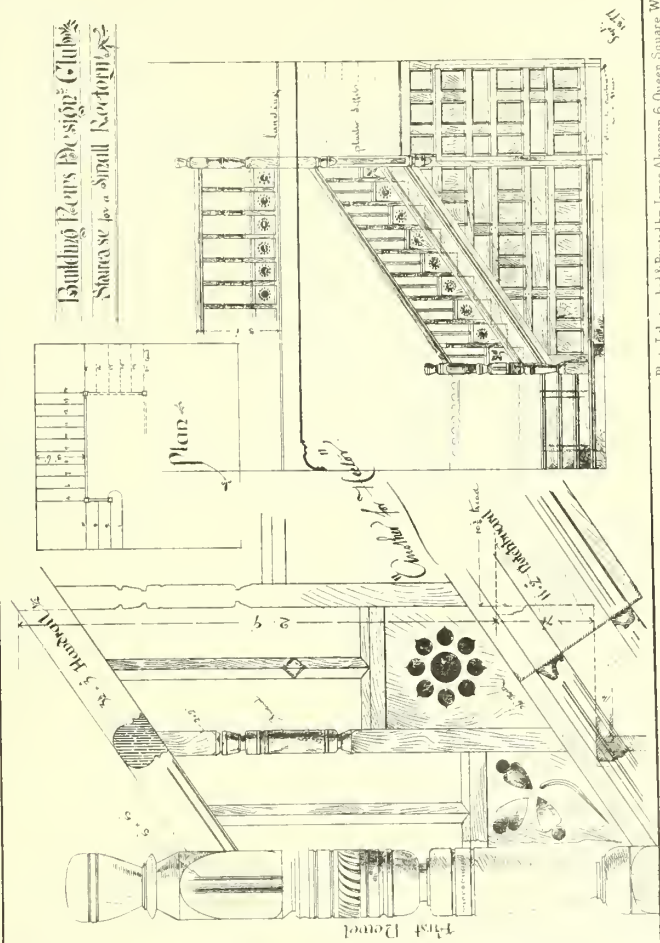
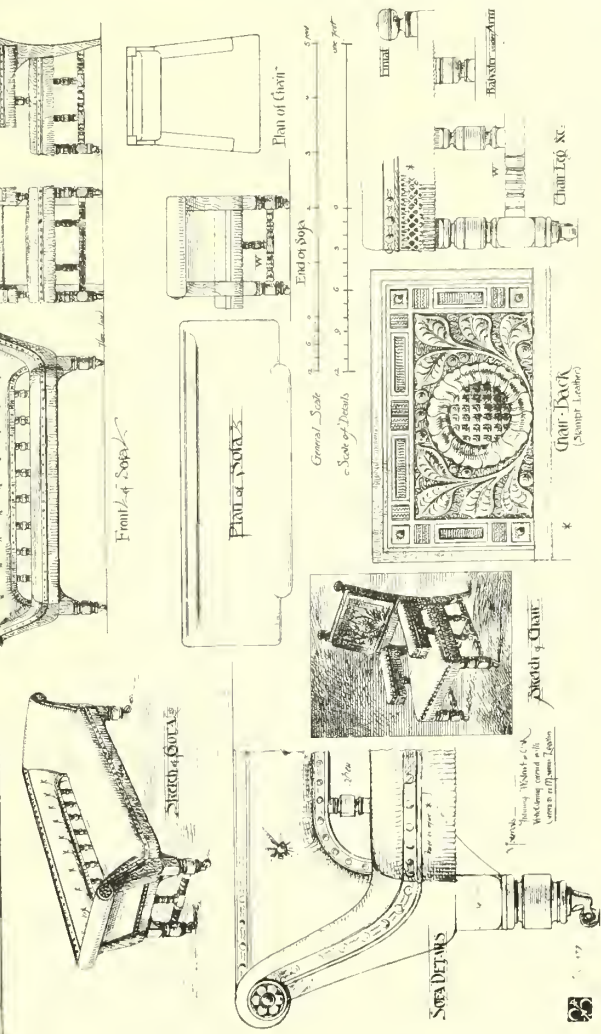
'Building News' Designing Club + An Escorial in Painted Wood



(B) DESIGN FOR STAIRCASE - FOR A RECTORY

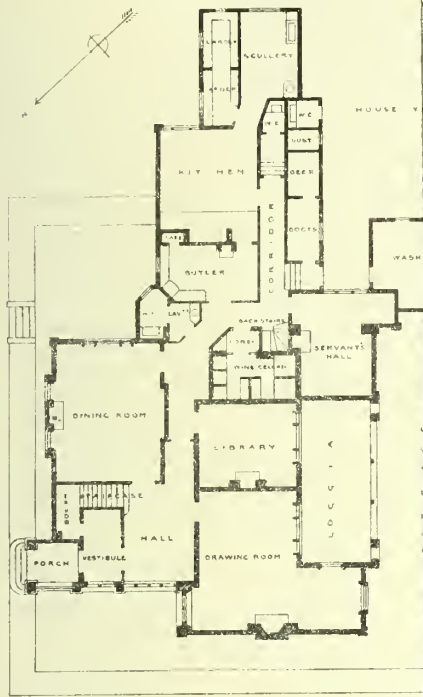
Ground in Green that enough to show the wood - Fillers Claws of Panels Cut with Decorations in height colour

'Building News Designing Club' SOFA and FISH-CHAIR



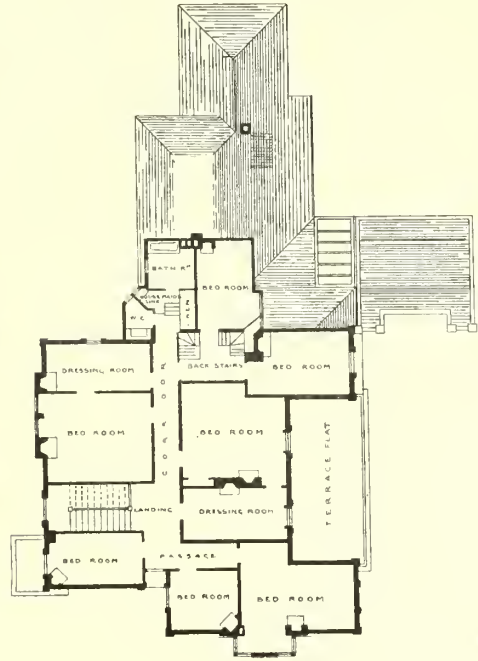
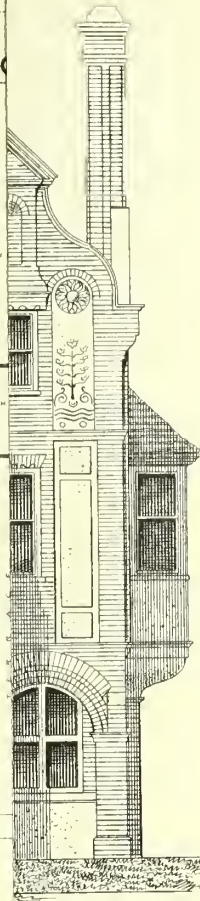
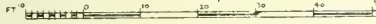
HOUSE AT DATC

BUILT IN CONCRETE & BRICK

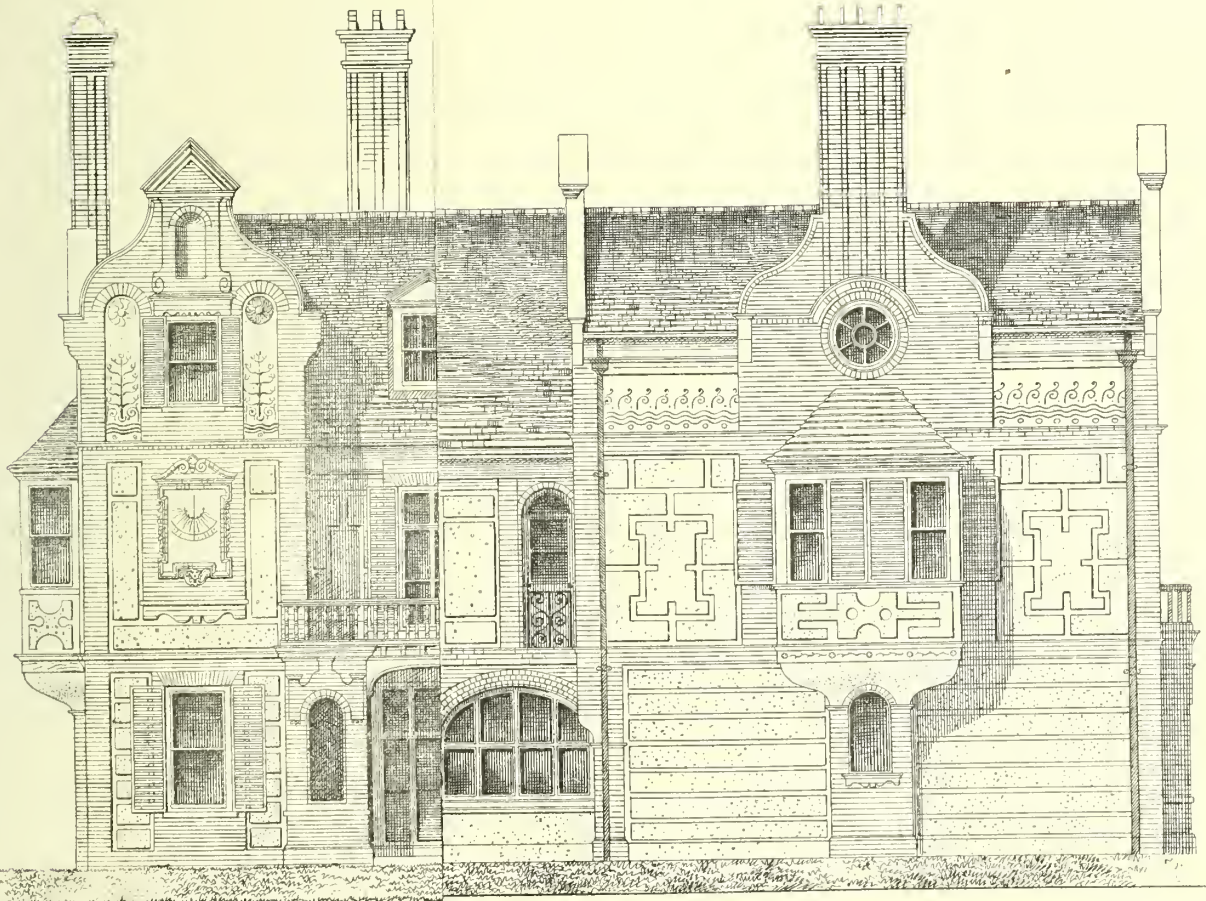


GROUND PLAN

Scale of plans.



FIRST FLOOR PLAN



Side or West Front

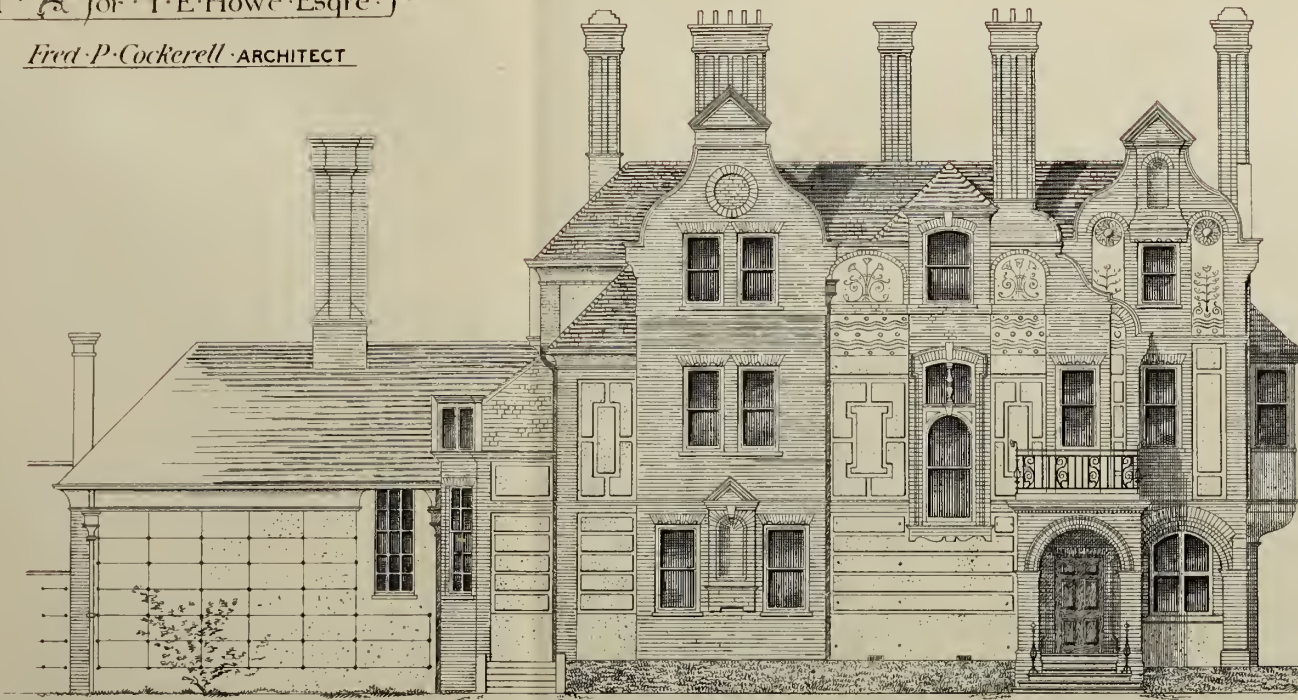
MAURICE S. ADAMS DEL.

50 Feet

HOUSE AT DATCHET for T. E. Howe Esqre.

BUILT IN CONCRETE & BRICK.

Fred P. Cockerell ARCHITECT.



Entrance Front

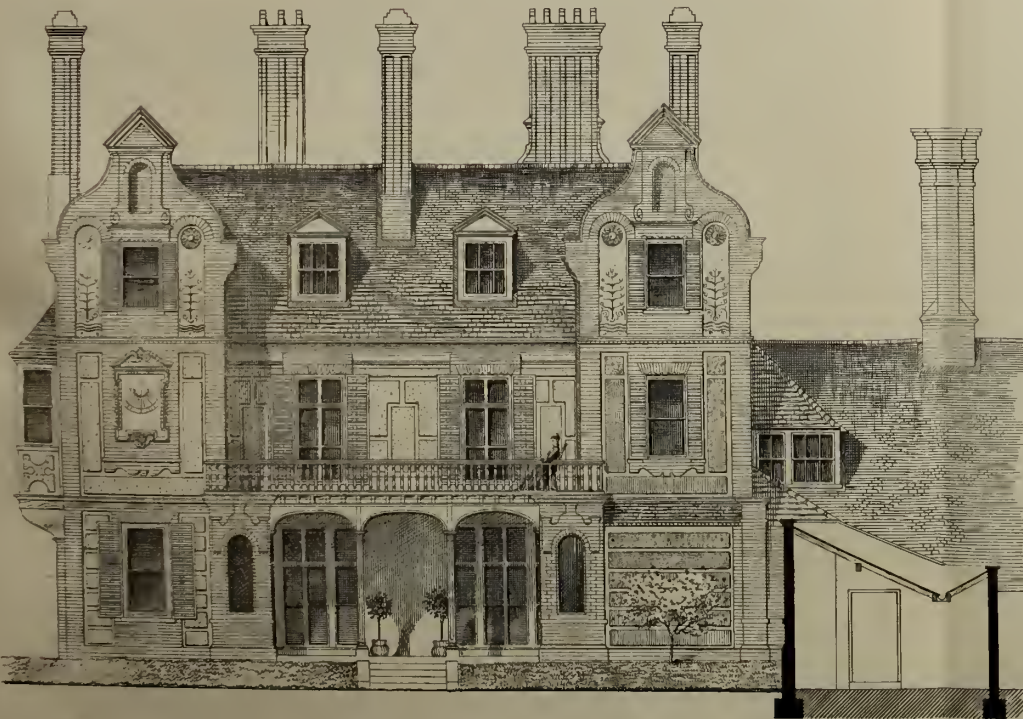


GROUND PLAN

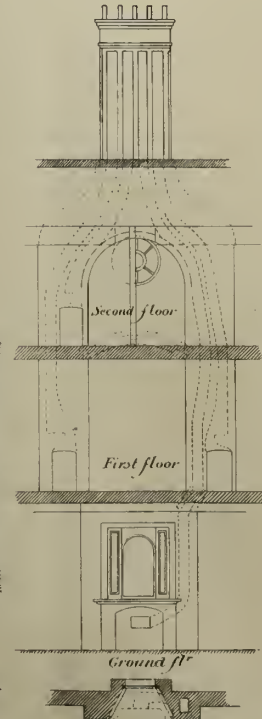
Scale of plans.



FIRST FLOOR PLAN



Garden Front



Section



Side or West Front

Scale 0 5 10 20 30 40 50 Feet

HAUPT & ADAMS INC.

ARCHÆOLOGY AT ST. ALBAN'S
CATHEDRAL.

THE following papers relating to the restoration works at, and recent archaeological discoveries made in, the Abbey Church, and now the Cathedral of St. Alban, were read before the members of the St. Alban's Architectural and Archæological Society at the Assembly-rooms of that city, on Thursday afternoon, the 11th inst.

The first paper, contributed by the Rev. O. W. Davys, M.A., of Hemel Hempstead, was entitled

A GLANCE AT THE RESTORATION WORKS IN ST. ALBAN'S CATHEDRAL, FINISHED, IN PROGRESS, AND TO COME.

We are able to look, and that with no small satisfaction, said the lecturer, upon some reparation works of great importance finished, while those in progress require careful observation, and those to come are of a character so important, in order to restore and complete the noble design of this most magnificent building, that we can hardly hope to accomplish them during this generation; cathedrals took generations to build, and even in these days of hurry the longest of them may well take generations completely to restore. In order to take a view of so vast an undertaking as the repair and completion of St. Alban's it will be necessary to glance at what its original architects intended, and what its restorers ought to keep in mind. I am hardly so sanguine as to suppose that all the plans of St. Alban's can be carried out in our day, though the progress already made may well encourage us; but it is our duty to work on by the guidance of a perfect plan, making every step one forward towards the repair and completion of that design, or rather group of designs, which we have original evidence of. We have, then, in the present church, speaking roughly, the designs of three great architects, Abbots Paul, John de Cella, and say John de Hertford—these without the Lady Chapel of Hugo de Eversden. The first designed, and apparently finished, a vast Norman church, the largest in England; the second, as many Early English architects did, endeavoured to add to the Norman nave a western front of extraordinary beauty; the third, as was the case elsewhere, planned the removal of the Norman apse and sanctuary, and the substitution of the richer work of his own day. To complete St. Alban's, then, you must repair and complete the designs of these three architects. The work of the first is now nearly all satisfactorily repaired; the work of the third needs further external reparation; and as for the western front of the second—one of the most remarkable designs in the kingdom—we can hardly hope at present to get beyond the three western portals, which, though common in France, are, I believe, peculiar to St. Alban's in England. I have heard it said that though St. Alban's, from its vast size, is a very grand building, yet that its form is remarkably ugly. But those who thus condemn the appearance of our cathedral must remember that we have now to look upon a very incomplete building, with sunken roofs, the wreck of a west front, and a presbytery, the lofty clerestory of which looks bare and gaunt without its flying buttresses. Given restored roofs, and a completed west front, together with these eastward additions, and we should have a cathedral second to none in grandeur, dignity, and beauty. I should vote for the restoration of the short lead spire peculiar to this district, which till lately crowned the central tower; we have plenty of length at St. Alban's—what we want is proportionate height, which we should make every effort to obtain. Our principle should be to lay down a plan which can in course of time be carried out, and which we can defend against those anti-restoration gentlemen who wish ancient buildings rather to crumble and fall than to be restored, however tenderly, to the condition which their first builders designed for them. I will now glance at such restoration works as are finished at St. Alban's. We may mutually congratulate each other that up to this time, in all that has been done, no single mistake has been made, and that if the work had to be done over again we could not wish it to be done more successfully than it has been; though our work has been

slow, as perhaps it was better that it should be, it has been sure. At a cost of some £20,000 the great church has been made structurally sound, in its future cathedral position, up to the ancient rood screen. True, the roofs of presbytery and transepts have still to be raised to their ancient pitch, but this can be done at any time when it can be paid for, without any injury to the completed work within. The Lady Chapel, too, through the exertions of the ladies of Hertfordshire, is nearly in a condition to be thrown open to the rest of the structure, whenever the unfortunate pathway which has hitherto cut it off can be carried, as it ought to be, round the outside of the building. When the permanent stalls can be provided, form and appropriation will have to be discussed; perhaps, as canopies are so expensive, it might be sufficient to provide them for the return stalls, and those terminating the principal lines of the western piers of the tower, only using arcading behind the others. With regard to the restoration works now in progress, the tide of repair has now left the eastern portion of the building, and is employed in the care of the nave; the Early English bays of William de Trumpington on the south side have been pronounced to be in a dangerous condition, owing to the loss of those natural buttresses which the cloister and adjacent buildings had originally provided, and some £10,000 was required to preserve and repair this beautiful work. It is certainly a great misfortune that this had to be undertaken, as it is swallowing up funds which were urgently needed more directly to advance the cathedral arrangements; but there is no alternative but to save in its integrity a magnificent nave, and restore to the use for which it is so admirably fitted as the church of the parishioners, for of all great naves this has been one of the best to see and hear in. In repairing it I trust nothing may be done which may preclude the idea of the restoration of such of the adjacent buildings as may be practicable for the use of the cathedral (such as the project for the insertion of windows where none existed before), for we should then leave the principle of repair, which has hitherto guided us, and lay ourselves open to a fierce attack from the anti-restoration party. In conclusion, I trust that it may not be long before St. Alban's is able to put on a distinctly cathedral character; nothing will be grander than the restored choir may be made. At present, looking above its temporary fittings, the structure, with its noble roofs of ancient decoration, is imposing in the extreme.

Mr. JOHN CHAPPLE, clerk of works for the restoration, then read the following paper, termed

A FEW REMARKS ON THE RECENT DISCOVERIES
IN AND ABOUT ST. ALBAN'S ABBEY.

I resume my narrative of some discoveries made in the abbey and its precincts, and of the progress of the works since February, 1876. At that period the contracts for the repairs to the choir and part of the Lady Chapel had nearly terminated, and an interval of twelve months took place, during which time comparatively little research was made. During my absence abroad for about eleven months important changes had taken place. In anticipation of the repairs to the nave it became necessary to excavate the earth on the outside of the south wall of that portion of the building. This was carried out under the direction of Mr. Wood, Sir Gilbert Scott's assistant. The object was to ascertain the state of the foundations and the amount of resistance which they were likely to offer as an abutment to the great system of shoring in the south aisle. In doing this Mr. Wood discovered the bases and parts of the shafts of five responds, built against the south wall, showing unmistakably the position of the forensic or outer parlour. These bases have been preserved, and although new buttresses are now being erected in immediate proximity, care has been taken that the antiquary and archæologist shall have every facility for examining them. Mr. Wood also laid bare some of the foundations of the great south-western tower, which was commenced to be built about A.D. 1208, by Abbot John de Cella, who left the work unfinished for want of funds; and it appears that his successor, Abbot Trumpington, although

he continued the building of the nave, stopped short in the work of the erection of the flanking western towers; the original scheme for that one on the south-west being carried out so far only as the putting in of the foundations and the completion in an altered form of the piers and arch leading from the projecting towers to the south aisle of the nave. The height of work is clearly defined where the one abbot ceased to build and where his successor recommenced. This arch was afterwards made use of as an entrance from the nave to the forensic parlour. The Abbey Restoration Committee have decided to have the buried works of Abbot John de Cella exposed to view. The extreme western bay across the nave and aisles will be excavated to a depth of about 3ft., and a noble flight of steps added in order to ascend to the highest level of the nave. The excavation is also to be continued so as to include the floor of the great western porch where the sedilia and vases for a period of four centuries have been buried. John de Cella's scheme was a grand and comprehensive one, being no less than the rebuilding of the whole west front of the abbey, with its three porches and two great towers; also to rebuild the nave and aisles. For this purpose the Norman work of Paul de Caen, westward, was entirely destroyed, except the foundations, and the rebuilding commenced in the Early English style of these foundations. It had evidently been the intention of Abbot John de Cella to vault this portion of the building, and add flying buttresses to support the walls; but he died, leaving the building unfinished; and his successors completed what had been so grandly designed, and, up to a certain point, so artistically executed. This completion was made at a much less relative cost; not only were the two towers omitted, but also the vaulted ceilings and the flying buttresses. Heavy shoring and trusses are being erected in the nave, with the object of assisting in lifting the roof off that portion occupied by the five western Early English bays. That being done, it will be the next endeavour to force the south arcade, with its triforium and clerestory, to an upright position, it now leaning considerably and dangerously towards the south. After that is accomplished the roof will be dropped to its original place on the walls, and flying buttresses erected to maintain the whole structure in its recovered position. In excavating the nave floor for the necessary examination of the south piers, two mutilated stone coffins were found, the upper edges of which were at a depth of 3ft. from the surface. Fragments of tiles are also turned up occasionally, showing the patterns used in this locality. A most interesting and important discovery was made in laying down gas mains in the public way on the south side of the south transept during August last. The workmen were excavating a trench from east to west throughout the whole length of the destroyed chapter-house, when on the north side of this destroyed building, against the south wall of the slype, or locutory, was found a stone seat or sedilia, corresponding in position to a similar one in the slype, and in addition to this was laid bare the north-west angle respond of the chapter-house. The west wall was then followed for about 7ft., and another respond found at an interval of 4ft. 6in. from the first mentioned. The architecture is of the most elaborate description, with zigzag and beaded moulding. I found the internal length of the chapter-house to be 95ft.; the width is unknown, until excavations can be made in the shrubbery adjoining. I have no doubt that a perfect mine of wealth to the architectural world lies under the surface in this vicinity, as when the great destruction of monastic and other buildings took place, the *débris* covered the ground to a depth of several feet, and hence the fortunate though unintentional preservation of the various foundations with the moulded bases and parts of columns. This chapter-house, with the slype adjoining, was, according to the late Rev. Dr. Nicholson, the work of Robert de Gorham, eighteenth abbot. During the past year I was looking over the Dom Kirche in Lubeck, and saw there a brass of about twice the size of the handsome one in this abbey to the memory of Abbot Thomas de la Mare. In the lower border was a representation of the legend of St. Dunstan, and I

was struck with the similarity of the engraving generally to the one here. On making inquiry I found that the artist was lent from Bruges, and that he travelled to Lubeck and to St. Alban's to engrave these brasses. I obtained a print of that at Lubeck, together with some details, which now lie on the table. Now for a little discovery nearer home. About two months ago some alterations were being made in the house in which I reside in St. Alban's, situate in Romeland, on the north side of the Abbey churchyard. About 3ft. below the surface of the ground floor many fragments of raised tiles were found, similar to those now laid in the floor of the presbytery of the abbey, also some pieces of stained glass of the Decorative period, which, from being so long buried, resembled talc, and crumbled readily on being touched. A few words on the Lady Chapel: All the windows except the eastern one have been repaired, every attention having been paid to the refixing of the old details in their original position, adding nothing more in the shape of new work or material than was absolutely necessary. The other necessary repairs to this part of the building are at a complete standstill for want of funds, every farthing subscribed by the ladies of Hertfordshire having been expended on structural repairs. I wish also I could announce that the contemplated public way around the eastern end of the abbey was an accomplished fact, so that the citizens of St. Alban's might have the opportunity to shut up that passage through the antechapel which is a cause of so much desecration. I do not, however, yet despair of seeing this done. On the occasion of the enthronement of the first Bishop of St. Alban's, on the 12th of June last, temporary stalls were fitted up in the choir of a rather substantial, though plain, character, exactly on the old foundations in the Benedictine choir. When the great central tower was under repair a few years since it became necessary for its better preservation to remove the bells from the position they occupied in the bell-chamber to another area, so that their weight should rest in the strongest corner—an arrangement involving the removal of the chimneys, which have since been silent. It has recently been resolved by the committee to re-instate these chimneys with some modern improvements. In concluding these notes I must allude to the recent establishment of a bishopric, having for its episcopal church the glorious old abbey, and the raising of the ancient borough to the dignity of a city. These changes should certainly be an earnest of good things to come in the completion of that work of restoration of which I have given a necessarily imperfect account.

COMPETITIONS.

DERBY SCHOOL BOARD.—In response to advertisement about 50 designs have been received, and are now on view from 10 to 5 daily, until the 26th inst., at the Masonic Hall, Gower-street, Derby. The Ashbourne-road school, to accommodate 1,100 children in four departments, will be erected from the design of Messrs. Coulthurst and Story, of Derby; the second premium being awarded to Messrs. Giles and Brookhouse, of Derby. Messrs. Coulthurst and Story have also been placed first for the Traffic-street school for 700 children; the second premium being awarded to Mr. A. N. Bromley, of Nottingham.

NEW FEVER HOSPITAL, SHEFFIELD.—For this competition twenty designs were sent in, and the following is the result:—1st, Mr. Swan, architect, Sheffield; 2nd, Mr. Wm. Hill, architect, Leeds; 3rd, Mr. D. Dodgson, architect, Leeds.

WELLINGBOROUGH GRAMMAR SCHOOL COMPETITION.—In our notice of this competition we placed the design of Bonner and Mills third. These gentlemen inform us it should be placed second.

It is suggested by some correspondents of the South Wales press that an effort ought to be made by the Dean and Chapter of Llandaff to recover and restore the detached bell tower of the Cathedral, now lost to sight and encircled by cottage property. Mr. John Pritchard, diocesan architect, writes strongly commendatory of the suggestion.

Building Intelligence.

BRAY.—A company is being formed for the purpose of erecting an aquarium and winter garden at Bray, county Wicklow. The object is to erect, on the site known as the Carlisle Grounds, near the Railway station, a building which will comprise a marine aquarium, a floral-hall, and a refreshment and reading-room. The floral-hall will be in the centre of the building, will be furnished with seats, and will have a large orchestra and a suite of artistes' retiring rooms at one end. Mr. J. F. Fuller, of Dublin, is the architect for the scheme.

BRISTOL.—A new Bible Christian chapel is about to be erected at Bedminster, and the foundation stone was laid on Monday. The chapel will be about sixty-six by forty-three feet in the clear, with a main central entrance and lobby, and will seat together 650 persons. The height of the chapel, from floor to the springing of the ceiling, is about 20ft., and from floor to apex of vault, about 31ft. The exterior walls are to be of dressed Pennant stone, with freestone quoins, arches, and other mouldings. Red Mansfield stone will be intermixed in some cases. In the principal elevation a free use has been made of Early French Gothic—the central features being the main entrance double doorway, and large tracery window. The architect is Mr. James Crocker, of Exeter. The contractor is Mr. R. J. Crocker, of Bedminster. The total cost will be about £5,000.

BYKER.—The Leighton Primitive Methodist Chapel and Schools, in Heaton-road, Byker, were opened on Tuesday. The building measures about 76ft. in frontage by 131ft. from front to back. The erections comprise a chapel measuring 64ft. by 41ft., with 600 sittings; Sunday-schools in the rear, 50ft. by 33ft., and two stories in height; and also four classrooms, to accommodate about 600 Sunday scholars. The style is Classic, freely treated. The principal elevation of the chapel is towards the east. The dressings to doors, windows, cornices, &c., have been executed in terra-cotta work, manufactured by Messrs. Graham and Co., of Blaydon. The cost of the scheme is about £5,000. The buildings have been designed by and carried out under the superintendence of Mr. Thomas Parker, architect, Newcastle-on-Tyne.

CITY OF LONDON.—The parish church of All Hallows the Great and Less, Upper Thames-street, was reopened yesterday week after restoration. The tower and vestibule on the north side of the church, which projected far into the roadway, have been removed, and the site on which they stood has been thrown into the street. A new vestry, with a tower for the bells and the necessary offices, have been erected on the south side of the church. The cost of the alterations, with the necessary fittings for the interior, has been very nearly £4,250. The church is famous for its beautiful carved oak screen, supported on spiral columns, which, with the richly ornamental pulpit and reading desk, was presented shortly after the Fire of London by the merchants of the Steelyard, which was in the parish of All Hallows the Great. The church was formerly called All Hallows the More, to distinguish it from that of All Hallows the Less, and before the Fire had a large cloister on the south side. The steeple was much admired, while in 1632 all the aisles were raised a foot and a half, and the pews a foot above that.

EXPENSIVE ASYLUM ANNEXES.—The Norfolk magistrates last week considered in Quarter Sessions the tenders for the new county lunatic asylum buildings, of which the lowest—that of Messrs. Cornish and Gaymer, amounting to £33,290—had been recommended for adoption. Mr. C. S. Read, M.P., and others, thought this very high, for as the buildings—mere annexes—were only to accommodate 117 males and 133 females, it was at the rate of £134 per head, and the county surveyor had said the buildings, if for 200 inmates, would cost about £22,000. The county surveyor explained that the buildings were perfectly plain, nothing but bricks and mortar, with a display round the windows which would cost nothing; but in the estimate there was nearly £2,000 for extension of present chapel, £2,008 for water supply, and

£700 for washing arrangements. He was building an asylum for the city of Norwich which would cost £55,000, and would house 330 patients. Sir F. Powell Buxton said that Caterham and Leytonstone asylums held about 200 patients each, and cost only about £60 or £70 a bed. Earl Kimberley stated that the average asylum expenditure throughout England was £200 a bed. After some discussion the tender of Messrs. Cornish and Gaymer was accepted.

KELSALE.—The chancel of the parish church of Kelsale, Suffolk, has been rebuilt from designs by Mr. R. Norman Shaw—Mr. H. Luff, of Ipswich, being the contractor. The style of the work is Perpendicular, and the cost has been about £2,000. The east window is of five lights, with bold yet delicate tracery. Below the window will eventually be erected a carved stone reredos. The chancel extends some feet beyond the chancel aisle, and in the south wall is a two-light window. In the north wall is another two-light window, in which the old tracery is retained. The roof is an open wooden one of pitch pine. On the north side of the chancel is an arched recess occupied partly by the key-board of the new organ, and partly by the entrance to the two vestries. The rest of the church sadly needs attention, the removal of an unsightly gallery over the south aisle being especially to be desired.

LEEDS.—A new Presbyterian church is about to be erected in Cavendish-road, Leeds. The size of body of church is 62ft. by 46ft., giving accommodation for 443 adults, allowing 20in. to each, the pews all radiating from the rostrum. A gallery is provided at the tower end of church, with accommodation for 157 persons. Under the church is placed a large schoolroom with class-rooms attached, book and store-rooms, duplicate lavatory arrangement, staircases leading to church, a residence for care-taker, and entrance from Cavendish-road and Tonbridge-street. The style is Italian, the principal front being divided into five parts by pilasters, the outer portions being wings occupied by staircases, and the remaining three composed of entrance doors to church and a central tower 17ft. square, rising to a height of 126ft. above street level, divided into five stages. The facade is three stories in height, and will have a rusticated basement of stone, with superstructure executed in red pressed bricks, having stone string-courses and dressings to arched windows, the whole finished at the top with a bold moulded cornice and blocking, and ornamental pedestals at the two corners over pilasters. The cost of the building will be about £4,800. The architect is Mr. James B. Fraser, Park-square, Leeds.

LEYLAND.—A new Congregational church was opened last week at Leyland. Mr. Grant, of Preston, is the architect of the building, the cost of which, with the schools, is about £4,000. The church, which is built of stone, is 62ft. in length by 40ft. in width, and the ground floor will accommodate 380 people. The style is Early Gothic, and the tower, which rises to a height of 80ft. over the main entrance, is of the saddle-backed pattern. Over the entrance to the church is a plate-traceried window, and to the right is the main staircase to the gallery, emphasised by a sharply-pointed roof. A gallery, stretching right across the church at the south end, is capable of seating 120 people, and at the end under the tower there is ample accommodation for the children. At the northern end of the building is a semi-octagonal recess, with a groined ceiling, and this place forms the organ chamber and choir gallery.

MARESFIELD.—The old parish church of St. Bartholomew, Maresfield, Sussex, is about to be restored and enlarged from plans by Mr. John Oldred Scott. The church is in a very neglected condition, and is in need of immediate repairs, while the interior is blocked and disfigured by galleries. These are to be cleared away, and the building extended so as to provide 50 additional sittings. Tenders have been received from 6 contractors, the highest (£4,400), being that of Messrs. Carruthers, of Reigate, and the lowest that of Messrs. Checman, of Uckfield, £3,664. The latter, after reductions in plans, reducing the contract to £3,149, has been accepted. At the same time the chancel is to be restored by the rector, at an additional

cost of £500, and a chapel of ease is to be built in Ashdown Forest. The latter is to accommodate from 180 to 208 persons, at an estimated cost of £1,800 or £2,000, under the direction of Mr. Rhode Hawkins (who has presented his services) as architect.

METROPOLITAN BOARD OF WORKS.—On Friday deputations were received from the vestries of Rotherhithe, Whitechapel, and St. George's-in-the-East District Board, who presented memorials praying that a new bridge, free of toll, may be constructed across the Thames east of London-bridge, the site suggested being to the east of the Tower. The memorials were referred to the works committee. Permission was granted to Mr. Thomas Woolner, on behalf of the John Stuart Mill committee, to erect a statue and pedestal on the Victoria Embankment-gardens, east of the Temple Station. A contribution of £125 was granted towards the cost of setting back Norway Wharf, in Bermondsey-wall, so as to increase the width of the thoroughfare by about 4ft. for a length of 98ft. The Floating Swimming Baths Company recently applied for permission to convert their baths lying in the Thames, immediately at the foot of Northumberland-avenue, into a gymnasium during the winter months instead of a glaciarium as last year. The works committee moved that the sanction be not granted, and that the agreement as to the bath be terminated; but the matter was referred back to the committee in order that the company's secretary may be heard before such a step be taken. On the motion of Mr. Runtz it was "referred to the works and general purposes committee to consider and report what amendments are urgently required in the Metropolitan Building Act, 1855, the Metropolitan Management Act, 1855, and the Acts amending the same respectively, with respect to houses and buildings, and especially to report what amendments are desirable with reference to the width of roads, foundations of houses, buildings and erections, and recovery of expenses relating to dangerous structures, with power to instruct counsel to settle any bill."

OXFORD.—The increased requirements of the University and the growth of the Bodleian Library having necessitated an entire new suite of buildings for examination purposes, it was resolved a few years since that new schools should be built. Plans were chosen by two successive delegacies, but afterwards rejected by Convocation. A third delegacy was appointed in 1875, which invited Messrs Bodley and Garner, Mr. Champneys, Mr. Deane, Mr. Jackson, and Mr. T. O. Scott to prepare designs; each competitor was to receive 100 guineas, and the plans were to be estimated by a surveyor. The design chosen was that of Mr. T. G. Jackson, and this time the consent of Convocation was obtained to the plan selected. The building is now in progress, the past year having been spent in putting in the foundations. The plan consists of a quadrangle standing back from the High-street, surrounded with the examination buildings, or "Schools" on three sides and open on the fourth side towards the east. Between the quadrangle and the High-street a block of buildings is interposed, containing a large hall, the offices of the clerk of the schools, some rooms for examiners, and residence for a porter. Nine *visu voce* schools, with retiring-rooms for examiners, occupy the whole ground floor round the quadrangle, from which all but one of them are lighted. The three large writing schools and two *visu voce* schools occupy the first floor, and are lighted by both sides. The three great writing schools accommodate 200, 200, and 120 candidates respectively, seated at separate tables. The builder is Mr. A. Estcourt, of Gloucester.

RADCLIFFE.—New Church schools were opened at Radcliffe on Thursday week. The schools are planned in the form of the letter T, the top portion being the girls' school, 60ft. by 30ft., and the stem the boys', 50ft. by 30ft. In the event of a meeting the whole can be thrown into one room accommodating 800 persons. The building is of brickwork, with stone dressings. The woodwork inside is pitch pine, varnished. The style is a Late period of Gothic. The total cost will be about £2,400. The architects are Messrs. Maxwell and Tuke, of Bury.

ST. ANNE'S CHURCH, SUTTON BONNINGTON, NOTTINGHAM.—The chancel of this church having been restored has recently been reopened by the Bishop of Nottingham. The church is of a simple and interesting character, erected during the Decorated period upon a site about a mile from its present position, and appears to have been rebuilt upon its present site during the Tudor period. It consists of a chancel, nave, and one aisle, divided by Decorated arches, nearly semi-circular, formed of very small stones, in two orders, and supported upon alternately octagonal and circular shafts, with pleasing capitals of simple character; at the west-end of the nave is a double bell gable, and the whole building groups picturesquely. The chancel having recently given way in some places, it was decided to repair it, at the same time to make it more in harmony with the older part of the work. An inspection was made by the architect some months ago, and he found it necessary to erect a new roof and buttresses to prevent the further spreading of the walls at the top, and to entirely reconstruct the lower part of the walls to the height of about 4ft. above the floor line. Great anxiety was caused by the dilapidated state of the walls, both externally and internally, and more than usual care had to be bestowed upon them to prevent their falling altogether; but, thanks to the patient attention and care of the contractor, they have been saved, and although they now lean outwards at the top to a considerable extent, it is believed they are perfectly safe; they have been supported by large buttresses outside, corresponding with those of the nave. The new works consist of a new roof of pitch pine, with framed and trussed principals, wind-beams, and braces, and an embattled wall-plate, all covered with Swithland slates and red ridge tiles; new stone gable copings, and crosses of Attleborough stone; new floors of encaustic tiles, of antique make, by Goodwin, of Lugwardine; new oak chancel stalls and altar, a stone and alabaster screen, and a beautiful reredos of white statuary marble and alabaster, the subject being "The Last Supper," by Mr. Earl, of Kennington. The whole work has been well and carefully carried out by Mr. H. F. Allen, of Leicester, from the designs and immediate superintendence of the architect, Mr. Edwin Dolby, of 40, Great Marlborough-street, London.

STERNFIELD.—The parish church of Sternfield, Suffolk, was reopened last week, after restoration at a cost of £1,325. Mr. J. P. St. Aubyn was the architect, and Mr. Beedon, of Marlesford, the contractor. Externally the roofs throughout have been repaired and retiled, that of the chancel being entirely new. A little vestry, with organ-chamber adjoining, has been built on the north side of the chancel. The walls of the nave and chancel have been relieved of plaster, and that part of the chancel wall which was built of brick has been rebuilt with rough flints, and the south porch has received a new roof, of open timber inside, and has been generally restored. In the interior the disfiguring west gallery is gone; for the pews open benches have been substituted; a new oak pulpit has been provided; a new open timber roof given to the chancel; the windows reglazed throughout, a new three-light east window inserted, and filled with stained glass; a stone chancel arch erected, and the chancel paved with glazed encaustic tiles by Godwin, of Lugwardine, Hereford. The new oak pulpit was carved by Mr. T. Stopher, Ipswich.

TOPSHAM.—To-morrow is fixed for the consecration of the rebuilt church of St. Margaret, Topsham. The new edifice is not a restoration of what the original church is supposed to have been, but consists of a nave with aisles, chancel, and transepts, on larger scale, and more suitable to the wants of the parish than the first church could have been, whilst the old tower is retained. The dimensions are—nave, 83ft. 3in. by 24ft.; the entire width of nave and aisles, 58ft. 6in.; transepts, in length, 91ft. 9in. by 22ft.; chancel, to which there are aisles and vestry, 34ft. 6in. by 19ft. The style is Early Decorated. The walls are of Torbay limestone, the windows and dressings of Bath stone. There is a low screen of Bath stone, with tracery and marble shafts, between the nave and chancel, and the

stone pulpit harmonises with the screen. The seating is of red deal, with tracery in a portion of the bench ends. There is accommodation for 848 persons, including children, 449 seats being free. The carving is by Mr. H. Hems. The tower, chiefly built of red Kenn stone, had suffered much mutilation. Its facing has been restored, and new windows, consonant with the date, inserted in the place of wood substitutes. The works have been carried out by Messrs. Stephens and Son, Exeter, from plans by Mr. Ashworth, architect. The outlay has been upwards of £5,500.

WAKEFIELD.—The foundation stone of the New Town Hall at Wakefield was laid on Thursday week. Mr. T. E. Colcutt is the architect of the building, which was illustrated in the *Building News* of May 25, 1877. Mr. William Hedsworth is the contractor. The building is to be completed by January 1, 1880. The building will include a council chamber, committee-rooms, a borough court and police-offices, a suite of rooms for the Mayor, rooms and offices for the different departments of municipal work. The principal entrance to the building will be in Wood-street, and will form, with the window above it, the central feature of the elevation. Since the plan was approved some alteration has been made in this entrance, the effect of which will be to bring it more forward to the pavement line, whilst a balcony has also been formed over it. The council chamber will be on the first floor, and will be approached from the principal corridor. It will be well lighted by large bay windows, with stone pilasters and arches. The walls of the room will be covered by wood dado, with richly-moulded panels and carving. It is planned to accommodate fifty councillors, and will have a projecting balcony at one end for the use of the public, who, it was originally intended, should gain admission from the principal staircase. It has been decided, however, on Mr. Street's suggestion, to form a staircase in the tower, direct to the balcony in the council chamber, so that the general public may reach that room direct, without interfering with the arrangements of the building. The public entrance to the Borough Court will be in King-street, and will open into a corridor twelve feet wide, leading by the public stairs to the court on the principal floor. The whole of the elevation in Wood-street, and the return at either end, including the tower, will be faced with best rubbed Huddersfield stone. The whole of the corridors and rooms will be, as far as practicable, of fire-proof construction, on Dennett's principle. All the walls of rooms will be finished in plaster, with cornices and dados in some. The total cost of carrying out the building as designed is estimated at £35,000, which does not include the upper part of the tower, but this could be added at a cost of from £2,500 to £3,000.

YORK.—A new Board school and residence have been completed at Baburth, near Selby. The accommodation is for 100 boys and girls, and 55 infants, and comprises a mixed school-room, 42ft. 6in. by 18ft.; class-room 18ft. by 13ft.; and infants' room 25ft. by 13ft., with lavatories and cloak-rooms attached. The cost, including fittings, will be about £1,800. Mr. Clamp, of Hull, whose design was selected in competition, is the architect, and the work has been carried out by local tradesmen.

The tender of Mr. Lawson, contractor, of Birkenhead, has been provisionally accepted by the Swansea Harbour Trustees, for the construction of new docks in St. Fabian's Bay. Arrangements are being made by the trustees for speedily commencing the work.

The memorial stone of a new Free Church was laid at Nithhill, near Paisley, on Saturday afternoon. The church, which is being built from the designs of Mr. Wilson, architect, Glasgow, stands on an excellent site, given by Lord Glasgow. It will seat between 300 and 400 sitters, and will cost £1,200.

At a meeting of the Sir John Gray Memorial Committee, held at the Dublin Mansion House on Friday, it was announced that a model of the statue had been completed by Mr. Farrell, and that £1,600 had been received in subscriptions.

In consequence of the satisfactory way in which the Tay has been bridged, it was resolved, on Thursday, by the directors of the Forth-bridge that steps be taken with the view to an immediate commencement of the bridging of the Firth of Forth.

PUBLIC HEALTH.

The Leading Journal of Sanitary Science and Progress. The number published October 26 contains articles on Household Economy and Health, Vaccination and Small-Pox Statistics, The Philosophy of Play, Metropolitan Fever Carriages, Missing Links in the Sanitary Administrative Service, The Association of Certifying Medical Officers, The Society of Medical Officers of Health, The Regulation of the Supply of Fresh Air, The Yorkshire Association of Medical Officers of Health, A Smokeless Stove, What Chemical Analysis does not do, New Tests for Milk, Public Health Reports, Legal Intelligence, Water Supply, Intercommunication, The Editor's Table, Cleanings, &c. Price Two-pence. Annual Subscription, Post-free, Eleven Shillings. 31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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Cases for binding the half-yearly volumes, 2s. each.

"BUILDING NEWS" DESIGNING CLUB.—Received:—Chas. C. Mort. (Your suggestion shall be considered.)—Henry, Leopold, Foster, Guernonprez, Beginner. (You do not say what competition rules you require. Do you mean our club rules?)—John Weaver, Caulbour, Jacobs, Jag, B in 2 circles, Fleur-de-lis, L in G., Another for Hector, Laborateur, Leizlad, A. C. Lanyon. (Your suggestions shall be noted.)

DRAWINGS RECEIVED.—Robt. A. Bushby.—Wolstencroft and Son.—H. T. Sugden.—G. H. Goldsmith.—J. M. Brookes.—Joseph Gibson. (We do not think it has been published.)

RECEIVED.—H. G. C.—J. O. P.—J. P.—C. H.—H. W. M.—J. T. L.—S. T. H.—T. S. H.—J. R. W.—W. W.—H. E. J.—S. & H.—G. B.—J. B.—A. W. R.—F. J. McK. J. P. (Published by Spon, 48, Charing-cross.)—AN OLD SUBSCRIBER. (Your query is an advertisement.)

THE QUANTITY QUESTION AT SOUTHAMPTON.—(Mr. J. O. Parmenter has sent us an unnecessarily long vindication of his views in reference to the "quantity question," and his recent motion at Southampton, which we cannot find room for; but he fails to touch the main issue raised by us—namely, whether a town surveyor is justified in taking out his quantities for work done under his supervision. The facts he relates are of a purely local and isolated character.)

Correspondence.

CLEOPATRA'S NEEDLE.

To the Editor of the BUILDING NEWS.

SIR,—As Cleopatra's Needle will probably be here in a few days, and, as far as I know, nothing has been definitely settled as to the place of its erection, I should be glad, with your permission, to say a few words on the comparative merits of the various sites that have been suggested.

It will, I think, be universally accepted by those at all conversant with art matters that an obelisk should form a central point in a symmetrical architectural composition.

Greenwich Hospital seems to me to afford a site in every way admirable. The style of the building is large and palatial, its square is ample, it has a noble terrace to the river, the opposite side of the square is flanked by two beautiful domes in pleasing contrast to the needle-like form of the obelisk, while the space between the domes, through which we see the distant park, presents a most beautiful background. In this respect Greenwich is almost unique. The composition has no central building. Indeed, this site seems almost made for an obelisk, and has only one objection. It is too far from London. People seem to expect a more central position.

The front of the Royal Exchange, the very heart and centre of the crowd and bustle of our great city, would, of course, in this respect,

be pre-eminent, and this site, with a re-arrangement of the statues, might perhaps be made respectable; but the buildings in Cornhill are not only totally wanting in uniformity, but their commanding height so dominates the Bank that the want of symmetry would be disagreeably obvious, and the general proportion and lines of the Royal Exchange are not sufficiently horizontal in character to enhance the beauty of an obelisk.

The same remarks apply to the front of St. Paul's, while the space should be at least four times what it is to admit such an architectural feature with any propriety.

The front of the British Museum, though comparatively deserted, is free from these defects, for the facade is more horizontal in proportion, while the centre is flanked by projecting wings—important advantages in this matter. The style, too, is more simple—I had almost said more Egyptian, than that of either St. Paul's or the Exchange, and there can be no question that the Alexandrian obelisk would find an appropriate resting place in our national museum of antiquities. But there is one obstacle, and, I fear, that an insurmountable one. English officials have a mania for railings. Unluckily they do not often put up handsome ones, but the railings in front of the Museum are so massive and handsome that there is even less chance than usual that they will be removed. They completely spoil the effect of the building, and I have no wish that the obelisk should share the same fate.

With a proper arrangement of the avenue and a symmetrical plan, the front of Buckingham Palace would afford an unexceptionable site, though perhaps not equal to a central spot in the parade-ground of the Horse Guards.

The site that has been spoken of on the Thames Embankment, where the obelisk would appear above the centre of the new floating bath, is quite out of the question, for the size and proximity of the railway bridge and station would take away all sense of symmetry.

Far better would it be to place it on the centre pier of Waterloo-bridge, for though such a position is not free from objection, the obelisk would have a more imposing appearance from such an eminence than in any other site I can think of, and since the Embankment has cut off one of them, the river is spanned by 8 instead of 9 arches, and we get what is unusual, a pier instead of an arch in the centre. By substituting square for the present circular columns, the pier would be made, æsthetically as well as practically, sufficient for so imposing a burden.

The site in Palace-yard, on which the wooden model is now erected, seems the worst that could be found, for symmetry is impossible; while the general proportion and lines of the surrounding buildings, especially of the clock-tower, are exactly those which neither set off the beauty of an obelisk nor are themselves in any way improved by it.

Were it not for an expense which it would be vain to expect our Government to incur, I would suggest the re-erection of the noble semi-circular colonnade, once the glory of Burlington House, now prostrate and overgrown with grass on the banks of the river in Battersea-park. If this were combined with a stately flight of steps, having Cleopatra's needle as the centre, we should have a most striking feature in a reach of the river which, flowing as it does between two parallel embankments a mile in length, seems to be peculiarly adapted for architectural display.

The front of Chelsea Hospital, on the opposite side of the river, is already occupied by the paltry obelisk put up some years ago to the memory of the officers and men who were killed at Chillianwallah. This has lately been taken in hand by the gardener, and with its accessories now presents an excellent example of everything we should avoid.

I will mention one more site—Portland-place. No doubt that handsome but somewhat dreary street would be improved by such an ornament, but the houses are not of sufficient architectural importance to deserve it.

In conclusion, I will put down the foregoing sites in what appears to me the order of their architectural merit:—Greenwich, 1; British Museum, 2; Battersea-park, 3; Buckingham Palace or Horse Guards, 4; Waterloo-bridge,

5; St. Paul's or Royal Exchange, 6; Portland place, 7; Palace-yard, 8; Floating baths, 9.—I am, &c.,
PHILOSYMMETRE.

PRINTS IN THE BRITISH MUSEUM.

SIR,—From Mr. Stephens' letter in your current number, any one would suppose you had attacked the officials in the print-room in the very interesting, and I regret to say too true, account of its mismanagement which you gave on Friday week.

Owing to the extreme kindness and attention of the gentlemen in charge it is possible for students like Mr. Stephens and myself to work in the print-room without losing our time. But the writer of your article is, from my point of view, quite right in asserting that, as a means of public instruction, the print-room is practically inaccessible, and its contents hidden.

Let me put the case of a schoolmaster who would show some of Holbein's, Dürer's, or Hollar's masterpieces to a class of boys or girls studying art. We have the finest drawings of these and other masters in our possession, and we seclude them from the public eye. I am always sorry to hear that the Museum has had a fresh bequest, unless a condition is attached to it such as Mr. Slade attached to his—namely, that the objects be exhibited. As it is, the Slade prints are placed in the darkest part of the King's Library, and ostensibly for want of room—want of room in the dark place, I suppose—only a portion of the collection is shown. This is certainly not the fault of any official in the print-room.

Could we find out where the fault lies, we should know who is to be blamed for the absurd and vexatious regulations of the reading-room. It would not, perhaps, be very hard to name names, but this is not the place or the time.

Let me remind you of a sentence in one of the newspapers last year:—"No country has drawings equal to those in England, and no country but England would keep them concealed."—I am, &c.,
W. L.

Burlington Fine Arts Club, Oct. 19.

THE MECHANICS OF ARCHED IRON ROOFS.

SIR,—The article in your last is calculated to do some little mischief to those who read it, and expect to find themselves advanced in knowledge thereby. Several gratuitous references to the "practical builder," who, so far as I know, has never yet had occasion to design a large roof, disfigure the article; but much worse than these is the off-hand way in which the investigation is treated. The writer commences by stating that "the iron rib . . . is capable of resisting strains of any kind . . . since the whole is united in one continuous beam," and yet the whole investigation is a very cumbersome attempt to find the stresses, on the assumption that the rib is hinged at the crown. The most usual object of the continuous arch is to reduce the horizontal thrust, and inasmuch as the thrust varies inversely as the rise of the curve of equilibrium, it follows that it will pass above the rib at the centre if the designer's wish is effected. Now, it is necessary to observe that these arched ribs but rarely fit exactly between the supports, and that a very small springing of the foot causes a very great variation in the position of the curves, and in consequence of this the rib readjusts itself to a considerable extent. How it does this has been well shown by Mr. B. Baker in his paper on "Arches" in the little work entitled "Beams, Columns, and Arches," and the result is to show that an uniform section to provide against bending is not far wrong. Of course the direct thrust is greater at the springing than at the crown, and more metal is consequently required there.

The whole investigation is exceedingly unsatisfactory, and the number of formulae quite unnecessary for the result aimed at. When the purlins are far apart and the rib shallow there is a strong tendency in the rib to buckle between the loaded joints; consequent on the discontinuity of the curve of equilibrium this does not appear at all. Nothing whatever is said about the rib as a long column, or about the direction of the pressures from the purlins, which are not unfrequently so arranged as to throw all the tangential components on the walls

y means of secondary rafters, the purlins only exerting a normal pressure on the rib. The raphic method affords easy solution for any proposed loading and for any irregularly-shaped rib, and is being adopted by engineers almost the entire exclusion of algebraic computations.

Starting with the profession of regard to the practical builder, why not have taken the centres of gravity from cardboard moulds? It is certainly simpler and clearer to the mind; and why introduce moments of inertia which are not considered requisite for large engineering structures? To teach, our pupils must be ready to learn and properly grounded, and not "practical builders," and we must be accurate and plain in statement.—I am, &c.,
October 20th, 1877. C. G. H.

THE CHURCH OF ST. PETER, REGENT-SQUARE.

SIR,—In your issue of last week appears a design by Mr. W. Scott Champion for renovating the interior of the above church, and without attempting a criticism of the design, except to say that if carefully worked out in detail it promises a successful divergence from the stock interiors of the day, I should like to make a few remarks which the descriptive account accompanying the design have suggested. It appears to me somewhat singular that the particular portion of London in which the Church of St. Peter has been erected is favoured with an example of a church in the Gothic style, and another in the Classic style, each I think the very quintessence of unadorned and unmitigated ugliness; the Gothic structure is in Tavistock-place, and is now advertised for sale, and I have not sufficient patience to describe its faults. The man or woman who designed it is probably sleeping with his or her fathers, and may be or she rest peacefully! The Classic study is that of St. Peter, Regent-square, and in the descriptive account above referred to there occur the words: "Still withal there is a vast amount of good design, and a capital proportion in the building, and it has been the desire of the architect to make the present structure a thoroughly church-like interior without destroying the characteristics of style." Now, Sir, I should be sorry to criticise any work without being able to point out clearly the bases upon which the criticisms rest, but as regards the interior of this church, I should esteem it a favour if Mr. Champion or anybody would inform your readers, not where a "vast" amount, but where any amount, the least bit, of good design is to be found in this church, either in proportion, arrangement, or detail; or, in fact, any one redeeming feature in the most depressive, gloomy sepulchre I know. If Mr. Champion does not intend to destroy the "characteristics of style," however he has succeeded in producing the design you publish I cannot conceive.

Mr. Champion makes no mention of the exterior of the church, which is one of those erected at a time when church designers appear to have had the Choragic monument of Lysicrates upon the brain; but he who designed St. Peter's Church had more than this, for he has, as quantity surveyors would say, *timesed* the monument. Except as regards order, two monuments has he stuck one on the other, and both stuck on the roof behind the portico, out of all proportion with the church, and apparently very much surprised how they got there, and how it is that they keep up. The north and south windows of the church are lanky, and the relation of the semicircular heads to the openings and the pilasters, as a matter of detail, is execrable. The stone pilasters, which are probably intended as responds to the angles of portico, are absurd. They are practically flush with the face of the wall, and carry nothing but wretched ornament on the caps—the whole of the mouldings throughout are the very worst that could be found in the style, or want of style; and it is to be hoped that any restoration of the interior of this church will be accompanied by the total abolition of the two monuments over the portico, and the re-use of the stone as far as practicable in the new tower or steeple, which should be erected, not in "the characteristics

of the style," but in harmony with the proposed new interior. The other portions of the exterior might be satisfactorily dealt with without much expense.—I am, &c.,
WILLIAM WOODWARD.

KENSINGTON VESTRY-HALL COMPETITION.

SIR,—We beg to enclose you for publication copy of a letter we have addressed to the chairman and members New Vestry-hall Committee. Possibly, the other gentlemen who were selected by the referee will co-operate with us in the matter, and forward their views through the medium of your columns.—I am, &c., ONE OF THE EIGHT SELECTED BY THE REFEREE.

[Copy.]

"To the Chairman and Members Vestry of St. Mary Abbots, Kensington. (Vestry-hall Competition.)"

"GENTLEMEN,—We have read in the professional papers recently published that neither of the four selected or premiated designs for the above can be carried out for the respective amounts of tenders submitted therewith. Under these circumstances, we beg to submit that the authors of the remaining designs recommended for adoption by Mr. Whichcord should now have the opportunity of sending in detailed estimates, or that there should be a fresh competition among the eight.—We are, &c.,

"THE AUTHORS OF ONE OF THE EIGHT
"London, Oct. 22." "DESIGNS.

Intercommunication.

QUESTIONS.

[5164.]—Surveyors' Charges.—A builder on his last legs submits a low tender for a job, and is accepted. The contract is signed, and in a few days the creditors of the builder are called together, and a receiver appointed to liquidate the estate. The surveyor who took out the quantities has never sent an account to the receiver, nor has any notice of a meeting of creditors been sent to him. The employer has paid the surveyor, and deducted the amount from the balance due to the receiver, who has completed the contract. The receiver argues that the charge for quantities should be paid to him so that he could hand the surveyor a shilling in the pound. Opinions on this will oblige—SURVEYOR.

[5165.]—Girders.—Girders are said to be supported only, or fixed at their bearings. In the latter case (say, in a cast-iron girder) the flanges need not be so strong as in the former one. But what is the precise meaning of the word "fixed"? Should that (say, bolts) which fixes the girder be of equal strength with the flange itself, and should that to which it is fixed be something that will keep perfectly rigid during the time that the beam is fully loaded? I presume that the slightest yielding at that point would result in the girder becoming a supported one only, and the flanges consequently not equal to their work.—LANGHAM.

REPLIES.

[5163.]—Testimonials.—The legitimate thing to do would be to get the persons giving the testimonials to re-write them. If the applicant altered the name and dates with the intention of deceiving it would clearly be forgery. There can be no reason why the alterations should not be made by the individuals who gave them. If I were on a selection committee, and ascertained testimonials had been so tampered with, I should think something detrimental to the character of the applicant had occurred between the date of the original testimonial and the application. No professional man of honour would so alter his testimonials—he would send them as originally written.—BOROUGH SURVEYOR.

The Galway Guardians discussed on Friday a letter from the Local Government Board last week, asking for plans and specifications of the alterations now being executed at the workhouse by Mr. McDonald, when it appeared that Mr. Brady, the architect to the board, had not been consulted in reference to the work. A member pointed out that Mr. Brady's services ought either to be dispensed with altogether, or he should be treated as the board's architect; and on a division being taken, it was decided that Mr. Brady superintend and certify on the repairs and alterations now going on.

The foundation stone of a new Board school for 40 children was recently laid at Adlingfleet, near Goole, by Mr. R. C. Empson, of Goole Hall. The architect is Mr. Robt. Clamp, of Hull, and Messrs. Jackson Bros., of Goole, are the builders.

A bridge over the Arun, between Houghton and Amberley, has just been rebuilt in stone at the joint cost of the county of Sussex and the Duke of Norfolk. Mr. F. D. Bannister was the engineer, and Mr. Bushby the contractor, who undertook to build the new structure for £3,050, but who has also been paid an additional £500 for extra works of foundation and piling executed according to Mr. Bannister's orders.

LEGAL INTELLIGENCE.

IN RE T. F. COOKE.—This case was last week again before the London Court. The bankrupt, Thomas Frederick Cooke, of the Napier Works, Blackfriars, and Lancaster-road, Lower Norwood, builder and contractor, was adjudicated on the 4th inst., and an application was made on Thursday for the appointment of a receiver and manager of the estate, with a view to the completion of certain valuable contracts. Mr. Registrar Brougham declined to make the order, but intimated that the court would be prepared to entertain an application by the petitioning creditor for leave to advance the funds necessary for the completion of the contracts, and to be recouped by the trustee, when appointed, out of the first moneys properly applicable to the purpose. The application was accordingly renewed in that form. His Honour made the desired order.

IN RE J. F. AND E. VAN CAMP.—The debtors, Jean François and Edward Van Camp, carrying on business as builders and contractors at Kilburn-rise, have failed for £230,000, returning their assets at about the same amount, and the court recently appointed a receiver and manager of the estate and granted an interim order restraining various actions.—Upon the application of Mr. Herbert, his Honour now continued the injunction, and also granted a further interim injunction against several other suing creditors.

LOST PLANS.—At the Saffron Walden County Court on the 16th October, an action—Wright v. Clay—was heard, in which £5 17s. 6d., balance of account for building a house at Littlebury, was sued for. Mr. Naylor, for defendant, said that when plaintiff was employed defendant furnished him with plans and specifications. They had applied to plaintiff for the plans, so that they might see whether the work was completed according to them, but plaintiff had never produced them. Mr. B. F. Ackland, for plaintiff, said this house was built in 1874, and over £300 had been paid for it; the defendant had had opportunity to ascertain whether it had been built according to contract. His client had searched for the plans, &c., but could not find them, and he believed he had delivered them to defendant; at all events they were missing. The county court judge (Mr. Edmund Beales), considered there was no substantial defence, and gave judgment for plaintiff.

LIGHT AND AIR, OBSTRUCTION OF.—Chancery Division.—Spottiswoode v. Godbold.—Mr. Willis Bund, on behalf of the plaintiffs, moved *ex parte* for an interim injunction till next Wednesday, to restrain the defendant from carrying up some new buildings so as to obstruct the light and air enjoyed by the plaintiffs. Plaintiffs are the Queen's printers, who have a branch office on the west side of Chancery-lane. On the eastern side are being erected some magnificent buildings, in place of some small houses and shops, which some few years ago were pulled down. These old buildings, it was said, were 43ft. high, and the plaintiffs had discovered that the new buildings were to be of the height of 63ft. The additional height, they alleged, would interfere with their light and air, especially on the first floor, which was used by employes engaged in drawing plans for lithography. The width of the lane at the point in dispute was, from house to house, 37ft. On the plaintiffs giving the usual undertaking as to damages, his lordship granted an interim injunction against the defendant till next Wednesday, restraining the defendant from erecting his buildings so as materially to interfere with the plaintiffs' light and air.

PARTNERSHIP AND BANKRUPTCY.—At the County Court, Newport, Monmouthshire, on Monday, a claim by Messrs. Turner, Lanphire, and Co., of Newport, was made for £19 1s. 4d., balance of building materials supplied in October and November, 1875, to it, was alleged, Messrs. Day and Palfrey, builders, of Hereford, who were carrying out a contract at Newport. Since the work was done Day had filed a petition in bankruptcy, and plaintiffs now sued Palfrey, on the ground that the goods were ordered by the firm of Day and Palfrey. Evidence was given for Palfrey, to show that the goods were for Day's sole use. Judgment was given for defendant, the judge being of opinion that Palfrey did not hold himself out as Day's partner.

SPECIAL RATES FOR PAVING NEW STREETS.—WORSHIP-STREET POLICE-COURT.—During the hearing of a number of summonses, taken out by the Vestry of the parish of St. John's, Hackney, against owners of house property therein for non-payment of paving rates, an important question as to appeal against parish ratings was raised. Most of the summonses were heard *ex parte*, the defendants not appearing, and the order for the payment of the amount claimed, with imprisonment in default of sufficient distress, being made in their absence. Those defendants who did appear complained that the rate was excessive, one gentleman saying that he was charged £13 5s. for paving the footpath in the front of his house. The rates, one for the paving of a road exceeding £1,000, were proved to have been made, and allowed by the Vestry, and the apportionment to the defendants was also formally proved. Mr. Busby told those defendants who complained that they had a right of appeal against the rate, but it must be made before the allowance.

To this it was said that there was no knowledge when the rate was to be made. One defendant complained that the Vestry had things so much their own way that it was impossible to appeal. He had been called upon to pay £130 at a moment's notice. Mr. Bushby said that the sum was undoubtedly large, but he could not give time. His function was merely ministerial—to make the order for payment or to send the defendant to prison in default. The parish must be applied to for time. On behalf of the Vestry, it was said that some three months had passed since the assessment, and those who held over were unfair to those who paid at once. The right of appeal against ratings was to quarter-sessions, but it may be mentioned that periodically the rate-books for the parishes over which the court has jurisdiction are brought to the court for the magistrate to make the allowance, which is done in a purely formal manner. The rates are proved, the books are produced and signed, and it is then that the parishioners should appear to appeal, but do not. Mr. Bushby, when making the orders in those cases which came before the court, told the defendants that if they had not appealed he was unable to help them. He advised them to look after their parish matters for the future.

LATERAL SUPPORT.—"NEIGHBOURING LAND." **WHAT IS IT?**—A point which appears never to have before arisen was decided in the case of the Mayor of Birmingham v. Allen (37 L. T. Rep. N. S. 207), reported by us last week. The long series of cases relating to the right of one man to lateral support for his land or for the buildings erected upon it from the soil of another, consists entirely of decisions upon points arising in disputes between landowners whose lands have been contiguous. The terms "neighbour," "neighbouring lands," and "adjacent lands," have been universally employed to express the relation between the persons and properties of the disputants, and a body of law regulating the rights of "neighbours" with regard to this subject has gradually grown up, but the question as to what constituted such a "neighbour" and such "neighbouring lands" was never decided. A definition of these terms by the Master of the Rolls in the case above mentioned has been fully adopted by the Court of Appeal in confirming his decision. This definition we shall mention hereafter, with the facts to which it was applied, but we would first wish to remind our readers of the general law as deduced from the series of decisions above-mentioned. Every landowner has, as an incident of property, a right to the lateral support of the land "adjacent"—that is, contiguous to his own. But if he chooses to build on the extremity of his land he has not, as an incident of property, a right to the lateral support of such adjacent land for such building. He has no right by loading his own soil to increase his neighbour's liability to support it without a grant to that effect. Such a grant will be implied by law after an uninterrupted enjoyment of such lateral support for twenty years. If, however, the soil upon which the building is erected has been excavated, the lateral support necessary from the contiguous lands must evidently be much greater, and in such a case a grant will not, it seems, be implied unless both the building and the excavation beneath it are twenty years' old, and the owner of the adjacent land was during that period aware of the existence of the excavation. Possibly since Lord Tenterden's Act (2 & 3 Will. IV., c. 71, s. 2) the proper basis for such a right is no longer an implied grant, but the mere lapse of twenty years, though this is by no means certain; but whether that be so or not the result is the same, inasmuch as the proper construction of that Act requires that the easement should have been enjoyed for twenty years under a claim of right, which it could not be if the owner of the servient tenement was unaware of its existence. The case of the Mayor of Birmingham v. Allen was as follows:—The action was for an injunction to restrain the defendants from working the mines or minerals lying near to the plaintiff's land in such a manner as to cause its subsidence. The plaintiffs, the Corporation of Birmingham, were the owners of a piece of land whereon were erected certain retort houses and other gas works, some of which were upwards of twenty years old. The defendant was the owner of a piece of land situate at a short distance from the gasworks. Between the gasworks and the defendant's land a strip of land intervened. This strip had been conveyed in 1834 by the company to a third person, and such person had, more than twenty years ago, and to the defendant's knowledge, excavated the soil beneath it for the purpose of getting coal. There was evidence that if this intervening strip of land had not been undermined the defendant might have worked his coal on his own land up to his boundary without injury to the plaintiffs' land, and he would therefore have had a right to do so. The question was, whether the intermediate excavation by a third party could have the effect of lessening that right. It is clear that if the defendant was to be considered the plaintiffs' "neighbour," and his land "neighbouring" or "adjacent" to the plaintiffs' land, as those terms are used in the decided cases, he could be restrained, if his mining operation became dangerous to the plaintiffs, inasmuch as their buildings were more than twenty years old. It was argued that all landowners must for this purpose be considered to be a man's neighbours whose operations do in any remote degree injure his land. The Master of the Rolls, however, was of opinion

that the term could not have so wide a meaning. "The neighbouring owner," said he, "for this purpose, must be the owner of that portion of land—it may be a wider or narrower strip of land—the existence of which, in its natural state, is necessary for the support of my land. That is my neighbour for that purpose; as long as that land remains in its natural state, and it supports my land, I have no right beyond it." "There might be land of so solid a character, consisting of solid stone, that a foot of it would be enough to support the land. There might be other land, so friable and of such an unsolid character that you would want a quarter of a mile of it; but, whatever it is, so long as you have got enough land on your boundary which, left untouched, will support your land, you have got your neighbour, and you have got your neighbour's land, to whose support you are entitled." The above definitions were unanimously adopted by the judges in the Court of Appeal, and it may now be considered as settled that a man's "neighbour," who is bound to afford natural support to his land, or (if such a right has been acquired) to the buildings upon it, is the owner of that land which in its natural state would have afforded the necessary support. If this were not so, a man might be made liable for, and the value of his property greatly deteriorated by, the acts of another, which acts he would be, by no possible vigilance, in a position to prevent, and a responsibility which he did not originally bear would be cast upon him by the acts of a stranger. The judgment of the Master of the Rolls, therefore, which has been fully confirmed by the Court of Appeal, is in accordance with every principle of natural justice.

THE RIGHT OF LAYING DOWN GAS PIPES.—An adjourned summons against the Wimbledon Local Board, for refusing to permit the Mitcham and Wimbledon Gas Light Company to lay down a certain gas main pipe under the footway in the Merton-road, came on for hearing last week at the Wandsworth Police-court. The proceedings were taken under the 9th section of the 10th of Vict., chap. 15, which provided that, in a dispute, a plan should be determined by a magistrate. The company wished to lay the pipes under the footway on grounds of economy and safety to the public; the board, on the other hand, wished the pipes to be laid under the roadway to suit the convenience of pedestrians, and because it was intended to cover the footpath with asphalt.—Mr. Bridge was of opinion that the gas company had a right to put down the pipes where they liked, and that the highway authority had to see that they were put down in such a way as not to be detrimental to the public. But both parties did not agree to that construction of the Act, and asked him to decide in what part of the road the pipes should be placed. He said he had listened attentively to both sides, and he had been to see the road. The safety of the public was the only thing to be considered, and he was of opinion that the best place to lay the pipes was under the footway. He added that he would back up the surveyor of the board in any plan which he thought was the best for carrying out the works.

IN RE J. F. AND F. VAN CAMP.—This case, which came before the Court of Bankruptcy on Friday, was a heavy failure in the building trade. The debtors, who have presented a petition for liquidation, are described as of Station-terrace, Kilburn-rise, builders and contractors. Their liabilities are stated at £230,000, with assets to about the same amount, consisting of stock-in-trade, plant, fixtures, debts, and freehold and leasehold property.—Mr. F. S. Herbert, for the petitioners, mentioned the case to the court, and asked that Mr. S. Lovelock, accountant, should be appointed receiver and manager, and for an interim injunction to restrain actions.—His Honour granted the application.

STAINED GLASS.

LIGHTCLIFFE CHURCH.—The members of the family of the late Sir Titus Salt, Bart., have put up a large stained glass window in his memory in the west end of the above church. Figures of Noah, Abraham, Moses, Samuel, and Daniel are introduced, and under each figure is represented an incident taken from the life of the personage represented above it. The work is richly coloured upon a silvery-white ground. The inscription reads:—"In memory of Titus Salt, first Baronet, born Sept. 30, 1803, died at Crow Nest, Lightcliffe, December 29, 1876. This window is erected by his children." Messrs. Heaton, Butler, and Bayne, London, were the artists.

MELTON MOWBRAY.—A new stained glass window, by Messrs. Wales and Co., of Newcastle, has just been erected in the parish church of Melton Mowbray. The subjects are "Faith, Hope, and Charity," illustrated by Biblical examples of those virtues.

WATER SUPPLY AND SANITARY MATTERS.

FALKIRK.—Plans for the drainage and sewerage of the burgh, prepared by Mr. James Deas, C.E., Glasgow, were submitted to the Falkirk Town Council on Friday, and after examination remitted to a committee that the probable cost of carrying them into effect may be ascertained. Mr. Deas pro-

poses to divert several small burns into the sewer and to build new sewers, inverts and culverts, so that the discharge may take place into the river Carron, within the limits of the tidal flow.

SOUTHWRAM, WEST RIDING.—The Local Board of Southwram, having applied to the Local Government Board for sanction to borrow £700 for carrying out a scheme of drainage and water supply, an inquiry was held before Mr. Samuel Joseph Smith, C.E., inspector, on Friday last, when the details of the scheme were explained by the engineer who has planned it, Mr. Horsfall, of Halifax, and several minor alterations were suggested by the inspector. The sewerage proposal is to carry the sewage in 12in. pipe to Cromwell Woodbottom, where it will be passed through two settling tanks, and afterwards disposed of in irrigation on an area of about 30 acres of farm land.

CHIPS.

A new bank for the London and County Banking Company was opened at Redhill, Surrey, on the 1st of this month. It is a Classical building, and was erected from the designs of Mr. Edward Larmer architect, Reigate, the works being carried out by Messrs. Holdsworth, builders, of the same place.

A new school has been commenced at Dutton for the Dutton School Board, by Mr. Davies, builder, Frodsham, from the designs of Mr. Edmund Kirby Liverpool, architect to the board.

The Town Council of Barnsley were informed on Tuesday that 122 applicants had appeared in answer to an advertisement for a foreman mason, and 8 applicants for the post of surveyor. The appointments to these offices were adjourned pending further inquiries as to the candidates by a committee, whose choice will be by no means a restricted one.

The new post-office for Rotherham was opened on Wednesday. The new building is situated in Westgate, and was formerly used as the railway station of the Midland Company, but has been altered for its new purposes by Mr. John Garlick, of Saltley Works, Birmingham, at a cost of £4,000. The public-office and letter-sorters are on the ground floor, the telegraph instruments being on a store added above. The building is of stone, and the fittings are of the best description.

The independents of Hucknall Torkard, near Nottingham, have decided to erect a new chapel and schools on the site of the present structure. Messrs. Smith and Heathcote, Mosley-street, Manchester are the architects.

The foundation stone of the new Yorkshire College, at Beach Hill-grove, Leeds, was laid by the Archbishop of York on Tuesday. Mr. A. Waterhouse has prepared the plans for the entire collegiate building, but it is only proposed at present to build on the ground level, so as to accommodate the textile department as the only funds in hand are the £10,000 given for the object by the Clothworkers Company of the City of London.

The organ in Lisburn Cathedral was re-opened on Sunday, after enlargement and repairs executed by Messrs. Telford and Telford, of Dublin. Improvements are about to be made in the churchyard and in the approaches to the cathedral.

The Cottingham School Board have appointed Mr. Robert Clamp, of 20, Scale-lane, Hull, as their architect. The Board are about to erect a school for 300 children in St. John's-wood—a rapidly extending district in the suburbs of Hull.

The Mirfield Local Board, at their meeting last Wednesday, appointed Mr. M. Helliwell, of Hebden-bridge, surveyor and inspector of nuisances, at a salary of £150 per annum. There were 42 applications.

The first stone of the church of a large monastery about to be erected at Cowfold, Sussex, for the monks of the Order of St. Brune—a branch of the Grand Chartreuse de Grenoble—was laid on Tuesday week.

At the fortnightly meeting of the Stockton-on-Tees urban sanitary authority, held on Friday, the surveyor (Mr. Edwards) reported that John Ewbank had deviated from the approved building line of a new thoroughfare to be called Eggleston-street. The width should have been 35ft., with permission to project bay windows on either side 2ft. 6in. from the wall line; but as carried out the width is but 34ft. 6in. Proceedings were ordered to be taken against Ewbank, the owner, and Alfred Sawden, the builder, and also against several other persons, for not adhering to the plans submitted and approved, in the matter of sculleries and widths of yards.

Wisbech Town Council have asked the Treasury Commissioners' sanction for borrowing £6,000 for the purchase and laying out of a new cemetery.

It was decided at a meeting held in the County Buildings, Ayr, on Friday, to take steps for establishing an archaeological society for the counties of Ayr and Wigtown. Earl Stair, K.T., was nominated president, and a committee was appointed to draw up constitution and rules.

Our Office Table.

AMERICAN ART, like American Literature, has a cause to be ashamed of itself, and there is herefore no reason why some of its professors should be so dishonest. We have once or twice before had to rebuke some of these gentlemen who, with a coolness that is to be envied by honest people, have appropriated some of our own possessions. But the most barefaced instance of the kind that we have ever come across, has just been brought under our notice by Messrs. Cox and Son, of Southampton-street. The offenders are Lang and Nau, a Brooklyn firm of upholsterers and furnishers. These highly respectable tradespeople have just issued a catalogue of mediæval art furniture, and every page of it is copied from Messrs. Cox and Son's Catalogue, except the title page, which seems to have been begged, borrowed, or stolen from another London firm. An ingenious attempt to disguise the theft has been made in some cases, but generally the Yankee firm seem to have been convinced that Messrs. Cox and Son's arrangement could not well be improved upon, and they have accordingly appropriated page after page just as they stand in the English original. The introductory paragraphs to the catalogue, and a horrible design on the back page are the only original things about the book, and they are rubbish. How flattered Messrs. Cox and Sons must feel if an old proverb is true!

The people in one part of Anatolia, according to Captain Burnaby, have a very economical way of building their habitations. The man who is old enough to take unto himself a help-mate, and who is about to leave his father's roof, marks a piece of ground, generally of an oblong shape and on the side of a hill. He next digs out the earth to the depth of about 7ft. Then, hewing down some trees, he cuts six posts, each about 10ft. high, and drives them 3ft. into the ground, three posts being on one side of the oblong and three on the other. Cross-beams are fastened to the tops of these uprights, and branches of trees plastered down with clay cover all. A few planks, with a hole made in them to serve as a doorway, inclose the outer side of the building, and a broad heavy plank closes the entrance, hinges being replaced by strips of cowhide. A wooden railing divides the room into two parts; one of them is tenanted by the sheep, oxen, camels, and cows of the proprietor, and the other by himself and family. No partition wall separates the cattle from their master, and the smell which arises at night from the confined air and from the ammonia in the building is excessively disagreeable to a European. In cold weather a hole in the roof, which serves as a ventilator, is stopped by a large stone.

THAT the ritual and precedents of the Church of England require the font to be at the west end, and near the entrance of its churches, is evident, and no architect who studies the objects of the building he is designing would think of placing it anywhere else, even if he did not place a proper baptistery for the font's reception. But to place the font immediately

in the centre aisle is always a questionable procedure, especially when the steps are so arranged that little more than a foot is left on either side for passage way; and this has been done, to the evident inconvenience of worshippers, in the singular but clever church of St. Agnes, Kennington-park, lately built by Mr. G. Gilbert Scott. Here on Sunday last we saw a lady thrown headlong in consequence of the unreasonable planning of the font's steps, if not of the font itself. We did not expect such a mistake as we have just alluded to from such an architect, and we mention it as an example of what to avoid.

An interesting discovery of so-called Druidical remains has been made this week on Beckhampton Downs, Wiltshire. They consist of a circle of stones about 50 yards in diameter, with an "entrance" or gap on the turf on the eastern side. The stones show marks of fire, suggesting a cremation theory, are all recumbent, and very small, only about two or three feet in length. About 24 or 25 stones have been raised, but the excavation of the circle has not yet been completed.

CHIPS.

Lanside-road, U.P. Church, Glasgow, has been re-opened after completion of extensive alterations and repairs, effected from the designs of Mr. Alex. Skerving, architect, of the same city. The ceiling has been lined with wood, and varnished, the seats cushioned, windows stained, walls decorated, and pulpit removed to a fresh position.

Plans have been prepared by Mr. C. Pertwee, of Chelmsford, for the improvement and modernisation of London-road Congregational chapel in that town. The present flat ceiling is to be removed, open benches substituted for high pews, lohhies and vestry to be enlarged, and a ventilation system carried out, the total cost being estimated at from £1,500 to £2,000.

Saffron Walden Town Council have finally decided to purchase the gas and waterworks, and to give £6,400 for the former and £10,300 for the latter undertaking.

Extensive alterations have just been carried out in the Dorset County Hospital, under the direction of the executive committee, with the aim of improving its sanitary condition.

A workmen's supper was held at Castle Cary, Somersetshire, last week to celebrate the completion of the Camnock-terrace by Messrs. Seaward, contractors. Mr. W. J. Allen, clerk of the works, presided.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,
Have REMOVED their SAFE AND LOCK BUSINESS to new and extensive Premises,
123, QUEEN VICTORIA STREET, ST. PAULS, E.C.
Illustrated Price Lists gratis and post-free.
Makers to the QUEEN, H.R.H. the PRINCE OF WALES, and the Bank of England.

Throat Irritation.—Soreness and dryness, tickling and irritation, inducing cough and affecting the voice. For these symptoms use Epps's Glycerine Jujubes. Glycerine, in these agreeable confections, being in proximity to the glands at the moment they are excited by the act of sucking, becomes actively healing. Sold only in 6d. and 1s. boxes, labelled "JAMES EPPS & CO., Homoeopathic Chemists, 48, Threadneedle-street, and 170, Piccadilly, London."

Trade News.

WAGES MOVEMENT.

EDINBURGH.—The following circular has just been issued to the "Master Plasterers of Edinburgh, Leith, Portohello, and Vicinity," with a view to bring about a change in the working arrangements of the trade:—"The United Operative Plasterers having had under consideration the manner in which the plaster work in a number of buildings in and around the city has been executed for some time back, resolved that it was their duty to do their utmost to prevent employers who may contract for work at an unremunerative rate, with the hope that they will get men to do the work in a manner at once detrimental to the best interests of masters, the public, and the trade, from underselling the employers who wish to execute their work in a fair and honest manner, at a fairly remunerative rate. The United Operative Plasterers will decline to do three-coat plaster in any other manner than the following, viz.:—All angles properly straightened with a rule; walls and ceilings to be slack-floated and hand-floated with water; all the finishing coat to be hand-floated and polished."

LONDON.—A meeting was held on Saturday evening at the Spread Eagle, Charles-street, Tottenham-court-road, comprised of delegates from the Amalgamated General Union and non-society men of London belonging to the carpenters and joiners, for the purpose of obtaining from the employers a rise in wages and a diminution in the hours of work. It was resolved: "That in the opinion of this meeting, composed of delegates representing the carpenters and joiners of London, the time has arrived when we can ask for a reduction of the hours of labour and an increase in our wages."—The present aspect of affairs in connection with the strike of the operative masons in London represents both parties as being confident of success. The masters have gone to America, France, Germany, Italy, and Belgium for labour, with a certain amount of success, and the men represent themselves as being no worse off, but even better than they were three weeks ago. With respect to the importation of foreign and provincial labour, the only point where such labour is having a trial is at the new Law Courts. The stone yards on the building have never yet been entirely closed, but last week a great impetus was given to the works by the introduction of about sixty Italian and German masons. There are also about thirty Englishmen in the same shop. The foreigners went to work yesterday week, and on Friday last, as the Italians were leaving for their lodgings, they were set upon and hooted by a mob of roughs. They went to work on Saturday morning, but it is stated that they have not since left the scene of their labours, having been provided with hammocks in some of the cellars of the new building. This influx of nearly one hundred masons has set the works going again, and the eastern building is being paved with the stone which has been cut and squared by the machines during the past ten weeks. On the other hand, the men are equally confident. So far from there having been three hundred masons recently discharged, the central committee state that the number of men on strike is about the same, or a trifle under what it was three weeks ago, the number in receipt of strike pay being about 650. The central committee also boast that their funds show a better state than they did at that period. The amount then paid to the men on strike was 18s. per week. This was increased, on the 6th inst., to 20s., and last week the committee paid 21s. to each man, showing that the levies come in regularly and in sufficient amount to carry on the work they are engaged in. Some of the delegates who went over to the Continent, with a view to checking or stopping the importation of foreign labour, have returned, and they speak hopefully as to the result of their mission. Reports of their journeys will be submitted to the next general meeting of the union.—The first contingent of 58 masons engaged through the Master Builders' Com-

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OF EVERY DESCRIPTION, ALSO

ARTIFICIAL LIGHT REFLECTORS.

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

mittee in America arrived in London on Wednesday. Eight or ten of the new arrivals at once deserted, and were taken away by the English masons on picket in cabs. The Americans allege that they were told in New York by the agent that there had been a masons' strike in London, but that it was ended. The men also complain of the great discomforts of the voyage. The men are to be employed by Mr. Booth on the new Temple buildings. It seems not unlikely that they will accept strike pay, which, it would appear, the strike committee are in a position to give them if they join the men on strike. On Wednesday the Italian and German masons brought over to work at the New Law Courts remained inside the hoarding surrounding the building. They require the aid of several interpreters, for they have come from various districts and speak several distinct dialects. The strike committee are as confident as ever, and they say that they do not in the least fear the importation of American and foreign masons. The funds of the committee are stronger than when the strike commenced, and they are paying increased strike allowance to the men who are out.

MANCHESTER.—The Executive Committee of the Manchester Master Builders' Association have informed the representatives of the men on strike that in their opinion "it is undesirable to renew negotiations" with a view to a compromise.

ST. HELENS.—The joiners at St. Helens, after having been on strike for 23 weeks, have resumed work on the terms offered to them by the employers before they struck on the 1st of May last—viz., 8½d. per hour. This is the same wage as is paid at Liverpool, and ¼d. per hour less than the Manchester joiners receive.

WOLVERHAMPTON.—A Wolverhampton correspondent states that negotiations have been carried on between England and Germany, which have resulted in German builders and contractors having expressed their readiness to undertake work in England with their own men. These they will bring over with the requisite foremen. In pledge of their resolution to carry through any work upon which they may enter, they are prepared to sign contracts for its completion within specified dates under a heavy penalty. They say they shall meet any opposition by simply placing themselves under the protection of the German consul.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—ADVT.]

Holloway's Ointment and Pills.—At all seasons throat and chest complaints are more or less prevalent. It should be universally known that their relief and subjection can be radically effected by this treatment, which every one can safely carry out without losing precious time or risking present and prospective danger.

CHURCH METAL WORK.

Altar Rails, Alms' Dishes, Coronas, Candlesticks, Communion Plate, Mediaeval Gas Standards, Lecterns, Screens, Trowels, Vases, Gates.

SOLE AGENTS for Powell Brothers' Stained Glass, &c., Doulton Ware, and Architectural Terra-cotta, Ornamental Tiles, Lemeth Palace.

Estimates Furnished for Special Designs.

CHUBB AND SON.

57, ST. PAUL'S CHURCHYARD, E.C. LOCK and SAFE WAREHOUSE, 128, Queen Victoria-st., E.C.

TENDERS.

BANSTEAD, SURREY.—For planting grounds of school for Kensington and Chelsea School District. Messrs. A. and C. Harston, architects, 15, Leadenhall-street:— Veitob and Son (accepted) ... £412 13 0

CAMDEN TOWN.—For the erection of Turkish baths. Mr. H. Bridgman, architect; quantities by Mr. Fred. Thomson:— Carcase and part of fittings: Hunt, J. R. (accepted) ... £4,000 Wall decorations: ... 525 Atbenian Marble Co. (accepted) ...

CO. DURHAM.—For auxiliary buildings (for 402 patients) and two entrance gates and lodges for same, at Sedgfield Asylum, Durham. Architect, —Mr. William Crozier, M.I.C.E., engineer and architect for the county of Durham; quantities supplied:—

	Main Buildings.	Entrance lodges and gates.
Inglis, Middlesbro'	£34,203 19 0	£1,130 10 0
Robinson, Sedgfield	33,677 18 8	1,193 3 3
Rutter, Durham	33,574 13 0	1,280 10 0
Wilkinson and Pounder, Middlesbro'	32,440 0 0	1,196 0 0
Suggitt & Son, W. Hartlepool	31,947 0 0	1,203 0 0
Elliott, Newcastle-on-Tyne	31,800 0 0	1,230 0 0
Forster, Washington	31,445 7 2	1,230 6 1
Kyle, Barnard Castle	31,379 10 7	1,188 14 9
Crosby, Stockton	31,245 0 0	1,259 0 0
Hutchinson & Bainbridge, Gateshead	30,934 17 3	1,178 10 4
Tomlinson & Son, Leeds	30,598 0 0	1,196 6 0
Craggs & Benson, Stockton	30,499 0 0	1,165 0 0
Graddon & Son, Durham	30,467 13 6	1,088 7 6
Robson and Son, Durham	30,194 0 0	1,179 0 0
Bailey, Newcastle-on-Tyne	29,643 9 6	1,072 17 9
Marshall, Darlington	28,779 0 0	1,217 13 0
Hodgson, Darlington	28,435 0 0	1,055 0 0
Johnson, Middlesbro'	28,375 0 0	1,193 0 0
Johnson, W. Hartlepool	27,550 0 0	1,160 0 0
Pearson Bros., Middlesbro'	27,044 6 4	1,090 10 9
Stephenson, R., Saltburn	26,855 8 6	1,187 11 5½
Atkinson, W. T., Stockton-on-Tees (both accepted)	26,050 10 8	1,049 17 10
Fawell, Darlington	...	1,044 4 0

[130 tenders were received in all, containing 411 distinct offers, 45 sole tenders, and 85 for different trades or sections. To the above amounts of accepted tenders may be added about £7,500 for foundations and drains, already executed; irrigation, cooking, heating and ventilating apparatus, and gas and water mains, &c., say under £34,600 for buildings complete in every respect.]

DARENT, KENT.—For cast and wrought-iron tanks of a total capacity of about 40,000 gallons, for the School for Imbecile Children, Darent, Kent, for the Metropolitan Asylum Board. Messrs. A. and C. Harston, architects, 15, Leadenhall-street:—

Beck and Co.	£1,550 0 0
Hall, J. and E.	1,269 0 0
Powis, C. and Co.	1,264 0 0
The Horseley Co., Lim.	1,075 0 0
Spencer and Gillet	1,065 0 0
Fraser Bros.	1,029 0 0
Morewood and Co.	1,025 0 0
Wright, J., and Co.	1,018 13 0
Masefield, R.	1,000 0 0
Le Fevre and Co.	999 0 0
May, J. and F.	995 0 0
Spenslagh and Co.	984 0 0
Cochrane and Co.	964 0 0
Baberue and Co.	959 0 0
Abel, W.	955 0 0
Newton, Chambers, and Co.	951 0 0
Hill and Smith	940 0 0
Brettell, J. O. and O. E.	938 0 0
Chandler, J. and Sons	899 0 0
Inkes, Coulsen, and Co.	809 0 0
Ashmore and White	793 0 0
Pontifex and Wood (accepted)	698 0 0

LONDON.—For warehouse and premises, No. 46, Basinghall-street. Mr. H. H. Collins, architect; quantities prepared by Messrs. Batstone Bros.:—

Brass	£5,427
Ashby and Horner	5,417
Newman and Mann	5,417
Asby Bros.	5,348
Browne and Robinson	5,320
Waldram, J., and Co.	5,310
Scrivener and White	5,293
Merritt and Asby	5,220
Mark	4,975
Abraham	4,796
Nightingale	4,713
Kirk and Randall	4,658

HASTINGS.—For the erection of a Congregational church and school at Mount Pleasant. Estimated cost including terra cotta dressings, £4,430. Mr. Thomas Elworthy, architect, St. Leonards-on-Sea:—

Nightingale, B. E., Lambeth	£4,620
Crittenden, F.	4,413
Eldridge, W. H.	4,370
Vidler, A.	4,360
Asbdown, H.	4,311
Wood, J.	4,288
Smitb Wm., Kennington	4,260
Parks, D.	4,175
Geary, G.	4,140
Reeve Bros.	3,948
Hughes, H. and C.	3,895
Winter, J., sen.	3,844
Harman, C. (accepted)	3,699

[In addition to these sums, a contract for terra cotta dressings has been taken at £600.]

LONDON.—For new factory in the Euston-road for Messrs. Frederick Braby and Co. Mr. E. L. Tarbuck, architect:—

Manley and Rogers	£2,177
Longmire and Burge (accepted)	2,070

LONDON.—For shops and offices, Nos. 115, 116, and 117, Newgate street, E.C. Messrs. Ford and Hesketh, architects:—

Morter	£6,890
Perry and Co.	6,884
Brass	6,820
Kirk and Randall	6,703
Browne and Robinson	6,618
Lackland and Sons	6,590
Asby Bros.	6,561
Crabb	6,446
Scrivener and White	6,421
Lawrance	6,367
Nightingale	6,200
Newman and Mann (accepted)	6,167

LONDON.—For painting and decorating at Westbourne Villa, Finchley-road:—

Hackworth, A.	£250 0 0
Atkins, A.	236 0 0
Butcher, W. H.	233 15 0

SURREY.—For erecting a building and offices on the site of the old Prince's Stand, Epsom Downs, for Lieut. C. V. Strange. Mr. J. R. Hardwig, A.I.C.E., surveyor; quantities by Mr. T. Nixon:—

Goddard and Ton	£2,187
Taylor	2,100
Hooker	2,078
Calls and Son	1,975
Sbearburn	1,920

TUNBRIDGE WELLS.—For two gas holders, to be provided and erected at Tunbridge Wells for the company; each 112ft. diameter by 30ft. 6in. deep, single lift, with wrought-iron guide framing, cast-iron dry wells, inlet and outlet pipes, with bye-passes between each pair of pipes, as designed by Mr. R. P. Spice, of Westminster:—

Horsley Iron Company	£11,640
Cockey and Son	10,320
Cutler and Sons (accepted)	10,190

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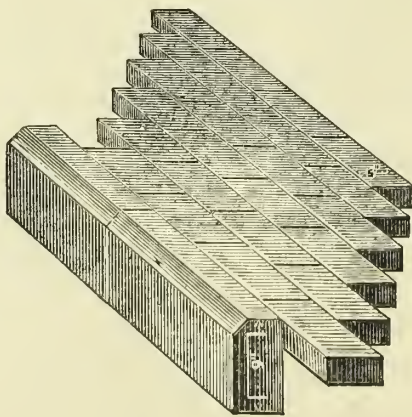
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THE BUILDING NEWS.

LONDON, FRIDAY, NOV. 2, 1877.

SCIENCE AND TRADITION IN DESIGN.

There is rapidly being created in France a school, at the head of which stand, perhaps, MM. Littré and Taine, which devotes itself to the culture of pure taste in regions other than those of the High and Fine Arts, conventionally so called. Of course they appeal to larger classes, and to a more popular ambition, since the French are a nation of working inventors and inventive workers, every one of whom hopes, through some happy idea, to rise above the ordinary level. But, of recent years, it has been discovered that this is rather an instinct than actual power, and accordingly the Practical or Technical Institute of Paris will, for the future, direct its forces towards the organising, as it were, of an immense amount of suggestive ingenuity which is at present wasted. No doubt the preliminaries of these associations are invariably tedious. They are immersed in discourses on æsthetics and the other alphabets of study, but M. Lèveque speedily emerges from these clouds and goes to Nature for an allegory in illustration of his solid subject. The nest of the swallow is exactly what it was when the swallow was first created, the throat of a man is precisely similar in London and in the Pacific Islands, and the bee has not improved upon his architecture since she began to build. This is an old argument, yet we shall see to what use it is put by the Parisian Practical Institute, with its lectures and demonstrations. They commence by asserting that a genius for design is not acquired, is inborn, is a matter of necessity in the individual—that Phidias was created to be a sculptor, Raffaele a painter, and Mozart a musician. They insist, moreover, that the beautiful arts have been influenced by circumstances almost innumerable—climate, personal temperament, the reign of peculiar tastes, religious and political, hereditary and social accidents, and that even whole populations are acted upon in a similar manner—as the Swiss and Germans with their toys, the Red Indians with their painted skins and wampum; and, in the history of mankind, a thousand other illustrations of the human imagination struggling towards art. It is to be regretted that the learned discussion just opened should confine itself so exclusively, or almost exclusively, to sculpture and painting, because, in a hundred other forms, their study might be varied. They themselves, indeed, supply a proof of what is here said. Says one of the members, "From the window at which I write I perceive the Dome of the Invalides, which is a mile and a half from my house. At this distance it appears 75ft. high. If I want to paint it from the place in which I am, and I want to represent it realistically as it is, I shall exhibit rather the dome than the main structure. I give its actual proportions, and leave the others out of the account. They are not in my sight, and they are not for my work." This is no more than a passing exemplification of the spirit which is passing over French, and therefore all Continental art of the present time. Not a few examples are given us as warnings of the pernicious tendency that exists. Thus Charles de la Berge, a painter of unquestionable talent, some of whose works hang in the Louvre, has been adopted as a master by a certain section of the school already referred to. He was a painter of the ultra pre-Raffaellian type—allowing this term to have any meaning at all—his notion of art consisted in reproduc-

ing every minute detail of circumstance and fact. If he had to represent a house he mounted to the roof and painted every separate tile, every decaying chimney, every invading patch of ivy or moss. "Nature thus," he said in his lecture to the Institute, "teaches us design," and so, he added, "will a school be henceforth founded." It is founded, though whether owing to the enthusiasm of M. Charles de la Berge may be doubtful.

The French academies of painting are wonderfully superior in their theories of colour and grouping, but woefully wrong in their ideas of perspective. This is admitted by their most eminent art critics. Thus, in the very Salon of the present year, an eminent landscape-painter, intending to have a rock in his background, brings it down into the front of the canvas, and splashes the sea upon its base. The effect is striking, but the art is nowhere. It is this want of principle in design which mars and wastes so much of the inherent French genius for all work requiring fancy and thought. Between the ideal and the realistic, in fact, the students of the Quartier St. Germain frequently lose themselves, and allow their mythological traditions to get the better of their efforts in design. At the same time it is curious to observe how they, "pupils of the Romans and the Florentines," as they term themselves, make a great ostentation concerning aerial and linear perspectives, borrow effects from the photographic apparatuses, talk about the inexorable application of mathematical laws, dilate upon geometrical systems, and finally, sit cynically down to their easels, saying, "A man, in these times, to be a painter, must copy without scruple." But that, we are glad to think, is only the irony of a young and, as yet, unsatisfied generation. Even from it, however, arises, through the new Institute, a protest against the profanations of photography. It makes, we are told, the hands and feet of the human figure too large. It violates the laws of perspective, it paints beauty out of sight as with a brush, and it is a fraud upon the genuine painter of portraits. M. Charles Lèveque, entrusted with the drawing up of this report, does not explain how or why he came to make it so miscellaneous. There can be no objection, however, to the introduction as studies of chiaro-scuro, or colours of all kinds, which are essential to the understanding and progress of art; and, indeed, in the matter of colour, the French have more of the Roman than of the Pompeian genius, and would be far better if they were refined down by a few degrees. To get rid of this excess would be, in truth, to get rid of the great French fault in art, as perhaps in other things—exaggeration; and yet, as our new teachers ask us, what is more indispensable to the arts of all kinds than light and tints? They were among the blessings of the Pagan heavens—

Et lumine vestit
Purpureo.

Colour, so far, was made more important even than design, regarding this latter as merely a question of outline and form. But the professors of the Institute have not neglected their other functions. They propose an inquiry, full and exhaustive, into what Burke called "the infallible splendours of the sculptor." The sculptor, it must be admitted, is put upon an uncommon ordeal before them. He must, they say, possess a perfect knowledge of dynamics, anatomy, geometry, and perspective. These conditions being satisfied, he must on no account be guided by the same principle as the painter, since their pursuits and the maxims of them are totally different. He has to consider whether his statue is to be placed in a niche or upon a pedestal; far above or near the ground; solitary or in association with

a group or a building; in a Classic, a Gothic, or a "no-character" neighbourhood. A really great artist, said M. Beulé, can make his own perspective; but then he spoke of Paris and Berlin, of Frankfort and Munich, and not of London. But the Practical Institute is not discussing monuments and the architectural adornments of cities alone. It urges that all through the common ways of life a certain idea and spirit of art may be followed, and even forced, if necessary, for a time, in order to banish all familiarity with ugliness, with vulgarity of form, and with those grosser notions which are too apt to be mixed up with our traditions of the popular life. To this end, indeed, the "Applied Æsthetics" of M. Sutter point with a distinct aim. He says that neither in architecture nor in sculpture, neither in painting nor in decoration, neither in pottery for the poor nor in furniture for their households, need anything extravagant be aimed at. Let them teach themselves in their own schools, he adds, and they will soon find out the value of their learning.

The subject is distributed by the new Institute under several heads. The first, as already indicated, includes architecture and sculpture. "Are there any laws with reference to these?" is the question to be tentatively asked all over France, presently. There are magnificent works in existence; there is a lineage of artists belonging to French history; but, say the preliminary investigators upon this commission, in a spirit somewhat new—"may we not turn from the secrets of the dead to discover the possibilities of the future?" This is one among the tasks undertaken, as we understand from documents, by the Parisian Practical Institute. It will be abortive, we fear. The future must discover itself. But, it would be unjust to represent the passing movement as simply a repetition of enterprises, denials, proofs, and experiments. A keen and certain test has been applied, and will be applied again, to those who challenge the verdict of the Parisian Institute. For example, the fidelity of the portrait, in comparison with that suppositiously related to it; the genealogies, as it were, of the two pictures; the translation from the real to the ideal, and thence back again, and, finally, a concourse of criticisms, each or all of which might assist at a middle-age revival, with no absolute results whatever. In the preliminary studies of the Parisian School of Design, now alluded to, it has been shown that the canvases of Léon-Baptista Albert were mistaken for those of Leonardi da Vinci, and that Jean Cousin passed himself off, unconsciously though, twenty times as Albert Dürer. We discover in this a secret. As the fashions of Spanish ladies in dress are the most easy to imitate, because they never change, so the fashions of the Low Countries in art are equally facile of emulation in a mechanical way, because they belong to an unchanging—possibly unimprovable—school. But we must not be led too far out of the way by the enthusiasm of M. Henri Delaborde, who falls through nineteen centuries from the ivory and gold of Phidias to the architect of the Baptistery at Florence, and the preferences, in point of design, accorded to Raphael. There, no doubt, the arts of decoration and design took a new turn. They were not in the style of Rubens; they were not in the style of Holbein; they no more belonged to the manner of Velasquez than they did to that of Claude Lorraine. And yet, through them all the art of design rose as if by imperceptible degrees, until it became a growth visible to the whole artistic world, and the pencil of Ingres became a rival to the brush of Titian. There was another artist at that time who might have made a name, but was prevented by the conceits of a

king. Denner, who could paint a living portrait on his finger-nail, was employed by the Fourteenth Louis to model portraits of his favourites in common sealing-wax; to draw monochromes of the statues in the gardens at Versailles; to model, even, dead bodies in wax. Yet this unfortunate man was, and still is, styled a great master in design! The commission just instituted is intended precisely to examine into these pretensions, especially with reference to Paris—whether, for example, the famous School of Fine Arts is worthy of the admiration it has excited, or the vestibule of the Palace of Justice—a poor Corinthian structure in the most imitative style—the vaulted gallery from the Place Napoleon III. to the New Louvre; the dome of Saint Augustin, or the interior of the Holy Trinity. There is no pretence of picturesque design, of course, in the new Central Markets, though the Parisians claim a great deal on account of their globular roofs and miserable approaches; but, if we would pursue the real topic raised by the Institute, we must leave these barbarous erections out in the cold and the darkness, and enter within the warmer halls of art, whether industrial or not, where the true sense and spirit of intellectual industry are represented, and where another Morshaussen might say:—"I regard my workmen as being artists, artisans, labourers—all in one." The French, however, perhaps even more rapidly than the Germans, are cultivating the taste in workmanship of which their industrial rivals have scarcely, as yet, formed more than an idea.

DESIGNERS AND DRAUGHTSMEN.

IT is quite evident that the designer and the draughtsman are seldom combined in the same individual. Architectural competitions force this conviction more strongly upon us every time there is a combination of plan and artistic draughtsmanship brought together. We seem invariably to detect the plan-designer and the elevation artist as two different individuals, inspired by two opposite qualities, in the same manner as men of knowledge, and men of wit and taste have long been known to be inimical. These separation of the ability and ingenuity required in plan design from the talent for expressing an elevation has indeed become so marked a fact in the practice of architecture that there are few who will dispute it. Even the public—not the most intelligent critics of works of architecture—have come to the conclusion that the "prettiest and showiest" drawings they see on the walls are the work of men not adepts in constructive skill—in fact, not designers of buildings, but designers of pictures—something that cannot be carried out for the estimate. We have often overheard the remark from men who have learnt to know the result of these contests of skill, that "elevations are misleading," or "it may look very well on paper," &c. Even committees are getting a little wiser, and seem to know that in architectural competitions they have to contend against artistic tricksters in colour, and competitors who manufacture their drawings, and they accordingly begin to prohibit coloured drawings, and sometimes perspectives, as delusive. Competing members of the profession, and their number is very large, begin also to understand their own chances and risks; they know their own strength or weakness, and they therefore often fortify themselves by engaging the talent of an expert in competition drawing. It is not surprising that this should be so, as every individual competitor is open to do the same, and enlist on behalf of his design the graces of colour, or the dexterous touch of the artist's pencil. Everything is fair

in love and war, and as our enemies may profit by our latest improvements in the construction of ironclads or breechloaders, competitors think it fair to acquire all the tactics they can. To meet this demand a large number of competition artists or experts have been called into requisition, who, it may be permitted to say, do little else than prepare perspectives or elevations from the rough sketches of their employers, or who, in a large number of cases, prepare—we will not say design—the elevations to meet the caprice of the individual, or the fashion of the hour, or the plans. These men, of whom we have no wish to speak in anything but in respectful terms, become *ipso facto* part-competitors. Hence within the last few years have sprung up a large number of nominal architects, or we would rather say architectural *modistes*, who cater to the popular fancies or styles of the day, who perhaps scarcely or never design a building *ab initio*, and who divide the honours of skill with those who, without their aid, would have been left in the "cold shade." We cannot but regret the results of the system in the true interests of architecture. We do not complain of a division of labour so far as design and draughtsmanship is concerned. It is impossible for an architect of large practice to personally work out the detail of every building he designs, nor do we complain of those architects who, as specialists, devote themselves to the design of elevations, or the decorative portions of architecture, but we protest, in the name of true architecture, against the wholesale "manufacture" of architectural designs—that is to say, the system of "designing" by deputy, by which the architect commissions another to manufacture a design for him—plan, elevation, and all—or so far to design it that the elevation is made the chief consideration, and the plan made to meet it. We could mention a dozen or more architects of standing in their profession who persistently adopt this system, and who virtually forfeit the title to be considered architects at all. They are certainly not architects in the sense that the ancient master-mason or Renaissance designer was: they may call themselves such, as a commercial perfumer or gastronomer calls himself an artist, but in no other sense. Art to them has come to be regarded as a manufacture that can be left to subordinates, and other hands. To their honour and sense of independence it must be said that some of the leaders of the profession set their faces against this system, that their work as a rule, bears the impress of their skill and their taste, and in some instances of their pencil. This wholesale "manufacture"—we can hardly call it design—of our buildings has intensified the public feeling against the honesty of architects; it has widened the breach between the practical builder and the architect, and has led to Government works being designed by their own officials. It has done still more irreparable mischief in the ranks of the profession itself. A class of specialists has arisen who are practically winning works out of the hands of the well-trained architect; the true art-architect is being ousted on one side by engineers, and on the other side by expert draughtsmen. Only the "commercial" architect, who cannot perhaps design at all, and who never gives himself the trouble to do so, obtains the windfalls in public competitions by "doing the right thing"—getting an expert to prepare designs for him, and paying a commission for his brains. Every now and then we hear of an unpleasant though profitable *exposé* of this joint authorship. A disagreement takes place—the artist claims the authorship, and the public profit. Competition, no doubt, has largely contributed to this system of things, and it may be argued that the public get the full value of this

division of labour. But they do not. In manufactures, division of labour is beneficial. In the design of a building, if the plan were prepared by a specialist well versed in the kind of structure, and the elevation designed by some one capable of expressing artistically that plan, the employer would undoubtedly be the gainer; but this combination is rather thwarted than otherwise, from the simple fact that the "designer" is not in this case interested in bestowing thought. The interests are divided, and, as a rule, the commercial architect employs one who can express *ad gustum* and *ad modum*, rather than design well for the purpose. In short, a trashy kind of merit is valued more than honest design. Unfortunately, too, the *prestige* of competition has favoured this kind of art. Dean Stanley the other day, addressing the students at St. Andrew's, expressed a sentiment that admirably represents the popular feeling for architecture, and those who cater to please it. He said, "The very attempt towards pleasing every body discovers a temper always flashy, and often false and insincere." Now, it must be admitted, there is a very strong tendency to do this in competition. Hence, not only the advantage of educated and enlightened juries, but educated committees of selection. Verdicts, as we have lately seen with regard to the now famous Penge case, have been given in almost direct opposition to medical testimony, by the prepossession of the mind, influenced by an able judge, and gifted oratory. Competitions without number have been decided upon wrong premises, and under the influence of trickeries of colour and drawing. But in art matters the fallacies of the *ad captandum* means used by the draughtsman have far more chance of being injurious than a judicial decision, simply because only the trained architect or critic can divest the design before him of the unnecessary forms, and realise the structural effect of the plans and drawings. As the skilled and eloquent advocate can build a superstructure upon certain facts, so the expert draughtsman can throw a charm over a plan utterly bad—a thoughtless and haphazard design—while close by the side of it may be a plan or a few rough elevations divested of every artistic finish that may not captivate the popular mind, but which may transcend the former in every substantial merit as an architectural composition. In one or two recent competitions this disparity has been too evident to be overlooked. To instance the recent Hove School competition, we noticed several plans of merit coupled with elevations that would do discredit to a pupil of two or three years' architectural training. The authors of those plans would have done well to have employed some one to design their elevations. Again, one or two of the best elevations have badly-arranged plans which no committee could accept. If the good plans could have been united to the architectural elevations both the plan and the elevation designer would have stood a better chance; and we may here mention that the selected design displays the combined advantages of skilful plan and elevation to a degree that constitutes it the best in the competition. So rare is the combination of good planning and elevational design that critical visitors to many of our recent exhibitions of drawings—such as those of Leeds and Wakefield, to say nothing of smaller competitions—could not have failed to detect the great divergence between the plan-designer and the elevation draughtsman. We know many men who can sketch an elevation, but who have not the patience or manipulative skill to elaborate it. Only a few of our leading architects are masters of plan and elevation. Mr. Waterhouse, Mr. Street, Sir Gilbert Scott, Mr. Norman Shaw, are architects who can com-

bine the two qualifications necessary to produce satisfactory architecture: on the other hand, there are hundreds of ingenious planners who make bad designers, and many good designers of elevation who cannot plan at all. So manifest is this that we are obliged to confess the two functions are not common, and frequently inimical; in fact, we have noticed that the plan-designer may be quite unskilled as a constructive architect, and may have a very imperfect acquaintance with building. The art-architect as designer very seldom possesses both qualities. This diversity of talent leads us to analogous instances. Addison, Molière, Pope, Hogarth, and Swift were better writers than conversationalists—in fact, the ablest conversationalists and wits have been indifferent writers. The pen is well known to be the extinguisher of oral wit or brilliant conversational qualities. In architectural design it would seem that a similar law prevails.

Our present method of architectural instruction leaves much to be desired. The pupil articted for a term of years is made to copy plans and elevations as if they had no connection farther than that one gave the length and divisions of the other. The draughtsman takes the plan, ticks off the windows and doorways, &c., plots them on his sheet, raises his verticals, and sets off his heights from a sketch; but the idea that the elevation should be made to express the arrangement, to pronounce certain features of the plan and the construction, is completely disregarded. The connection of the two processes to produce an integral whole is never taught systematically, and we consider more architectural reputations are wrecked upon the want of relation between the study of the plan and the external design than upon any other subject in the practice of the profession. The considerations that should determine the setting out of a plan, such as those presented by the programme of the requirements and the nature of the structure, site, &c., we have lately referred to in these pages. The conditions that should regulate the elevation should spring also primarily from these, and the artistic conception while free to exercise unrestricted power should be governed by the axial distribution of the apartments, and by those known and definite characteristics of art-expression which best fulfil the purpose of the building. The separation of plan-design from elevation-design must be considered rather the result of our imperfect system of architectural synthesis than the rational result of a true method or education, though if the proper correlation be established by it, there may yet be some hope for the author of a good plan to be successful in his orthographic design. There are very few plans that do not admit of artistically conceived elevations, but the fault is that they are studied apart. Very often the artist has only the position of the openings and main floors to guide him; he is ignorant of the surrounding buildings, the width of street the façade will face, the point of view from which it will be generally seen, or the leading idea of the plan itself. How, we ask, can a satisfactory result be expected? It is like cutting and fitting the garment to a dummy instead of the wearer. As a consequence, we get stock designs, cut and dried architecture, and inventive skill is sacrificed to stereotyped individualities.

BAHAMA AND TRINIDAD TIMBER.

THERE are many timber trees here which have such valuable properties that it will be worth while to enumerate a few, commencing with Bahama. The cedar of that island is used principally in house-building, for door and window frames, piazza posts, sills, girders, &c. It grows on several of the Bahama islands, but

is found in greater abundance on Andros Island, and its size, when full grown, is from 16 to 20ft. in length, and 1ft. in diameter. It is generally cut 10 to 16ft. in length, and from 5 to 8in. square. The branches are used for boats' timbers. This is one of the most durable of the Bahamian woods. It is a soft, close-grained, rather light wood, possessing the pink hue, and emitting the fragrant odour of the common pencil cedar.

Horseflesh mahogany is sold at fancy prices here, when good specimens are offered; but in Bahama it is principally used in house-building, and the branches and crooked trees for ships' timbers. It is a very durable wood, and grows on several of the Bahama islands, but is found of large size and in greater quantities at Andros Island, where it grows to about 20ft. in length and 2ft. in diameter. It is, however, seldom brought out of the woods of that size, for want of proper means of conveyance. It is a hard, fine-grained wood, and exhibits numerous open cells.

Dogwood.—The principal uses made of this wood are for feloes of wheels, and for ships' timbers. From its toughness and other properties, it is better adapted to the former purpose than any other of the Bahamian woods. The tree does not attain any considerable size, and is generally crooked. A rather soft, open-grained, but very tough wood.

Stopper Wood is principally used for piles and for wheel-spokes. It is a very strong and durable wood, and grows from 12 to 16ft. long, and from 6 to 8in. in diameter. It is found on all the Bahamian islands, and is an exceedingly hard, fine, close-grained, and very heavy wood.

Lignum Vitæ grows on several of the Bahama islands, and is generally exported to Europe and America. The principal use made of it in the Bahamas is for hinges and fastenings for houses situated by the sea-shore, or in the vicinity of salt ponds on the out islands, where, from the quick corrosion of iron hinges, &c., metal is seldom used.

Bahama Satinwood, so well known in the London market, and also called yellow wood, grows abundantly on Andros Island, and others of the Bahamian group, and to a large size. It is a fine, hard, close-grained wood, showing on its polished surface a beautifully-rippled pattern. Bahama mahogany grows abundantly on Andros Island, and others of the Bahama group. It is not exceeded in durability by any of the Bahama woods. It grows to a large size, but is generally cut of small dimensions, owing to the want of proper roads and other means of conveyance. It is principally used for bedsteads, &c., and the crooked trees and branches for ships' timbers. It is a fine, hard, close-grained, moderately heavy wood, of a fine, rich colour, equal to that of Spanish mahogany, although probably too hard to be well adapted for the purposes to which the latter is usually applied.

Crab Wood is mostly used for picture frames, and small ornamented cabinetwork, &c. It seldom grows larger than from three to four inches in diameter, and is a rather hard, fine, close-grained, moderately heavy wood. The heart-wood is of a beautifully-veined Vandyke brown, its external edge bright black, and the albumen of a pure white.

Trinidad.—The balata is a timber extensively used for general purposes, and much esteemed. Its diameter is from 2 to 6ft. The mastic is also held in high estimation, and varies from 2 to 4ft. in diameter. The gru-gru, which is a palm, yields beautiful veneer, as also does the gri-gri. For some of these trees it will be observed that we have no vernacular names, consequently the choice lies between the nature and the botanical name. The heart-wood of the butterwood only is used. The beauty of the wood is well known, but it never attains a large size. Its recent layers are of an uniform yellowish white colour. The carapa bears a considerable resemblance to cedar, and is extensively used, and much esteemed. It is from 2 to 3ft. in diameter. The West Indian cedar of Trinidad is a most useful timber, growing to from 3 to 12ft. in diameter, and is well deserving the attention of consumers, as is also the copai, a beautiful and durable wood. The sepe is a light wood, resembling English elm, impregnated with a bitter principle, which preserves it from

the attacks of insects. It is much valued, and its diameter is from 1 to 2ft. The calabash is very abundant. It is tough, strong, and is used for general purposes. In diameter it ranges from 1 to 2ft.

L'Angelme is a strong, hardy wood, exclusively used for the naves of wheels, &c. Courbaril is a valuable and abundant timber of from 2 to 6ft. in diameter, and may be otherwise described under the name of West India locust. Yorke saran is a very hard and useful wood, and also purple heart, which has the advantage of being very abundant, and runs from 2 to 4ft. in diameter. Aqua-Tapana is a very durable and curious wood, susceptible of high polish, and from 18 to 36in. in diameter. The green, grey, and black poni furnish the favourite timbers of the colony, and furnish the hardest and most durable of wood. Their timber takes a fine polish, has a peculiar odour, and is very abundant. The trees are 3 to 4ft. in diameter, and proportionably lofty.

It will be seen that much valuable wood is produced at places where we do not usually look for it, unless for some particular production which we happen to be acquainted with, such as Bahama satinwood, &c., and for the most part we are content to take the products of the forest, just as they come to our hands, and with few attempts to improve the quality of the wood by cultivation. But the great value of forests, as sanitary agents, and their value as an annual source of revenue, are now beginning to be appreciated, and it may be that another generation will not only find that the supply of building wood is more abundant in proportion to what will, no doubt, be an increased consumption, but also that the durability and beauty of our imported woods have been enhanced by proper cultivation.

ARCHITECTURAL ASSOCIATION.

THE annual conversation, with which the session of the Architectural Association opens, was held on Friday evening last at the society's house, Conduit-street, when, as usual, a large number of visitors were present. The President, Mr. Bowes A. Pace, opened the proceedings by distributing the prizes after having announced the awards made in connection with the several claims of the Association. The list of prizemen is as follows:—

ARCHITECTURAL UNION COMPANY'S PRIZE FOR MEASURED DRAWINGS.—1st prize, motto: "Tis better to have tried and lost than never to have tried at all," Mr. J. E. Hatch; 2nd prize, motto: "Excelsior," Mr. W. J. Lansdell.

ASSOCIATION PRIZE FUND.—DESIGN FOR COUNTY COURT.—1st prize, motto: "Hasti," Mr. G. A. Waters; honourable mention: "Justice," Mr. H. W. Burroughs.

CLASS OF DESIGN.—1st prize, Mr. H. M. Robinson; 2nd prize, Mr. A. W. Hennings; honourable mention, Mr. J. W. Fisher.

ELEMENTARY CLASS OF DESIGN.—1st prize, Mr. F. R. Farrow; 2nd prize, Mr. A. Cawston; honourable mention, Mr. Eden Smith.

COLOUR DECORATION CLASS.—Mr. E. E. Deane. CONSTRUCTION CLASS.—Messrs. H. H. Connall, R. Henry, F. G. Hughes, prizes equally divided; Messrs. H. Griffin, A. S. Gover, honourable mention.

Among the donations made to the library during the recess the presentation of several autograph drawings of the late Owen Jones, by Miss Jones, was referred to, and Mr. H. Stannus, on behalf of the donor, explained that the series of drawings exhibited must be taken as fair examples of the author's work, rather than as exceptional specimens, and that they had been given in accordance with the wish of Mr. Jones, whose loss they all so much regretted. The President then delivered the customary inaugural address from the chair, in the course of which he briefly alluded to the various classes and means of usefulness carried on in connection with the Association, and concluded his speech with a few well-timed remarks on restoration, and on the arts which verge on the practice of architecture, noting the progress made in domestic art, and the increased interest taken by the public in a more reasonable, as well as artistic manner of house-furnishing and decoration. Allusion was also made to art-neddlework, several specimens being shown on the walls. Amongst those who followed the President were Prof. Kerr, T. Roger Smith, William White, and E. C. Robins. Prof. Kerr,

in a rather lengthy but characteristic speech, reviewed the various systems of architectural education employed by the great nations of Europe—viz., England, France, and Germany. The scientific schools of Germany, with their minute and systematic drill, were spoken of in their favourable aspect as producing students thoroughly well grounded in the science of their art, if the soul of architecture as an art was wanting. The academic system employed in France was alluded to by the speaker as well-nigh perfect as far as the study of one school or style of art was concerned, leaving, however, a more comprehensive view of architecture uncared for. The English method of architectural education, though leaving much that could be desired, and yet to be supplied, was unique, and taking all the means available into consideration, was perhaps as satisfactory as any. The term of pupilage was compared to the apprenticeship in the case of a trade. Thus, said the professor, if it were desired to make a boy a carpenter he was placed in a carpenter's shop where he might see how the work was done, and learn his trade from actual contact with the work which was done there; so, in like manner, if it were desired to make a boy an architect he was placed in an architect's shop, there to obtain a knowledge in a similar way. The classes then of the Royal Academy, Architectural Museum, and Association, in one way or another, supplied the teachings of the French and German systems. The Institute had never wished to be considered an educating body, but it was evident that before long a change in this respect must be made; indeed, there would be no choice left in the matter, seeing the rapid strides which education in every branch of life and study was making. The conditional examination required of those who wished to become members of the institute under the new régime, now so soon to come into effect, was but the first indication of the turn things would soon take in the matter of architectural education. Mr. William White briefly alluded to the question of restoration and conservation of ancient buildings, but having undertaken to read a paper during the session on the subject, he reserved his remarks for that more suitable occasion; and Mr. Roger Smith also excused himself from any lengthy remarks, urging that the primary object of a conversazione was conversation. On the walls of the galleries were shown the drawings of the late Owen Jones, already mentioned; these consist chiefly of simple studies in outline, with some photographs of the author's designs for the National Gallery, and for the palace at Muswell-hill. Some autograph drawings by the late Sir M. Digby Wyatt and Fred. C. Deshon were also exhibited, those of the latter attracting considerable attention, although most of them had already been published, some in our own pages. Of other drawings we noted those by Mr. R. Phené Spiers, made this year in Sussex, one or two giving views of the old house at Rye, lately the subject of some correspondence in the BUILDING NEWS. These drawings were in water-colour, as were several by Messrs. P. J. Marvin, W. H. Nash, and others, not to forget the charming drawings of painted glass studies by Mr. W. H. Lonsdale for St. Mary's Church, Whitechapel. Mr. Lonsdale also exhibited photographs of a loving cup of elaborate character, and in severe mediæval design, reminding us of some decanters by Mr. W. Burges, and which we illustrated a few years since.* Mr. W. Talbot Brown exhibited a series of beautiful sketches in pencil outline made in Italy, and Messrs. Fraser and Kirby some full-size drawings of old glass from Chartres, shown, however, in rather crude tints, hardly perhaps quite fair to the old wall. Mr. Thos. Cutler had some very interesting drawings, the work of well-known artists, and we were particularly struck with a simple study of a head by Mr. J. D. Linton. Of art-needlework we must mention the examples shown by the Ladies' Art-Needlework Society, while the ecclesiastical embroidery and domestic hangings lent by Mr. Buckley, of Wigmore-street, exhibited great merit, both of design and execution, though the manner in which the specimens were shown was crowded, and by no means calculated to exhibit the work to advantage. Mr. Buckley had also some carv-

ings from Bruges, which were of interest, as were the wall-paper hangings exhibited by Messrs. Jeffery and Co., of Islington, whose productions are generally the work of well-known architects. The leather-work shown by this firm, however, was not quite to our taste, having a very metallic effect, which would only be intensified when seen in a large piece—indeed, this is the effect of almost all new-stamped leather-work, particularly that having a red ground. Messrs. Gillow and Messrs. Trollope exhibited a few specimens of art-furniture, most of quiet and good design. The latter firm contributed examples of very interesting tiles from their museum, and the matting shown was much admired. Of photographs, those from Portugal, lent by Mr. Horsburgh, were of particular interest, the buildings being less known. Of photographs illustrating English work none were of more interest than those lent by Mr. S. T. Aveling, of Restoration House, Rochester, the fireplace in the drawing-room being of very good design, of Elizabethan date, and in good preservation. The works shown in connection with the classes of the Association seemed of average merit, excepting that of the colour decoration class, which presented a marked advance. The enjoyment of the evening was increased by selections of music by Messrs. Coote and Tinney's band. Refreshments were served in the museum of building appliances, which offers but a very crowded space for the purpose, wholly unsuitable for so large a number, and it is to be regretted, after so many years' endurance of this inconvenience, that better arrangements in this respect are not made.

THE SESSIONAL ARRANGEMENTS OF THE ARCHITECTURAL SOCIETIES FOR 1877-78.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE first ordinary meeting of the Session 1877-78 will be held at 8 o'clock on Monday next. The Ashpitel Book Prizes, awarded to the candidates who distinguished themselves most highly in the Architectural Examination of 1877, will be presented by the President. The members' subscription portrait of Sir Gilbert Scott, R.A., Past-President, and a portrait of the late Sir Digby Wyatt, F.S.A. (the gift of Mr. C. C. Nelson, Fellow), will be presented to the meeting. The President, Mr. Charles Barry, F.S.A., will deliver his opening address for the Session 1877-78.

The lectures at University College, on Ancient Architecture as a Fine Art, will be delivered by Professor Lewis every Tuesday, from 7 to 8 p.m., from October 9th to the end of January—fifteen lectures; on Architecture, from the Mediæval to the Renaissance Periods, every Tuesday, 7 to 8 p.m., from February to end of session—fifteen lectures. Lectures on Construction, Materials, Drainage, Foundations, Walls, Timber, &c., every Tuesday, 6 to 7 p.m., from October 17th to the end of January—fifteen lectures. Lectures on Roofing, Masonry, Quarries, Arches, Groining, Iron Construction, &c., every Tuesday, 6 to 7 p.m., from February to the end of the session—fifteen lectures.

Lectures are given on the Arts of Construction, at King's College, by Professor Kerr, on Mondays and Thursdays, at 3.50 p.m. The lectures are in three courses. 1. October Term, on Materials. 2. January Term, on the Mechanics of Construction. 3. Easter Term, on Constructive Design and Practice. A short course of lectures on Architecture is also delivered in the January Term. There are also classes for the Study of Architectural Drawing, Descriptive Geometry, and Surveying and Levelling, on Monday, Tuesday, Thursday, and Friday, from 1 to 4 p.m.; and there is a class for Drawing, on Tuesday and Friday, from 7 to 9 p.m., besides evening classes.

Sessional Papers.—The committee appointed by the council to procure and select papers for reading at ordinary general meetings announce that the following papers have been promised and will be read, as under, during the present session, subject to such alterations in regard to date as circumstances may require:—

"On Middle Class Houses in London and Paris," by William H. White, Fellow, 19th Nov., 1877.
 "Architectural Notes on St. Alban's Abbey," by James Neale, F.S.A., Associate, 3rd Dec., 1877.
 "On the Law of Easements," by Locock Webb, Q.C., 17th Dec., 1877.
 "On the New Metropolitan Markets," by Horace Jones, Fellow, 7th Jan., 1878.
 "On the Architecture of Norway," by E. T'Anson, F.G.S., Fellow, 21st Jan., 1878.
 "On the Rise and Fall of Wages in the Building Trade," by Thomas Brassey, M.P., 4th Feb., 1878.
 "On the Prevention of Corrosion in Iron," by Professor Barff, 18th Feb., 1878.
 "On some Ancient Examples of Japanese Architecture," by Josiah Conder, 18th Mar., 1878.
 "On the Ecclesiastical Architecture of Scotland," by R. Anderson, Fellow, 1st April, 1878.
 "The Chemical Disadvantage of Sulphur Joints in Masonry," by Dr. Alder Wright, 15th April, 1878.
 "The Vexed Question of Oak or Chesnut in Old Roofs," by Thos. Blashill, Associate, 15th April, 1878.
 "Syria: the Cradle of Gothic Architecture," by John Whichcord, F.S.A., Vice-President, 20th May, 1878.
 "Popular Criticism as applied to the Architectural Profession," by T. Chatfield Clarke, Fellow, 3rd June, 1878.

ARCHITECTURAL ASSOCIATION.

THE Session of the Architectural Association commenced on Friday last with the usual conversazione, of which particulars are given elsewhere. The ordinary meetings open on Friday next with the President's address. The list of papers is as follows:—
 Nov. 23, "Notes upon Cornish Churches," F. P. St. Aubyn.
 Dec. 7, "Gothic Architecture," J. J. Stevenson.
 Dec. 21, "On the Revival of the Later Styles of English Gothic," J. D. Sedding.
 Jan. 11, 1878, "On Ornament," Lewis F. Day.
 Jan. 25, "Restoration v. Conservation," William White, F.S.A., and R. E. Pownall.
 Feb. 8, Discussion upon the last Paper, in which Messrs. G. H. Birch, L. W. Ridge, and others are expected to take part.
 Feb. 22, "Architectural Heraldry," F. H. Hummel, M.A.
 Mar. 8, "The Decorative Treatment of Modern Subjects for the Decoration of Modern Buildings," E. Buckman.
 Mar. 22, "The New Model Bye-Laws in relation to Public Safety, Health, and Comfort," F. Douglas Mathews.
 Mar. 22, "The Paris Building Laws," W. H. White.
 April 5, Discussion upon the Papers of March 22, in which Messrs. Blashill, Plumbé, and Robins are expected to take part.
 April 26, Members' Soirée.
 May 10, "On Architectural Ornamentation," Hugh Stannus.
 May 24, "To Burgos and Back," A. Payne.
 June 7, "Prehistoric Art and Rude Stone Monuments," T. Roger Smith.

It is suggested that some memorial be erected at Salisbury, within the next six years, of Massinger, the dramatist and poet, who was born in that city in 1584.

The inaugural ceremony in connection with the gift of the collection of sculpture models belonging to the late sculptor, Mr. Lough, took place in Elswick Hall, Newcastle, on Wednesday week. The models have been presented to the Corporation by Mrs. Lough.

New Board Schools and schoolmaster's house are now being erected at Melbourne, near Pocklington, under the superintendence of Mr. W. G. Penty, architect, of York, at a cost of £1,027. The works are being carried out by Messrs. P. J. and W. Harrison, contractors, York. The schools are to accommodate 110 scholars, and consist of mixed school 42ft. 6in. by 18ft., and infants' school 16ft. by 18ft. They are fitted with Shillito and Shorland's patent Manchester school grates.

The re-opening services in connection with the restoration of the chancel of St. Augustine's Church, Hedon, commenced on Thursday week. The portion of the restoration just completed is part of the scheme which was entered upon some years ago by the renovation of the south transept, since which time the nave, north transept, and chancel have successively been restored, until the entire structure has been redeemed from the state of ruin into which it had almost fallen, though the tower and some other parts still remain to be restored. The work connected with the chancel has been carried out by Messrs. Wilson and Sons, contractors, of Hull, and Mr. Webster, of Hedon, was the architect.

The Cambridge Improvement Commissioners have appointed Mr. William J. Bowyer, as borough surveyor for one year, at a total salary of £208.

Sir Gilbert Scott has just prepared plans for the restoration of Prestbury Church, Gloucestershire, the carrying out of which will cost £5,000.

* BUILDING NEWS, April 17th, 1874.

SCHOOLS OF ART.

COLCHESTER.—The session for 1877-8 of the science and art classes was inaugurated on Wednesday week by the public distribution by the mayor of the prizes and certificates gained at the last examination. It was stated that the work of the classes was progressing well, the percentage of the successes being above the average of the kingdom, but that the town subscriptions only amounted to £25 a year. An address on the method of scientific study was delivered by Dr. Taylor, F.G.S., of Ipswich.

DARLINGTON.—The annual meeting in connection with this school was held in the Mechanics' Hall on Friday evening, when the prizes and certificates were distributed by Mr. David Dale, who mentioned that it was 20 years that night since Mr. Elton took charge of the school, which had since been under his care, and many thousands of pupils had passed through the school. During the past year there had been an increased Government grant earned, concurrently with a small decline in the number of pupils. Mr. Dale also adverted to the growing feeling that, though the money devoted to the cultivation of science and art was considerable, a larger proportion should be expended in the provinces.

HANLEY.—The annual meeting of the Hanley School of Art was held on Friday last. The report of the committee drew attention to the large quantity of work done during the year, and the excellence of the samples shown. This year the Department had made its first experiment in holding examinations of a very advanced nature in provincial schools, and five students of this school had undergone that test. The head-master (Mr. Bradbury) reported that in April upwards of 2,000 works were sent to South Kensington for examination—a number greatly in excess of any previous year. One effect of the changes made by the Department was an enormous decrease in the number of third-grade prizes, and it was noted that the examiners appeared to have become indifferent to the requirements of local manufacture, particularly in regard to modelling, which received but a very insignificant share even of the lower-grade prizes. At the time test examination, in May, 15 students were successful in freehand, 25 in model drawing, 6 in geometry, and 5 in perspective; 15 papers were marked "excellent," and prizes awarded; 5 students had third-grade prizes, one a Queen's prize and three free studentships. A prize had also been obtained for modelling in plaster and foliage in competition open to the students of the United Kingdom. The balance-sheet showed an increase of £649 11s. 6d., and an expenditure of £591 4s. 7d.

KILMARNOCK.—The distribution of science and art prizes, gained during the last session by pupils in Kilmarnock Academy, took place on Tuesday. It was stated that in science the pupils had gained 51 Queen's prizes and one scholarship at South Kensington, besides 141 certificates, and in art (chiefly elementary) there were 76 prizes and 162 certificates.

ST. ALBAN'S.—The annual prize distribution to the students of the St. Alban's School of Art was held last week. This year the school has been open 40 weeks, from September to July. In the month of April, 400 drawings, 3 paintings, and 7 books, containing worked problems, executed by the art students in class, were sent to South Kensington for inspection; the result being a grant of £10 10s. At the May examination for Queen's prizes and certificates, 28 art students and 7 non-students worked 53 papers in model, freehand, geometrical, and perspective drawing. Fourteen certificates were obtained, 3 of which were termed "excellent," and carry with them Queen's prizes of the second grade. During the seven years the classes have been in operation, 416 students have received instruction; of this number 258 have sat for examination and 141 certificates in various subjects have been obtained, besides numerous Queen's prizes.

THE FEMALE SCHOOL OF ART.—The annual exhibition of the works of the pupils of the Female School of Art, was opened last week. The school was established in 1842, being then a Government institution. It now depends on students' fees and on the subscriptions of the

public. It contains 200 pupils. Six of them made a tour in Italy last Easter with the superintendent, Miss Gann, and brought back sketches made in Rome, Milan, Venice, and elsewhere, as a contribution to the exhibition. Three students went up this year for the National Gallery, and at once obtained admission. Two national silver medals, five bronze medals, six Queen's prizes of books, and 15 third-grade prizes were obtained by the pupils at the last South Kensington competition, and the works which gained these distinctions are exhibited. Some valuable prizes are attached to the institution itself, and were adjudged by Mr. S. A. Hart, R.A., Mr. Woolner, R.A., and other well-known artists. The Queen's Scholarship, value £50, was awarded to Rhoda Carleton Holmes for drawings in water-colour of an Egyptian girl, and other sketches. The National Gilchrist Scholarships, given primarily to provide students from the provinces with the best art training which can be obtained in England, were adjudged to Miss Burnay and Miss Newton. Both these ladies exhibit studies of flowers. The Subscribers' Scholarships, value £20, have been awarded to Elizabeth Lovell for crayon heads, to Florence Reason and Catherine Wood for sketches of fruit, flowers, and birds. Angela Mary Marshall obtained the Queen's gold medal for a bust from life of a negro, and she also exhibits a statuette of a fisherwoman, which gained a bronze medal at South Kensington. The silver medals at South Kensington were gained by Alice Hanslip and Anne E. Hopkinson. The first lady's work comprises studies in charcoal from the Laocoon, while among Miss Hopkinson's may be remarked a group of Oriental fruit.

CHURCH BUILDING SOCIETIES.

HANTS DIOCESAN CHURCH ASSOCIATION.—At a meeting of this society held in Winchester chapter-house on the 20th October, the following grants in aid were made:—St. Michael's, Bournemouth, £40, for new school; St. Peter's, Haven-street, Isle of Wight, £15 for new classroom to school; Sandown, Isle of Wight, £150 for new church; St. John's Church, Winchester, £20 for alterations and improvements; Silchester Church, £40 for restoration; and Brockenhurst £100 for new parsonage.

YORK DIOCESAN CHURCH BUILDING AND ENDOWMENT AID SOCIETY.—At the annual meeting of this society, held in the De Grey Rooms, York, on Tuesday, the following grants were made:—New churches—Warmfield, Pontefract, £152 10s.; St. Philip's, Holy Trinity, Hull, £300. Increase of accommodation—Paul-with-Thorgumbald, £48 16s. 6d.; St. Martin's, Scarborough, £150. New parsonage—New Hardwick, Pontefract, £150. Parsonage house buildings' purchase—Christchurch, Sulcoates, Hull, £100 (or £150 conditionally). Site for mission church—St. Paul's, Sulcoates, £50. At the annual meeting, subsequently held, a resolution was passed, thanking Mr. G. E. Street, R.A., for his valuable services as consulting architect for this society, but dispensing with his services owing to the present state of the society's finances. It is proposed to let the old society lapse, and to form a fresh one on a wider basis, and one more suitable to the present times, especially in the way of giving grants to temporary mission-rooms.

ARCHÆOLOGICAL.

DISCOVERY OF ROMAN TEMPLE NEAR ROTHERHAM.—During the past few weeks excavations have been in progress on the site of an old Roman encampment at Templeborough, near Rotherham. The area is 4 acres in extent and rectangular in shape, on each side of the square being a high rampart, supposed to have been raised after the departure of the Romans by the Britons when attacked by the Picts and Scots. The foundations of a building over 70ft. square have been discovered, together with a large quantity of Roman bricks, broken jars, basins, and tiles, the latter bearing the stamp "CIIIG." (*Cohors quartus Gallorum*). In close proximity were found the bases of two circular columns, and the threshold of a portico, in connection with which, soon afterwards, a row of seven columns

11ft. or 12ft. apart, was brought to light. The shafts of the columns are 15in. in diameter. It is believed that this was the site of a Roman temple, thus affording a clue to the origin of the name of the encampment. Public subscriptions have been raised, and it is intended to excavate the burial place adjoining the old fortifications, when further discoveries may be anticipated.

ARCHITECTURAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—The annual conversazione in connection with this association was held on Tuesday evening. Mr. H. R. Yeoville Thomason (president of the association) presided. Mr. Hughes read the committee's report, which stated that the association was to be congratulated on the increased interest manifested by the members, and on the enlarged attendances at the meetings, and in having acquired rooms for its own exclusive use. The various papers read were enumerated by the committee, who added that the classes had been fairly successful, the average attendance being very good. The library had been very well patronised by the majority of the members. During the session sixty volumes had been received from London and circulated among the members. The Saturday afternoon visits to buildings in course of erection are generally well attended. About the middle of the session the committee, considering that it would be an advantage for the association to possess offices for its own exclusive use, took the rooms now occupied by the association in Queen's College. The Chairman briefly addressed the students, pointing out to them the various studies necessary to become good architects. Mr. Reading announced that in the class of construction Mr. M'Connell and Mr. F. J. Hughes had taken prizes; in the class of design Mr. J. N. Fisher had obtained honourable mention, and in the elementary class of design Mr. Eaden Smith obtained a similar honour. In the library and dining-hall a large collection of drawings by the members were exhibited, as also numerous sketches by eminent architects. Messrs. Jones and Willis lent several specimens of carving in oak and brass; casts from ancient sculpture were lent by Mr. J. Roddis, of Aston; and Messrs. Camm Brothers sent a few specimens of stained-glass work.

LEEDS ARCHITECTURAL ASSOCIATION.—The first general meeting of the second session took place the other evening at the Mechanics' Institute, Mr. George Corson, the president, in the chair. There was a good attendance of members. Mr. W. H. Thorp, one of the hon. secretaries, read the annual report. It stated that the association was formed in December last, and now numbered 77 members. Taking into consideration all the circumstances of the past session, the results had been very satisfactory, and the prospects of the future were very encouraging. A number of papers on "Ventilation," "Architecture," and other subjects had been read at stated intervals, and visits had been paid to a number of buildings, both ancient and modern, in Yorkshire and Lancashire, including the town halls at Manchester and Bradford; Leeds Parish Church, Selby Church and Abbey, and the York New Railway Station and the Minster. These visits afforded an opportunity to the members of seeing a variety of examples of building instruction and decoration. During the session several prizes had been offered, and it was intended to distribute them at the conversazione to be held in November. It was hoped that there would be a larger number of competitors in future years. A class for design and construction had been suggested, but the scheme had hardly assumed a definite shape as yet. The balance-sheet showed that the income from subscriptions and entrance fees had been £41 9s., and the expenditure £16 12s., leaving a balance in hand of £24 16s. 11d. The President then delivered a short opening address.

The Abergavenny rural sanitary authority on Friday adopted an amended plan for the drainage of Llanfoist, prepared by Mr. James, surveyor, and adjourned the further consideration of Messrs. Gotto and Besley's report as to the best mode of draining Cantreff and Long Barn.

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ILLUSTRATIONS.

PRIORY CHURCH OF ST. MARY, GUISBOROUGH, YORKSHIRE—HOUSE AT STOODLEIGH, DEVON—VILLA RESIDENCE, UPPER BATLEY—DETAILS OF HOUSE AT DATCHET—CONGREGATIONAL CHURCH AND SCHOOLS AT BECKENHAM—"BUILDING NEWS" CLUB DESIGNS FOR ORGAN CASE AND MULLIONED WINDOW WITH EXTERNAL SHUTTERS.

OUR LITHOGRAPHIC ILLUSTRATIONS.

THE PRIORY CHURCH OF ST. MARY, GUISBOROUGH, YORKSHIRE.

OF all the buildings which were destroyed at the time of the Reformation, there is none the loss of which is more to be deplored than that of this once most splendid church. Of its original extent we know nothing, as far as I can ascertain, but the fragment which remains shows us that both the design and execution of the work were of the first order. The choir is known to have been burnt down in 1288, and to have been immediately afterwards rebuilt (this is mentioned in Mr. Sharpe's "Window Tracery," where the east window is fully described and illustrated). From this we may infer that the nave and transepts were either Norman or Transitional. There is a restored view in Ord's "History of Cleveland," which shows this choir with the spire of Salisbury and Chapter House of York, and is worth nothing. Mr. Sharpe has given an excellent series of drawings of the choir in his "Architectural Parallels," but he gives no flank elevation, for what reason I know not, as there are data for everything remaining except the clerestory buttresses and windows; but he restores the windows in his longitudinal section, and I have taken the tracery from this. The clerestory buttresses are conjectural. The ruins are well-preserved and cared for by the present owner.—C. C. HODGES.

STOODLEIGH COURT, DEVON.

THIS mansion is proposed to be built on a high slope of ground commanding a view of the Tiverton Vale, and at a distance of one or two hundred yards from the old residence. The principal garden front faces south-east. The perspective drawing engraved shows the opposite or north front, with the principal entrance and drive. The style selected is a simple treatment of the Jacobean or Stuart period, and the materials to be used are the local stone, which is of a dark warm tone, with dressings of "Ham-hill." The roof will be tiled. All the external detail will be simple. The design is by Mr. Lewis Paxton Crace, A.R.I.B.A., of 38, Wigmore-street.

PROPOSED CONGREGATIONAL CHURCH AND SCHOOL, BECKENHAM, KENT.

THE general arrangement consists of a single-span rectangular church, with end gallery, to seat 500, the school for 300 at the rear, and vestries and class-room between. The main entrance to ground-floor of church is by the arched double doorways in front, with the gallery entrance and staircase in the tower. The pulpit end consists of a central arch and two narrow side arches supported on stone pillars, forming a central bay for pulpit and communion space, while the organ is placed on one side, and a few screened seats for invalids occupy the other. The minister's and deacon's vestries are attached, and have a separate entrance. There is also a large ladies' meeting room, with a separate entrance, and infants'

and smaller class-rooms. These are reached from the school entrance, but there is also a direct connection between the school and the church. The walls externally will be faced with red brick, relieved with Bath stone dressings, the spire being wholly stone. The roof will be slated and finished with tile ridges. Internally there will be an inner boarded roof for warmth and to assist the acoustics of the building, but the main timbers of the roof will show. The walls of the church will be of cream-coloured facing bricks, relieved with stone and patterns in coloured bricks. The side walls are arranged in arched bays, so as to obtain greater strength and add to the internal effect. Heating, lighting, and ventilation are all carefully arranged, the latter evidencing itself by the two roof turrets, in each of which a Bayle's extracting ventilator will be placed. Architect, Mr. John Sulman, A.R.I.B.A., of 16, Furnival's-inn, Holborn, London.

VILLA AT BATLEY.

THIS villa is situate in Upper Batley, being a suburb of Batley, restricted specially for this class of villa residence, and has just been completed for Mr. Robt. Talbot, manufacturer. The plan of the house will explain its arrangements. The whole of the house is built of Delph wallstones, and the ashlar from Starthwate, each of which are the best building materials in the north of England. All the walls are 2ft. thick, and in addition are swithed as a preventive against damp. The joiners' work for the principal parts of the house is in pitch-pine varnished. The principal rooms and landings are warmed by wrought-iron hot-water pipes, laid in round the rooms behind a brass ornamental grate in plinth, and all these rooms lighted by Rickett's patent globe ventilating gas-lights. In addition to the house there is suitable stabling, front porter's lodge of a similar character, and the grounds altogether have an area of two acres, which is leasehold. The cost of the whole of the works, including gardens' laying out, is about £7,500, all of which have been carried out by local builders, from designs prepared and under the superintendence of Sheard and Hanstock, of Batley, architects.

DETAILS OF HOUSE AT DATCHET.

LAST week we gave the elevations and plan of this house; we now supplement it with a double-page sheet of details. The gable arches, chimney shaft, strings, and pediments are of red cut brick, and the panels are of concrete enriched with patterns; the sun-dial, drawn to an enlarged scale, is executed in the same material. We give also the mouldings of cut brickwork, the details of verandah balusters to stairs, and the enrichments of dining-room cornice.

"BUILDING NEWS" CLUB DESIGNS.

FOR critiques on the selected and other designs for an organ-case and on the mullioned window, with external shutters, illustrated in photo-litho pages this week, see p. 393 *ante*, in our issue for Oct. 19.

The correspondence as to the neglected detached bell tower of Llandaff Cathedral still continues in the South Wales papers. Mr. John Pritchard, diocesan architect, in a second letter, says the remnant has recently been further mutilated by the removal of a flying arch, but says he possesses a carefully-prepared drawing of the structure by Mr. Frame. He asks whether this fragment of a noble buttressed tower—now so encumbered with a cowhouse on one side and an oven on the other that it is not easy to get an accurate conception of its original form—does not come under the operation of Sir John Lubbock's Act for the Preservation of Ancient Monuments?

New Board Schools for the Carlton and Stillington district of Stockton-on-Tees were opened on Wednesday week. The buildings, which are Gothic in style, comprise a schoolmaster's house, a school-room 57ft. by 20ft., class or infants' room 30ft. by 16ft., and board-room 16ft. by 19ft., and will afford accommodation for 240 children. The schools have been built at a cost of £1,900 by Mr. G. Lazenby, of Stockton, from plans by Messrs. Weatherall and Moses, of the same town.

The foundation stone of the new college of St. Bede, Manchester, was laid on Monday. It will be erected next to the Manchester aquarium, which has been acquired by the Roman Catholic Bishop Vaughan, and will be used as a museum in connection with the college.

COMPETITIONS.

JUDGES' LODGINGS, SWANSEA.—In this competition 41 sets of designs were received. Those forwarded by Mr. Charles Taylor, A.R.I.B.A., of Merthyr Tydfil, were regarded as the best, and he was accordingly awarded the only premium of 50 guineas.

SOUTHPORT.—New covered markets are to be built at Southport, and in response to the invitation issued to architects by the Corporation, 25 sets of designs were received. Of these six have been selected by the markets committee, and the following are the three designs which they recommend to the council:—"Regardez-moi" to be entitled to the first premium of £100; "Sanitas," the second of £50, and "Experientia docet" the third premium of £25. The council met on Wednesday evening last, but we have not yet received the final award, or the names of the authors of the above designs. The six sets of plans are now on view in the council-chamber, Town Hall, Southport.

TOTTINGTON.—A committee meeting, in connection with the proposed new church of St. Mary, Hawkshaw, was held on Thursday week, when the designs submitted in limited competition by Messrs. Maxwell and Luke, of Bury, were accepted. The estimated cost of the building is little over £3,000.

It is intended to form a light railway from Pad-dock-wood Junction, on the South Eastern main line, to Cranbrook, and operations will soon be commenced by the contractors. Trial borings are being made on the proposed route at Horsmonden and Hartley, under the supervision of Mr. Wm. Elliott.

A new organ, built by Messrs. Browne and Co., of Dublin, was opened in the Episcopalian Church, Tullow, county Carlow, on Thursday.

A Local Government Board inquiry was held at Hastings on Wednesday week, with respect to an application from the Town Council for sanction to borrow £21,000 for the purchase of land for a public park, for the construction of Park-road and for sea defences.

Works of drainage have just been completed in Glen-of-the-Dows village, near Kilpedder, county Wicklow, by Mr. J. Saunders, contractor, of Bray.

The Maesteg Local Board of Health have requested Mr. Cousins, of Swansea, to report on the schemes for proposed waterworks for Cwmdu.

A circus is being built for an equestrian company's winter quarters, near Mary-street, Cork, from the designs of Mr. Giuseppe, architect.

Mr. Rivers, surveyor to her Majesty's Board of Works, visited Cardiff on Thursday in last week, to exhibit plans of a block of buildings for new Board of Trade shipping, postal, and telegraph offices for the port. The new premises will be erected on a site at Powell's-place, near the lower end of the West Dock, and will have a frontage of 100ft., and a depth of 150ft. It is hoped that the new buildings, which are greatly needed by the merchants of the port, will be completed within the next twelve months.

Dr. Cameron, of Dublin, in addressing the members and students of the Royal College of Surgeons of Ireland, on Monday, on the "Pathology of Contagion," dwelt on the manner in which foul and infected air is often brought by the insuflation of kitchen fires into dwellings, and in urging that every house should rest on impervious foundation, recommended a mixture of asphalt and sand, as better, from a certain point of view, than a stratum of concrete.

The great Whistler-Ruskin libel case, says the *Examiner*, has been fitted by report with a very peaceful conclusion. It seems, according to the story, that the great art-critic and the great painter happened to be in Venice a few weeks ago, that they were brought together, and that, over a friendly cup of tea, they quietly discussed the *casus belli*, and quietly agreed to let the matter drop.

Mr. Durhan, A.R.A., the well-known sculptor, died on Saturday evening, at his residence, 21, Devonshire-street, Portland-place, London.

The Town Council of Liverpool passed, on Monday, estimates for £22,205 as the probable expenditure of the museum, library, and arts committee during the ensuing municipal year.

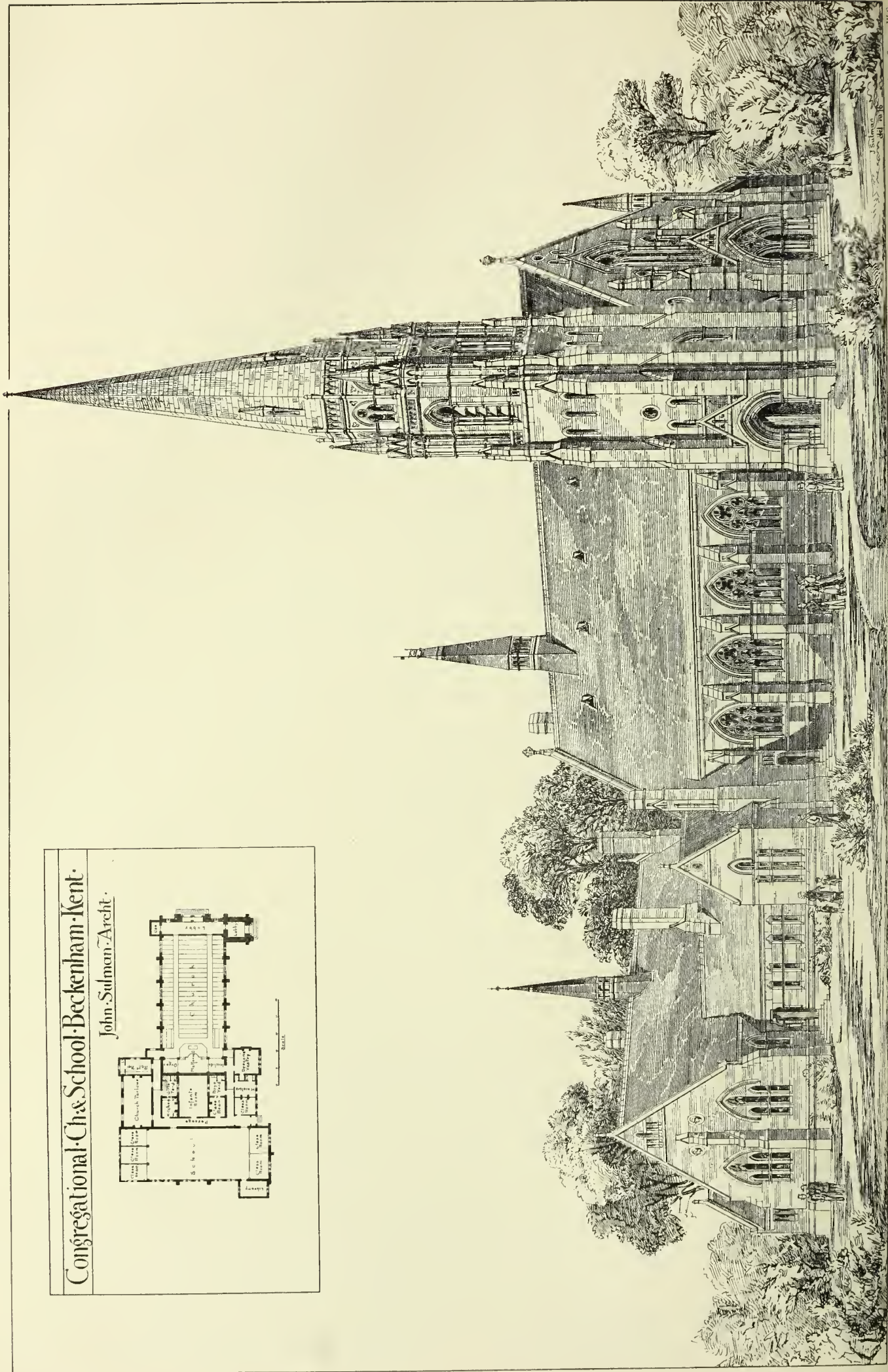
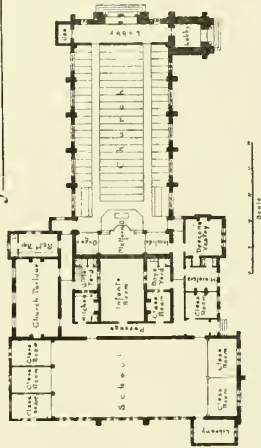
The Brighton Corporation opened on Friday a supplementary museum in the eastern block of the Pavilion property, the chief features being a collection of Chinese porcelain, agricultural implements, and instruments of torture, lent by Archdeacon Gray.

At the great palm-house, Kew, an entirely new and improved series of tubular boilers have been introduced for heating purposes. They are the invention of Mr. Edmund George Rivers, one of the Government surveyors of the department, and have been constructed by Messrs. Simpson and Co., engineers, of Pimlico.

THE BUILDING PEWS, NOV 2. 1877.

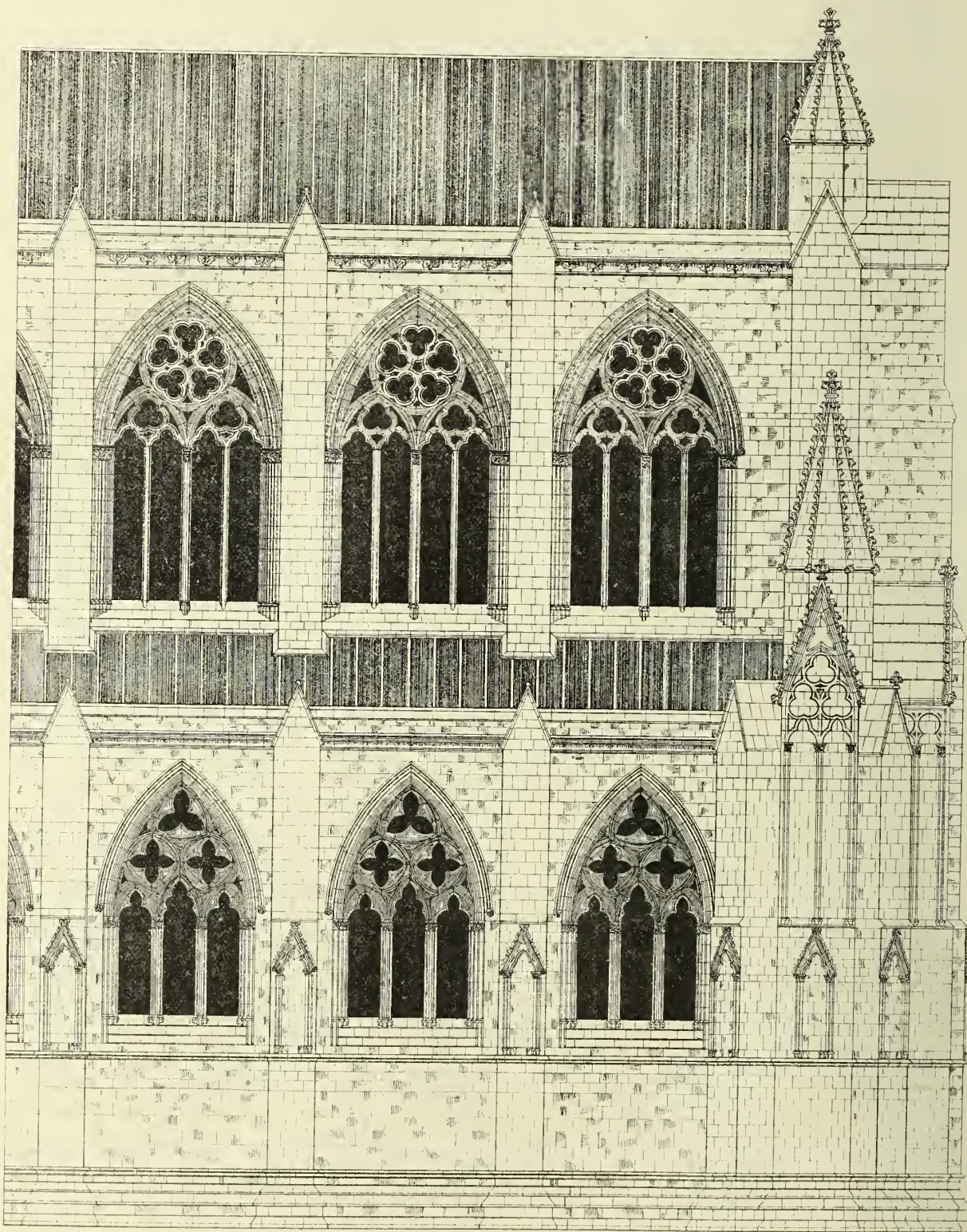
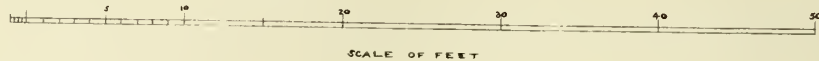
Congregational Church School Beckenham Kent.

John Sulman Archt.



The Priory Church of S. Mary Guisborough Yorkshire.

South elevation of Choir, circa 1290.



qh. 117

STOODLEIGH · DEVON ·
 FOR T·C· DANIEL ESQ^{RE}
Lewis P. Crace Archt.

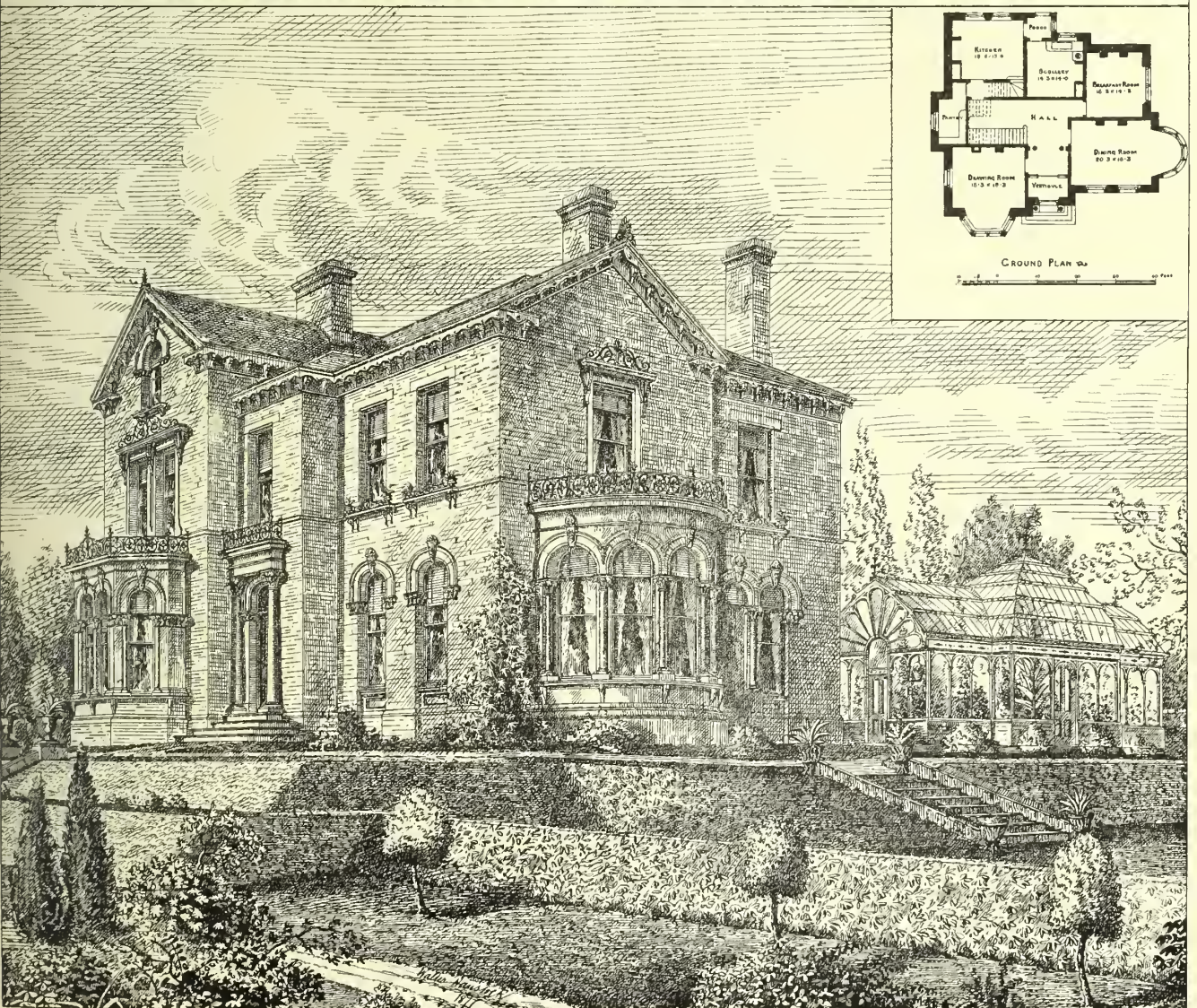
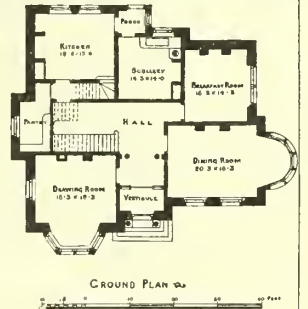
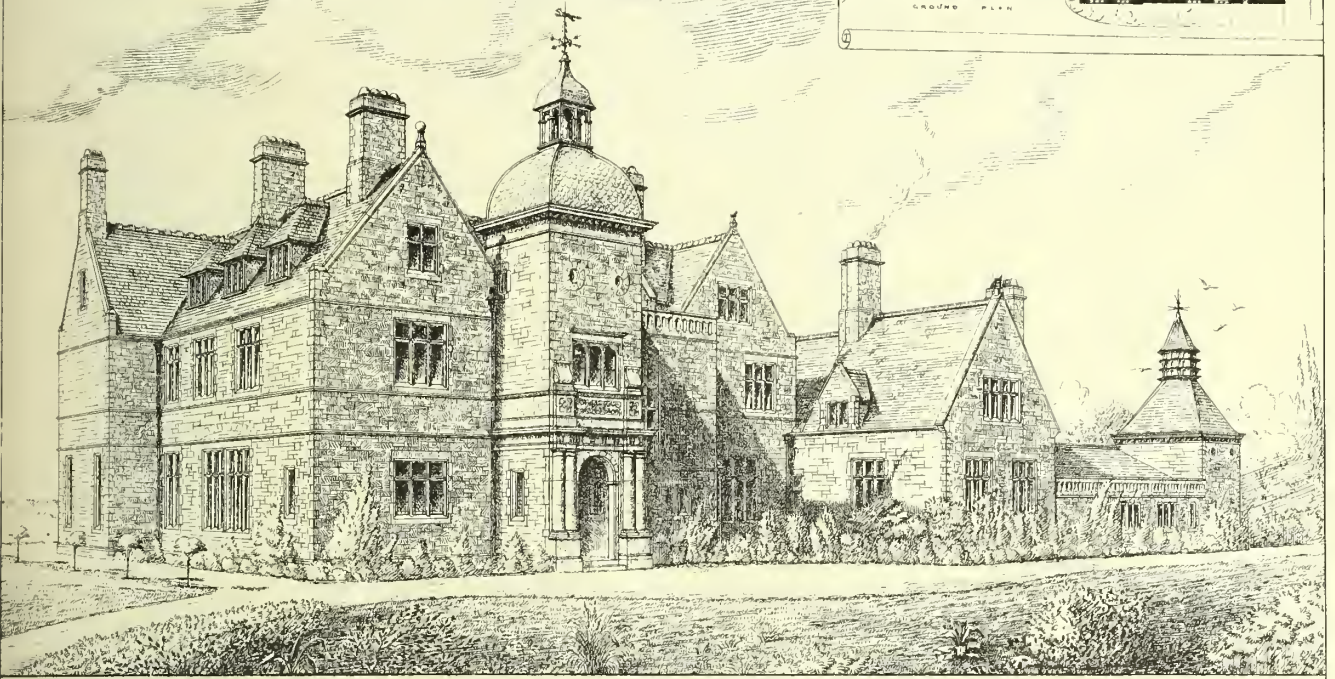
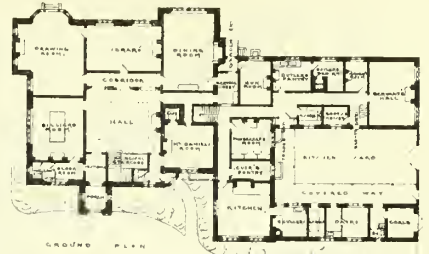
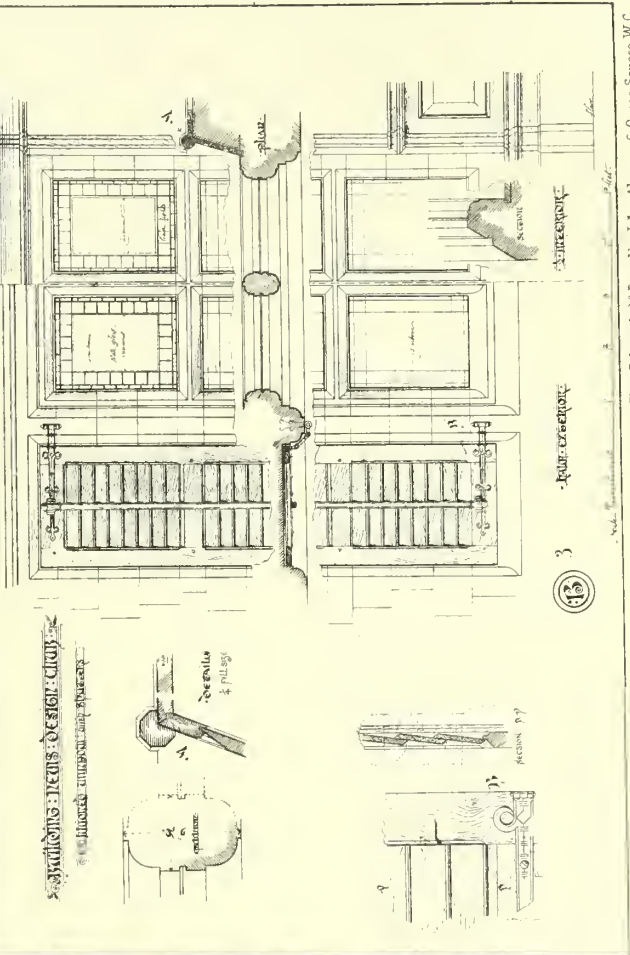
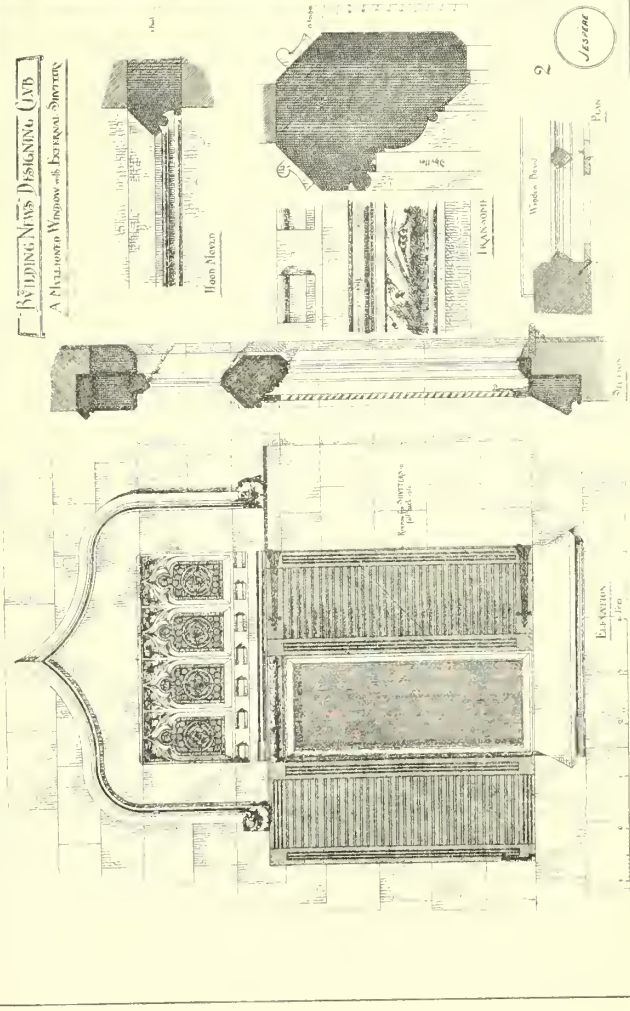
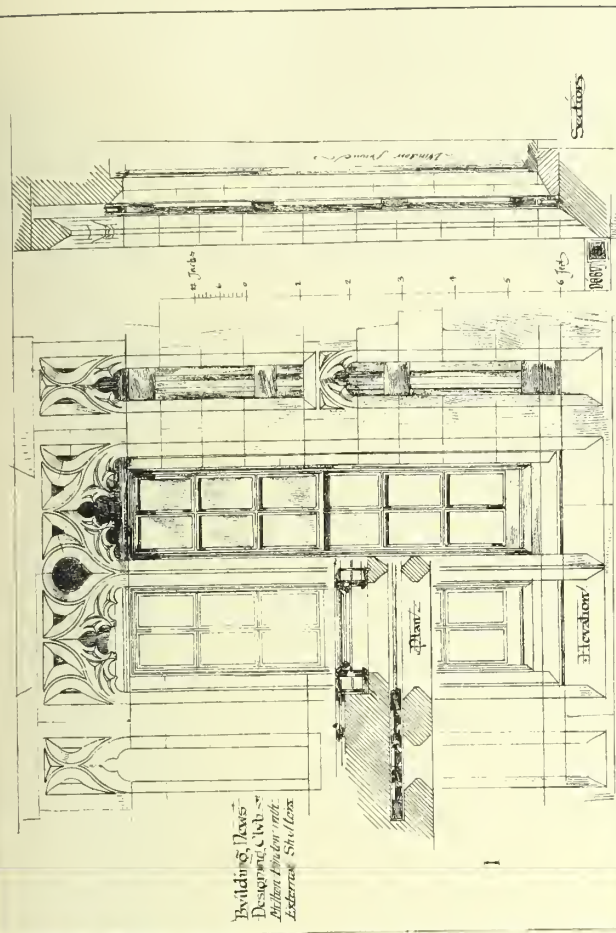
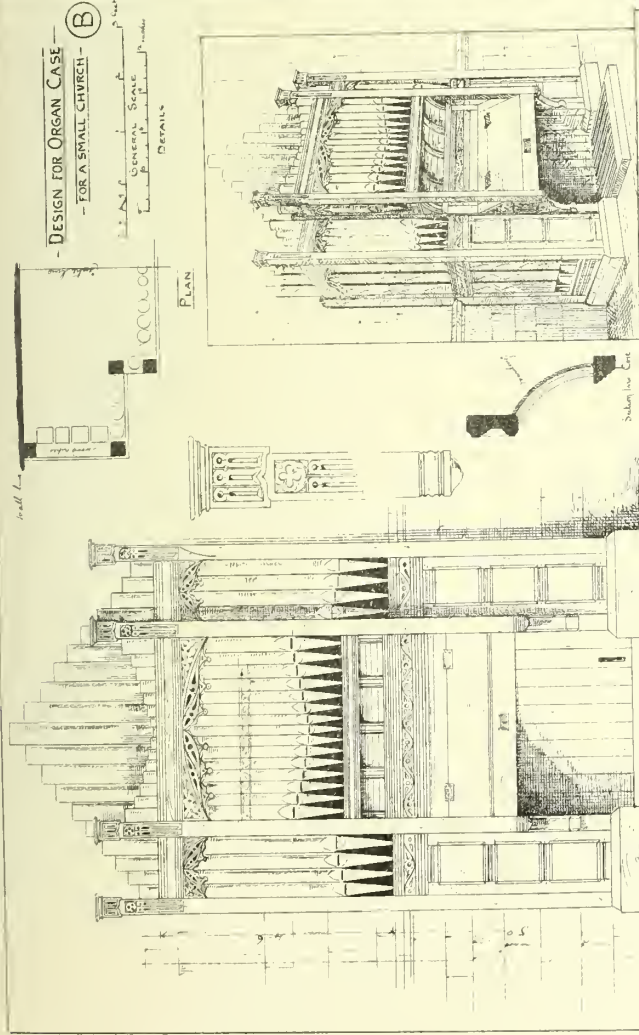


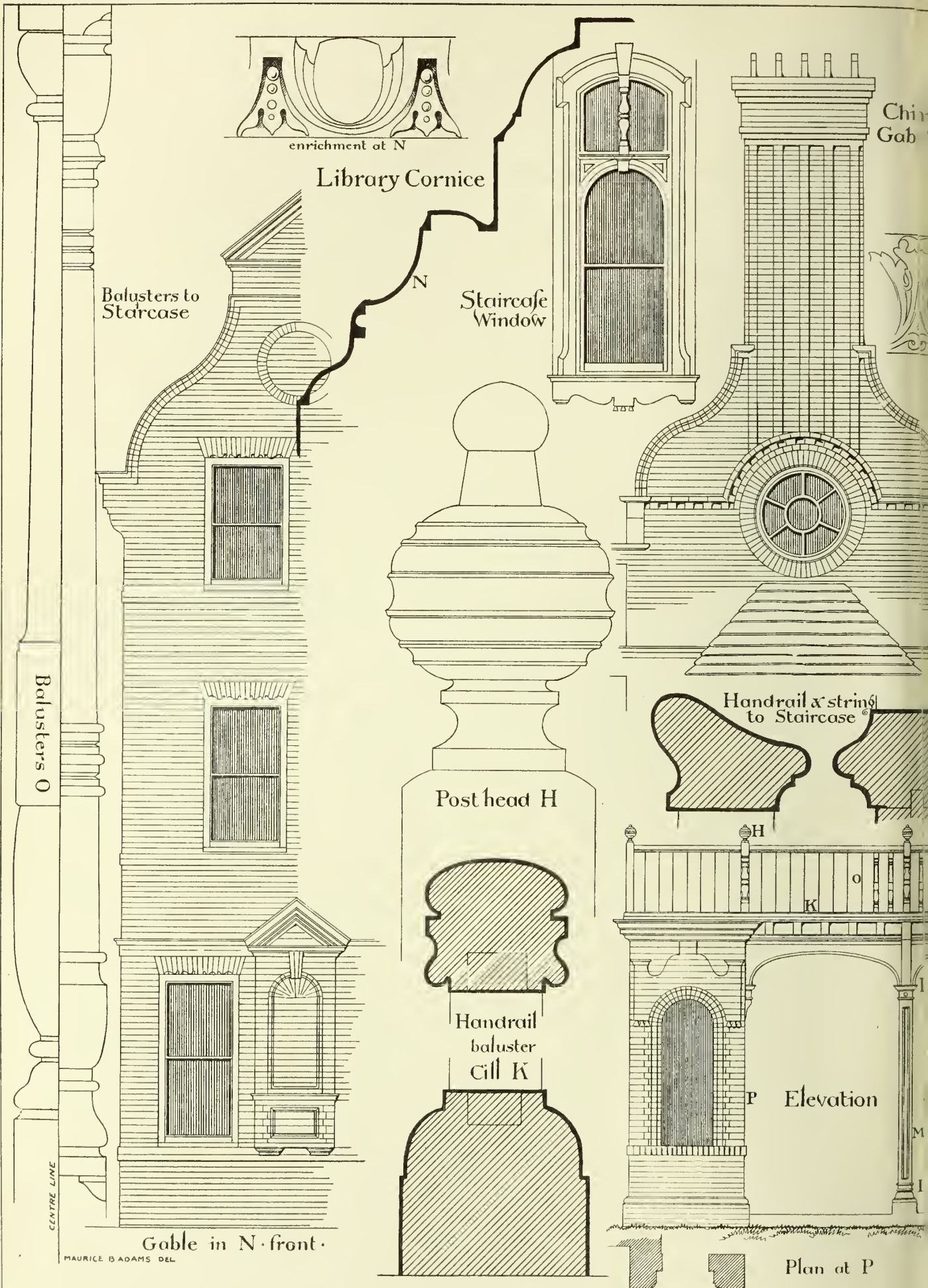
Photo Lithographed & Printed by James Akerman, 6, Queen Square W.C.

VILLA RESIDENCE UPPER BATLEY
 SHEARD & HANSTOCK ARCHTS



[Faint, illegible text]





CENTRE LINE

Maurice D Adams Del

Gable in N front

Library Cornice

Staircase Window

Balusters to Staircase

Balusters O

Post head H

Handrail & string to Staircase

Handrail baluster Cill K

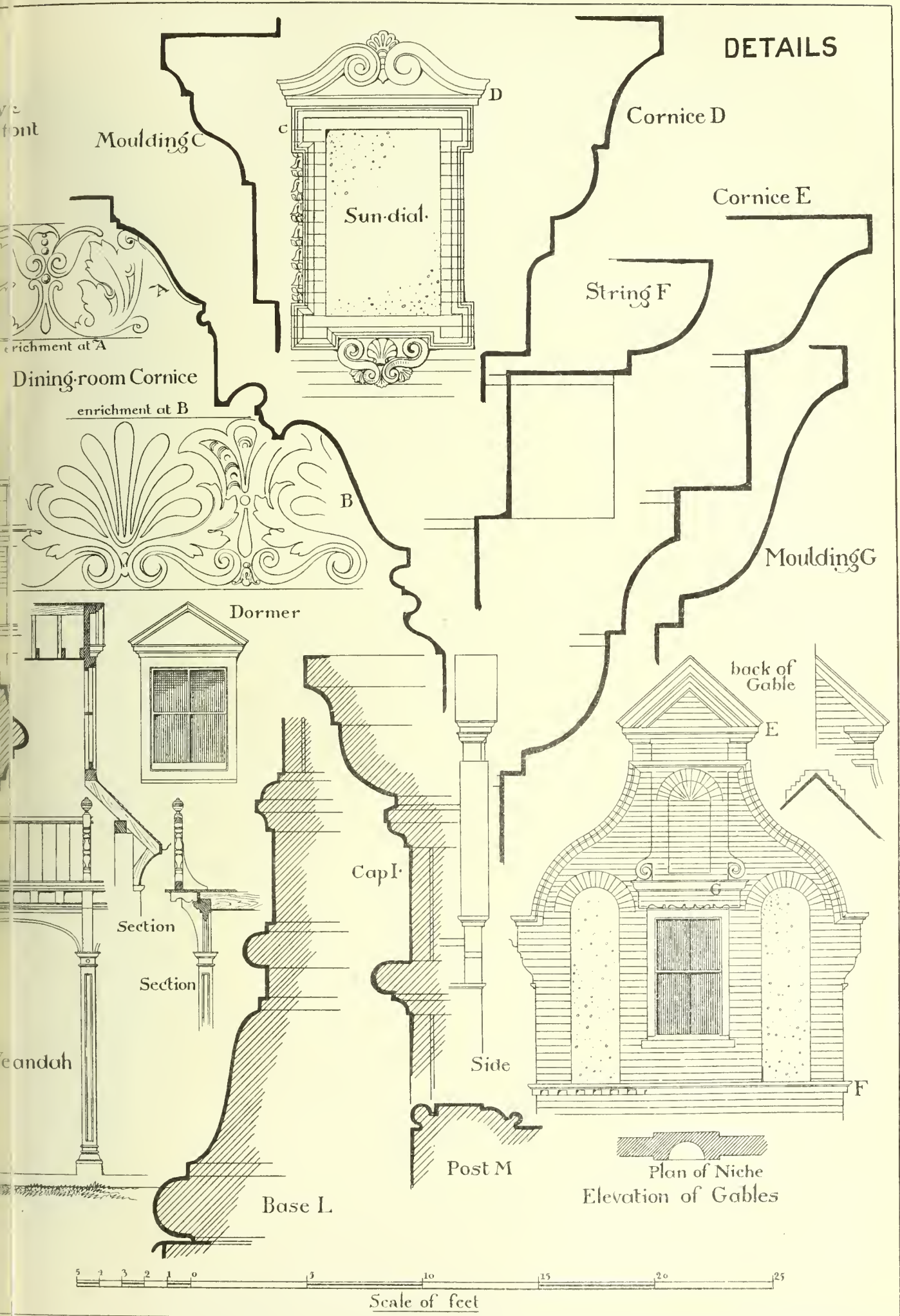
Elevation

Plan at P



1 Ft. Scale to Mouldings

HOUSE AT DATCHET BUILT IN CONCRETE AND BRICK for



BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS. NO. XVI.

A Street Front.

THE subject of a street front, with ground floor suitable for a wine-merchant's shop, with a mezzanine over, presents one of those every-day problems which the architect is called upon to solve. The response to our invitation has not been so large as we could have wished; and the designs received, though in one or two instances displaying some originality, are below the mark.

"Crowquill" sends a design that may bear away the palm, if not for originality, at least as a common-sense treatment. The shop front and the mezzanine form an elliptical arched opening, the springing, or chord line, being made the horizontal fascia for the name, the lower portion being framed with upright bars, and with two entrances, and the mezzanine treated as a large fan light, divided by radial bars. Above this the superstructure of three stories has a flat canted bay of three lights, springing from massive brick piers or quoins, and surmounted by a pediment with carved tympanum in a sort of Queen Anne style. The design displays decided points of merit; the ornament is simple, and confined to a horizontal cornice of brick, with honeysuckle pattern in the frieze, above the arched mezzanine, and to strings with simple incised patterns. The upper story is set back on the flat, and the windows are divided by fluted brick pilasters. There is, perhaps, a want of agreement between the ornament in the tympanum and that below; the former is a trifle more Roman or florid. The small bits of parapet on each side of the pediment look out of place with the semi-Greek ornament to the piers below. Some of the mouldings of brick and terra-cotta shown are pretty good, as the pediment cornice; others are of a questionable kind, as the upper member of the main cornice over front; and there is the fault of flatness in some of them. The author shows "Henderson's tension girder" behind the fascia forming the tie to the arch. Revolving shutters are shown also. The private entrance is set well back, allowing a side door into the shop. An hydraulic lift, for hogsheads, is shown on the other side. We place "Jag" next. The stories are higher, and there is originality, but want of study and a little more harmonising of the parts. The shop front is of plated glass, framed with two side doors, and a centre sheet of plate glass, the mullions continuing upwards over the transom or mezzanine floor level, and finished as bold bracket heads of Gothic character. The side-lights are made in two heights, with casements at top. The angles of the shop window and doorway fanlights are also cut off by solid brackets, the latter being finished with iron grilles. Above the mezzanine is a projecting bay window, corbelled below, triangular on plan, with two windows in the cants. On each side is another flat window, and the second and third floors are treated with projecting divisional piers of brick, dividing the front into three bays. The windows are segment-headed, with transoms, and leaded coloured glass in upper lights, with rough plate glass sheets below. Bands of well-designed terra-cotta run round the bay window below the sill and at the top. The private entrance is on the left side, recessed so as to give a side light to the shop window. The mouldings shown lack study; the main cornice members are too angular, and the label and other mouldings are poor. "J'Espere" is a cleverly drawn design, displaying considerable artistic merit, but of a class scarcely original. We somehow fancy we have seen many of the features before; they are not new to us. The style is Gothic, of a French florid or flamboyant character, but the ground story, treated with a side open doorway and plain segmental shop window, relieved by labels and crockets, with pinnacles between, lacks scale and proportion in the ornamental detail. The head of doorway is pointed, and is fitted with flamboyant tracery. A recessed porch, with a side shop door, is obtained. The mezzanine story is pleasingly managed as a lower range of three two-light windows; over two of them a balconette on circular moulded corbels is obtained,

the front of which is richly traceried in stone or terra-cotta. The first floor story is composed of three pointed tracery headed and label-crowned windows, with crockets and finials, each divided into two lights. The third floor is of timber and concrete, set within the parapet. There is a piquancy about the design, but it has more of the monumental than commercial type about it. The drawing is effective, and the detail in excellent taste. "Hampton" sends a design late to hand, in which the mezzanine assumes too much the look of a separate story. The shop front and doorways are distinctly treated, which is not desirable. The upper stories consist of a flat curved bay window, resting on brick brackets, and with three lights to each. We like the dormer breaking the roof, but the main piers of bays resting over the side flat-headed doorways is bad architecture. "Omega" in red circle (also late) does not show a mezzanine, but the front displays some character with the carved terra-cotta panels between the first and second floor windows, and in frieze of main cornice. The shop front, with the carved mullions and transom lights, is rich, though scarcely in harmony with the ornamental Queen Anne above. Drawing creditable. "Slingsby" is another design in Queen Anne style; the mezzanine arrangement is more satisfactory than the last, but the upper bay window and the arched balcony above do not well combine with the arched parapet, nor with the side brickwork. "Capio Lumen" is more original, but wanting in proportion and refinement of detail. The author divides his front into three unequal bays, the centre being the widest. Below, occupying the whole centre space, is the shop window, framed with two bars and a transom, the upper light filled with leaded glass. The side entrances are commonplace, and no proper mezzanine range is got. We certainly call the story above the first floor; it has no claim to the meaning of a mezzanine. A balcony on moulded stone brackets runs between. The upper story appears too lofty. There is, however, with these defects, a certain meaning and simplicity of treatment about the design that only required a little more study bestowed. "Spartan's" aspirations are certainly too grandiose and Gothicsque. There is a strong inkling for the muscular Gothic. The shop-window is small, and the superposed windows do not give us a fair idea of a mezzanine arrangement. Why, too, the absurd pointed label mouldings so close under such a luxuriant cornice? The upper stories display labour, but misspent energies and taste; the filled-in heads of the first floor windows, and the pointed arches over them, lack meaning, subordination, and gradation; the effect is crowded, and wanting in refined qualities. There is certainly evidence of skilled labour and some taste thrown away upon this design, arising from a desire to do too much. "Try" certainly possesses more merit in the lower part of the composition. Two brick piers dividing the shop window from the side entrances, are carried up with a straight transom of stone, with joggled points, above which the mezzanine windows follow, and preserve the same openings as below. Well-designed joggled window-heads, or lintels with a bracket cornice over, divide the façade below from the upper stories, which are treated simply; but the cornice and detail spoil the design, and the drawing is scarcely up to the mark. The author has, however, a fair idea, that in more skilled hands would have produced a satisfactory result. "Try, A.," not so good, and without a mezzanine, is hybrid in style. "Intersecting Triangles" is another Gothic attempt, but the author has failed to realise a mezzanine story; the pointed arches of different spans over the shop story are objectionable constructively and æsthetically; the mezzanine, or first floor window, with the terra-cotta diapering in the spandrels, indicate the same weakness and instability, the first, or upper floor windows, circular and pointed together, and the upper dormers have too much of the Yankee or Victorian-Gothic about it. When will would-be-Gothicists be convinced that a façade full of pointed arches, with fancy voussoirs, do not constitute the style, and betrays vulgarity. No plan or section is given, and the elevation is not inked.

A Lych Gate.

This subject is now a comparatively obsolete adjunct to churchyards in England, though in Wales and other mountainous parts the lych-gate may still be seen. We have given it chiefly because it presents a pleasing subject for the architect's pencil, and to elicit thought on a timber structure of simple form. "B" in a circle has caught the right idea. The conception is clever, and the working out of the design sensible. The author shows a low wall or plinths of masonry about 4ft. high, 9ft. 3in. apart, upon which a framed oak sill and standards are erected, consisting of the two centre uprights, with curved intersecting braces, halved together at their crossing. The timbers are cut square, without chamfering or moulding, the simple crossing of the braces being made effective; they are tenoned at the joints with projecting pins of oak. The uprights are framed together with a small head of tracery between, forming a pleasing *bonne bouche*, and are connected with the corresponding standards by plain flat-arched pieces pinned to a head-piece or tie-beam, upon which curved struts support the principals. Each pair of uprights has a truss. The roof is simple pyramidal, without cross or any ornament. The gates are effectively framed with horizontal rails, upright boarding below, and with turned shafts in the upper part; the coffin-rest or settle being at the side, and not in the centre, outside the gate. "Another for Hector," is a composition in a later style, but exhibiting good detail. The lych-gate is 8ft. 6in. between the seats, with a centre coffin-rest framed in wood, placed within the gates, its end being flush with them. The structure is of open framing, resting on low plinths, each side being formed of two standards, framed together with three uprights at the angles, with pierced heads, and connected by a circular arch, with transom and trefoil openings at the top. Plain carved brackets project over the fronts, and the gateway is also bracketed over at the top with spandrel tracery. The roof is brown tiles, with hipped ends. Details are simple, and in good taste. The stone seat on each side is a useful feature. "B" in two circles is another well-conceived idea, with a centre stone rest placed like the last, the side entrances being 3ft. 6in. each, with gates hinged to stone bases. The uprights are simply framed with balustring between at the bottom, the upper part being arched with chamfered braces. Brackets with moulded edges project at the angles to carry the roof, which is tiled, with hips at ends, and with a wood cross in the centre of ridge. At the foot of each upright are two curved spurs, tenoned into sill and upright. The roof is strengthened by longitudinal braces. "Fleur-de-lis" sends a design meritorious in parts, but ill-considered in conception. The circular spurs and the brackets springing from a single upright look weak, and rather displays cunning than good taste. The front elevation, with the curved braces, has a weak effect, and the roof is hardly wide enough. The author makes the rest for corpse, the centre posts, to which are hung some well-designed gates. The plaster panels in roof with bottle ends would have been better omitted. "Bee" in two circles has the defect of being over-roofed, at least, the supports are totally inadequate, and a structure of the kind could not stand a moment in a violent gale—the single uprights 9in. by 5in. would snap off like reeds. The centre gate-post is made the "rest." We like the simple cross on ridge. "Senlac" places his rest for the coffin at the side within the gates, and the structure is one-sided, the framing enclosing the rest on that side. Detail is badly drawn, and the roof heavy. "Laborateur" has a centre stone rest, with side wickets of a character that do not happily harmonise with the framed uprights. The curved spurs—pieces tenoned into the curved brackets has a weak effect, and we should not like to trust to them.

Among other designs, we place in their order of merit, "Vic," weak standards; "Jacobus," no gates shown; "Capio Lumen," rest too high; "Honos alit artes," with movable brackets for rest; "Felix," too like a porch; "J. W. C." in circle, no rest, curved tie and detail below par; "L." in G, poor in detail, with struts too weak.

Designs for Wall-Paper.

The designs for bedroom wall-paper are few. "Bee" in circle contributes by far the best. One is a lattice of cross stems and leaves flatly shaded, and, aesthetically considered, is a legitimate mode of wall decoration. The next pattern, with vertical stems throwing out alternate light and shaded leaves of pointed shape, is also simple, and suitable for a low room. "Fleur-de-lis" sends two patterns. The first shows greenish-brown leaves on pearly-grey ground; and another, variation with light leaves on dark ground, but, although in character with Queen Anne, is rather too naturalistic to please us. No. 2 design is rather more conventional; the interruption of the stems by the flowers is, perhaps, open to question, but the design displays more originality. Colours are a slatish-grey pattern on a vellum ground. "Début" sends two designs in outline. The first, with dado and wall pattern, in conventional leafage and stems, is a little too metal-like. The second is rather too crawly, in a thorough Japanese spirit. Both are original, and indicate invention. We next place "Queen Anne," a closely set conventional pattern of pentagonal-shaped flowers relieved by dark pentagons on a background of lighter colour, with a folial pattern, which is seen through the lozenge-shaped apertures. The pattern is rather too confusing, though clever. "Leizlad" sends two patterns; the first shows a series of commonplace octagon panels, with floral ornaments; and the latter is a large panel with convolvulus flowers—both geometrical and too mechanical. The present taste for Queen Anne has influenced largely the design for wall-papers. These are generally of an intermixed or "Dolly Varden" character, in which naturalistic treatment is found. We desire, however, in this club to encourage correct principles in all art design, irrespective of proclivities for any style.

NOTE.—Owing to some of the designs coming to hand on the week following the specified time, we desire to say that in future we shall not notice any designs that do not reach us within the time named. Such delay seriously inconveniences us in making the award.

LIST OF SUBJECTS.—NO. XVIII.

A. A graveyard monument in Classic taste, to be executed in granite or marble; cost not to exceed £50.

B. Christmas Decorations.—A design for the treatment of an arch and its shafts; one of a series; and for a temporary chancel screen covered with evergreen. The space on the sheet may be filled with devices. Natural treatment preferred.

C. A small railway station, to consist of booking-office, waiting-rooms, luncheon bar, &c. Plan, two elevations, and section; scale, 8ft. to the inch. Estimate not to exceed £1,500.

The village of Eaton Socon, near Bedford, is about to be lighted with Hearsor's patent automatic gas-lamps.

A new bridge has just been completed and opened at Wick, N.B., from designs by Mr. Paterson, C.E. The cost has been £4,000.

The new dock gates and sluices at Ayr have just been satisfactorily tested by the directors of the Glasgow and South-Western of Scotland Railway Company. The contractors were Messrs. J. and A. Taylor, of Townhead Works, Glasgow. The only work needed for the completion of Ayr Dock is the removal of the old worth pier, and this is being proceeded with.

Extensive works of sewer-construction have been carried out at Rutherglen, near Glasgow, by Mr. McGill, contractor.

The Scarborough Town Council have decided to purchase the undertaking of the Waterworks Company, and on Monday night authorised a committee to prepare a bill and deposit the same in Parliament, and to negotiate terms with the directors of the water company.

Works of drainage are about to be carried out at Dalkey, from the plans and specifications of Mr. R. Walsh, C.E.

At a special meeting of the Town Council of Barnsley, held on Tuesday, Mr. J. H. Hanson, of Huddersfield, was elected borough surveyor in the stead of Mr. Kenworthy, resigned, and Mr. R. Woodruff, of Barnsley, who has acted as clerk of works for the new public hall, was appointed to the post of foreman mason. There was a very large number of applications for each of the appointments.

Building Intelligence.

BEDWELTY.—On Wednesday week the new Board Schools were opened at Victoria and Tredegar, near Bedwelly. The Victoria schools have been designed by Mr. Blessley, of Cardiff, and erected by Mr. Piggford, Newport, at a cost of a little over £3,000. Accommodation is provided for 500, in three departments. The Tredegar schools will accommodate 1,500 children. Mr. Blessley, of Cardiff, was the architect, and Messrs Wood and Son, of Worcester, the builders. Mr. Blessley's design was selected in competition as the best and cheapest. It was to cost under £4 per head per child. As a fact it cost £4 2s. 4d., the odd 2s. 4d. being the cost of overcoming the difficulties experienced in building on the site selected.

BOSTON SPA.—The Congregationalists of Boston Spa last week celebrated the opening of their new chapel. It consists of a nave, with small transepts, porch, lobbies, and tower. The total length of the church is 53ft. long by 34ft. across the nave, and 43ft. across the transepts, the whole roofed in by one span with open timbers. The accommodation provided is for about 260 persons. A school has been built behind the church on the same ground level, and on the chapel tower is a slated spire, about 90ft. high to the top of the finial. The architect is Mr. Payton, of Bradford. Including £350 for the site, the total cost of the new chapel has been £2,800.

BRISTOL.—A new block of business premises have just been completed at the corner of High-street, and Mary-le-port, Bristol, from the designs of Mr. Henry Williams, architect, of that city. The fronts are of Bath stone, and supported on polished Aberdeen granite, sunk and moulded piers, with moulded (grey) granite caps and bases. The shop fronts are divided into a series of arches, with elaborate cast-iron columns and spandrels, supplied by Messrs. Macfarlane and Co., of Glasgow. A wrought-iron box girder, upwards of 13 tons in weight, supports the stonework above. At the junctions of High-street and Mary-le-port-street, a circular corner is formed with the principal entrance underneath. The piers support a moulded entablature and cornice, with carved panels underneath. Immediately above the façade is broken up by a series of segment-headed windows, with moulded architraves and ornamental pediments, with carved key-stones. Between the windows are moulded bases and pilasters with carved caps, with projecting panels above. The general contractor for the building is Mr. R. J. Crocker, of Bedminster. The general plumbing work was executed by Mr. Harris, of Bristol.

CLIFFE.—The plans prepared by Mr. Philip Curry, architect, of Moreton-place, W., for the reseating and restoration of the parish church of St. Thomas-à-Becket, at Cliffe, near Lewes, have been accepted by the vestry. The flooring and seats will be renewed, the gallery in the north aisle is to be removed, and the existing windows in the aisle replaced by others of similar character to those in the south aisle, a new vestry built in place of the present inconvenient one, and a new pulpit and communion table in oak, stone font, and deal choir stalls are to be added to the furniture. The present large reredos, which blocks the east window and dwarfs the small chancel, is to be removed and re-set up in the new vestry, and replaced by a much smaller and less pretentious one, executed in Caen stone. If funds permit, a new open roof in deal is to be thrown across the chancel.

HANDSWORTH.—The memorial stone of the new Public Offices and Free Library at Handsworth was laid on Tuesday afternoon. The style of the buildings will be a free treatment of Gothic of the Tudor type; and the premises will comprise a board-room, public offices, free library, stables, fire-engine house, and cart and implement sheds. The elevation will be carried out in red-pressed brick, with Hollington stone dressings; while the roofs will be covered with Staffordshire tiles of improved make. The buildings, which are expected to be completed within twelve months, will cost between £10,000 and £11,000. The architects are Messrs. Alexander and Henman, of Stockton-on-Tees and

Middlesborough; and the builder is Mr. Charles Steel, of Pitsford-street.

LIVERPOOL.—On Tuesday the foundation stone of a new Primitive Methodist chapel and school was laid at Liverpool, in Princes-road. The plan of the chapel is a parallelogram, 75ft. long by 46ft. wide, and the school now stands at the right angle at the back of the chapel, with the entrance facing Beaconsfield-street. The school-room on the ground floor will contain five class-rooms, of various sizes, 28ft. by 13½ft. down to 18ft. by 13½ft. There will also be a minister's and deacon's vestries, &c., and above these there will be a room 70ft. by 33ft. The chapel will have a gallery on two sides, and the ground floor will have seats for 900 persons. The elevations of the schools and sides of chapel will be carried out in brick, with stone dressings. The front of the chapel, tower, &c., will have an octagonal spire of dressed stone 110ft. high. The whole contract has been taken by Messrs. Nicholson and Ayre, for the sum of £6,536, the architect being Mr. Richard Owens.

LWYNPIA.—On Monday the corner-stone of St. Andrew's Church, Llwynpia, Ystradyfodwg, was laid. The style of the new building is Early English, of about 12th and 13th centuries. The estimated cost is £2,100, and the church will accommodate about 500 persons. Mr. White, builder, of Swansea, has undertaken the contract, and the building will be superintended by Mr. W. D. Blessley, Cardiff, the committee's architect. The plan is cruciform, having a simple nave, with centre aisle and transepts. The chancel is not in the present contract, but it is hoped soon to erect it. There will be no tower at present built, but the west front has for one of its chief features a stone bell-cote springing off the gable coping.

LONDON SCHOOL BOARD.—At Wednesday's meeting of this Board the tender of Mr. W. Downs, of Hampton-street, Walworth, amounting to £11,197, was accepted for a school for 1,166 children in Beethoven-street, Queen's-parkestate, Chelsea. The school has been planned, on a freehold plot of 1½ acres in extent, as a one-story building with three departments, the graded schools being arranged around a hall in the centre, 70ft. by 40ft., which is intended for holding pupil teachers' examinations, &c., for the Chelsea division. The total cost of buildings will be only £9 12s. per head—a step, as Mr. Stiff, chairman of the works committee, remarked, in the right direction. An amended tender by Mr. C. N. Wilmot, of High-road, Lower Clapton, amounting to £717 10s., was accepted for the alteration of Upton House, Urswick-road, Homerton, to adapt it as a truant school. From returns as to the removal of temporary iron buildings from one site to another, it appears that the average cost of such removals is about £200, including provision of foundation, drainage and sewerage, and fences. It was decided to schedule, in the next session of Parliament, 36 sites for new schools (ten being alternative sites) and 19 plots of additional land for enlargements of schools or playgrounds.

MANCHESTER.—A shop in Portland-street, Manchester, has been rebuilt for Mr. William Armstrong. The front is of tooled Spinkwell stone; the shop door window frame and bressummer are of English oak, the rest of the woodwork of stained pitch-pine; the roof and sides and front of the dormer are covered with red tiles; the main cornice is cement panels, with stamped and coloured enrichments. The work has been executed by Mr. Josh. Thompson, builder, of Manchester, under the direction of the architect, Mr. G. H. Goldsmith, 63, Faulkner-street, Manchester.—New offices for the *Manchester Courier*, and the *Manchester Evening Mail*, have just been erected for Messrs. Thos. Sowler and Sons, by Mark Foggett, builder, under the superintendence of Messrs. Wolstencroft and Son, architects, of Pall Mall, Manchester. The main portion of the building forms one nearly square block. The style of the principal front which faces Cannon-street belongs to the many modern developments of Classic architecture. It is divided into five bays by stone pilasters, which support a cornice above the second floor windows. The third floor is built as an attic over four of these bays; the portion adjoining Bank Buildings being kept low in order to avoid interference with the

light of property situated on the other side of the street.

METROPOLITAN BOARD OF WORKS.—At Friday's meeting of this Board deputations appeared in support of memorials from the vestries of Bermondsey and Rotherhithe and St. Olave's district board, asking for early improvement of the thoroughfare from London-bridge to Deptford, for which Parliamentary sanction has been obtained. A deputation from the Westminster district board attended to request the board to seek powers, in its next Building Act Amendment Bill, to effectually prevent the use of hoardings and like structures for advertising purposes. It was pointed out that the practice of letting hoardings to bill-stickers was a growing one; that it was unsightly, and productive of inconvenience to the public, and often a source of danger, while the fact that they received substantial rent from these structures induced builders to keep them up longer than was necessary. All the memorials were referred to the works committee. The following applications from local authorities for borrowing money were granted:—Mile End Old Town Vestry, £6,000 for purchase of leasehold wharf, erection of stabling, and supply of necessary plant for carrying out slopping and dusting work (interest 5 per cent.); Plumstead District Board, £850 for sewer, &c., at Charlton (3½ per cent.); St. Pancras Vestry, £1,927 for widening Gordon-house-lane (3½ per cent.); also £6,000 for granite paving (5 per cent.); and £6,750 towards rebuilding canal bridge at Gloucester-gate, Regent's-park (5 per cent.); and Lambeth Vestry, £6,000 for purchase of horses, carts, and plant (5 per cent.). Mr. H. A. Hankey's application for approval of a plan for the construction of the walls of the south wing of Queen Anne's Mansions, Westminster, of greater height than provided for by the Building Act, was not granted. Amended plans submitted by Messrs. Brunlees and McKerrow, showing proposed interference with the sewer and subway in Queen Victoria-street by the works of the Metropolitan Inner Circle Completion Railway, were approved, but the company were referred as to the sewer itself and drains to the City Commissioners of Sewers. The Board approved the preamble of the bill prepared last session to amend the Metropolitan Management Act, 1855, the Metropolitan Building Act, and the Acts amending the same respectively. The new bill is to deal with such matters as roads, foundations of houses, "buildings and erections," and recovery of expenses relating to dangerous structures. Attention was called by Sir F. Truscott to a large stack of timber near Waterloo Station, which he considered would, if it took fire, endanger the small cottage property and Peabody dwellings near by. The architect to the board (Mr. Vulliamy) said he visited the premises some time since, and found that the stack contained a furnished office lit by gas. He gave notice that it was a dangerous structure, when the office was done away with, and he was unable to interfere. A general discussion took place on the peril of fire involved by large timber stacks, and the necessity for a clause enabling the Board to deal with them. Mr. Freeman warned the Board not to attempt to incorporate too many matters into their bill, reminding the members of the manner in which a clause in a former bill relating to timber stacks was defeated by the combined opposition of builders and cabinet-makers. The matter was eventually referred to the Building Act Committee. It was agreed to purchase the rights of Queen's College, Oxford, in Plumstead Common and Shoulder-of-Mutton Green, at a cost of £10,500.

NEWTOWARDS.—On Wednesday week a new Roman Catholic church at Newtownards was dedicated. The style of the building is Late Decorated, and Messrs. Hanson and Son, of London, are the architects. The materials are Scrabo freestone with Dundonald red sandstone dressings. Inside the new church measures 108ft. by 45ft., and will hold over 650. The structure is composed of a sanctuary, with a side altar, on the north side, and sacristy to the south. There are also north and south transepts, nave and aisles, with four bays. At the western extremity of the building is a small

gallery. A porch is situated at the south-west angle of the building. At the intersection of the nave and transepts is a lantern tower, and close behind it a tower for the bell. At the end of the south aisle, immediately over the foundation-stone, is a statue of St. Joseph, another, of St. Patrick, occupying a niche immediately over the door at the south-west corner. Both niches are formed of well-cut Dundonald stone. The cost of the building has been nearly £10,000.

NEW CLEC.—The foundation stone of the new church of St. John, Apostle and Evangelist, was laid on a site in Rutland-street and Cleethorpes-road, New Clec, near Grimsby, on October 25th. The church is designed with a nave, north and south aisles, a chancel with organ chamber and vestry on the north side, and a western narthex. The style is Early English. All the doorways and windows of the church will be of Ancaster stone, and the exterior walling will be of brick, relieved by stone string-courses and ornamental brickwork. The western narthex is approached through an open archway, leading to a large doorway, richly moulded, having columns with moulded caps. It is lighted by a triplet window at the south end. The nave and chancel are of unusual width, and will be covered by an open-timbered roof 30ft. in span, the aisles being somewhat narrow. In the sanctuary on the south side is the sedilia, surmounted by a canopy. An arcade of three arches will form the chief feature of the sanctuary under the east window; the central arch contains the reredos, which is divided into three compartments. The lofty walls of the chancel will be relieved by arcading, which is carried round on the north and south sides below the clerestory. The church will contain 600 sittings. The seating throughout will be of stained deal, and the floors of the passage are to be laid with tiles. The works are being carried out by Mr. J. M. Thompson, builder, of Louth, from the designs of Mr. Jas. Fowler, of the same town.

PRESTON.—The new premises of the Preston Reform Club was opened on Saturday. The building has been adapted according to the plans of Mr. D. Grant, architect, of Preston, at a cost of nearly £1,500. A new stone frontage of Classic design has been erected, and the internal arrangements, comprise, on the ground floor, a vestibule, news and telegram-room, registration office, luncheon-room and bar, and billiard-room; on the first floor, reading and lecture room and smoke-room, and on the second-floor another billiard room. In the basement are the kitchen, store-rooms, &c.

READING.—A new Temperance Club-house is being erected at Reading. The club accommodation comprises a public coffee-room on the ground floor, 20ft. by 18ft.; a reading-room on the first floor, of same dimensions; and a bagatelle-room, 28ft. by 13ft., with the entrance from the landing of the main staircase. In addition there is a kitchen, and other offices, besides bedrooms for the manager. The building is built and faced with red bricks, relieved with the introduction of grey brick patterns and ornamental string-end encaustic tiles in the pillars of the front. The builder who has undertaken the contract is Mr. James Wicks, of Southampton-street, and the works have been executed from the design and under the superintendence of Messrs. Morris and Stallwood, architects, of Friar-street, who give their services gratuitously. The total amount of Mr. Wicks' contract is £525.

ROCK FERRY.—The new Roman Catholic church of St. Anne was opened at Rock Ferry last Sunday. The building is in the Early Decorated style, and contains nave, chancel, transepts, and side chapels, besides baptistery and tower. The materials used are yellow Stourton stone for the dressings, with facings of pierrepoints of a bluish tint. The whole of the interior of the chancel and chapels has an ashlar facing of Stourton stone. The entire length of the building is 124ft. The outside width of nave is 39ft., and the same, including transepts, is 70ft. The height from floor to apex of roof is 40ft. The total cost amounts to upwards of £7,000. The building was designed by the late E. Welby Pugin, and has been carried on by his brothers, Messrs. C. W. and P. Pugin, architects, of Westminster

and Ramsgate. Mr. Woolley, of Chester, was the contractor.

SPALDING.—The foundation stone of a new church dedicated to St. Paul was laid on Thursday, the 18th ultimo, by Miss Charrington, of Spalding, at whose cost the entire of the works are to be erected, that lady having given the munificent sum of £32,000 for the building and endowment of same, including vicarage and schools on the same site. The church will be a fine structure in the Early English style, having a noble tower and spire, disconnected with the nave by several yards. The exterior will be of red brick and Ancaster stone, and from the designs of Sir G. Gilbert Scott. Messrs. J. and W. Pattinson, of Sleaford, are the builders; and Mr. Geo. Hanuaford, clerk of works.

ST. ASAPH.—New grammar schools are being built in this city to accommodate 40 boarders and 60 day scholars, with head master's house of three stories adjoining. The school buildings themselves will cover an area of 118ft. x 60ft. The principal entrance is beneath a tower, in which will be placed the water supply cisterns, leading to vestibule and staircase hall. On the right is the boys' dining-hall, 30ft. x 20ft., and on the left the large school-room, 50ft. long by widths varying from 20ft. to 30ft. On the same floor are the class-rooms and master's study, while a corridor leading to the playground shuts off the lavatory and offices. The dormitories are on the first floor, that for seniors over the dining hall, and that for juniors above the school-room, the under master's sitting and bedrooms and other rooms are planned in the story above. The building is to be of bricks made near the site, with Ruabon pressed bricks for angles, jambs, and arches. The inside of principal rooms on ground level will be faced with white pressed bricks, above a dado 5ft. high, in red pressed bricks. The whole of the joinery will be of pitch-pine varnished; the roofs will be covered with Bangor slates. The heating will be by Gurney's stoves. Mr. R. Lloyd Williams, of Denbigh, is the architect; and Mr. Moses Parry, of Conway, the builder. The total cost will be about £4,000.

TOPSHAM CHURCH, DEVON.—On Saturday, the 27th ult., the rebuilt church of St. Margaret, Topsham, was consecrated. The new building is not a restoration, for nothing good was left in the recent church but the old Perpendicular tower, which has been repaired, and combined with the new work. The church, reconstructed with enlargement, consists of nave 83ft. 3in. x 24ft.; entire width, with aisles, 58ft. 6in.; chancel, to which there are aisles and vestry, 34ft. 6in. x 19ft.; transepts, in length, 91ft. 9in. x 22ft. The style is Early Decorated. The walls are of limestone from Torbay; the dressings of Bath stone. The seating is of red deal, with tracery in the bench-heads, accommodating 848 persons, 449 being free, including children. The roofs are red deal, ceiled between the rafters, excepting that of the chancel, which is boarded, and has mouldings and tracery. There is a reredos of five crocketed canopies, carved by Mr. H. Heus, who has executed the corbels, &c., throughout, and illuminated by Mr. Drake. The organ occupies a chamber north of the chancel, with vestry adjacent. There are three large stained glass windows (memorials): one in the north transept, by Beer and Driffeld; the west and east windows by Drake; the south window of chancel by Hughes. The sacarium is inclosed with a brass rail and standards, and this portion paved with Minton tiles. Adjoining the tower entrance is the Norman font, with a plinth supplied, set on an octagonal step. The entrance is through a deeply-pannelled arch (Perpendicular), and close beside it in the tower was discovered, filled with rubbish and cob, a steep stair, rising about 6ft., and giving access through a small doorway into the body of the church, probably a rood stair. The enlarged church required an extension of the churchyard, and a space about 60ft. x 45ft. has been added on the east side through a clearance of some old houses, and the east end is now visible from the main street. The works have been carried out by Messrs. Stephens and Son, of Exeter, under the direction of Mr. Ashworth, architect; the clerk of works was Mr. Bradford.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—J. K.—C. W.—W. T. W.—A. and Co.—J. W. C.—C. H. and Co.—J. A. S.—A. L. B.—H. G. C.—A. C. Lanyon.—C. Mort.

ERRATA.—We stated on p. 373 that Mr. J. Howcroft had been appointed surveyor to the Kirkleatham Local Board. Our information was incorrect, Mr. L. S. Thompson is the gentleman elected. Last week, in our description of the design for new Spa buildings at Scarborough, the names of the architects should have been given as Hetherington and Oliver, not Hetberington and Ourer.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. Published every Friday, Price 2s. Annual Subscription, Post-free, Eleven Shillings. This week's number contains articles on The Annual Report of the Local Government Board, Household Economy and Health, A Disease Map of Birmingham, Musgrave's Slow Combustion Stoves, The Pathology of Contagion, An Aërating Filter, On the Influence of Climate on Health, Habitual Female Drunkards, A Smokeless Stove, What Chemical Disease does not do, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c.—31, Tavistock-street, Covent-garden, W.C.; and all News-vendors.

Correspondence.

THE MASONS' STRIKE.

To the Editor of the BUILDING NEWS.

SIR,—The letter of "C. B." One of the Deputation of Masons," requires some reply, which, by your leave, I will make as short as possible. "C. B." says that there can be no difficulty in the masons working different hours from bricklayers and others, because plumbers have always worked different hours. I think any person of common sense will at once see there is nothing in such an argument. Plumbers have no work in connection with masons, and the well-known reason of plumbers being allowed shorter hours is the unhealthiness of their employment, they being always constrained to work in a stooping cramped position, and liable to inhale the fumes of molten metal.

The next fallacy of "C. B." arises from his mixing up the trades of carpenters and joiners. Carpenters at work in open buildings must of necessity work the same hours as bricklayers, plasterers, &c. The joiner has, as "C. B." states, a nice warm shop to work in, and so is unaffected by weather or darkness.

"C. B." denies the assertion that a skilful mason is made to eke out his time so as not to surpass the idle and unskilful, and asks, "Can the master builder point out any rule in our book to that effect?" In reply, I say that the book in question is not available for the masters to see, and if it were the chances are that no such rule would be found. But the practice is as I have stated, and many instances can be given of the masons striking because the masters wished to test the amount of a man's work by measuring it.

The last matter referred to is the dissatisfaction of the Masons' Union at the course the master builders have adopted in seeking men from abroad, being unable to get them at home, and to this I reply that the masters had no other reasonable course open to them. "C. B." also deplores the fact of many hundreds of men being compelled to subsist on the strike pay of 18s. per week. In this I heartily agree with him. I know a man with nine children, who is starving on that allowance (his large family having made it impossible to save much), and yet that man might be earning his 10½d. per hour as a fixer if the Union would allow him to work for his old employers.—I am, &c., A MASTER BUILDER.

THEORIES OF RESISTANCE.

SIR,—I observe in your article on the above subject last week that you quote an opinion of Mr. Kent's, from *Van Nostrand's Magazine*, that my theory of "diagonal resistance" in beams, subjected to a transverse stress, "is far from being a correct theory." I should not have minded such a random expression of opinion had you not apparently endorsed it yourself. It would be more to the point to say of the theory that in the form in which it is propounded it is not a universal theory. Let me state that the theory, as propounded, is based on the assumption that the material of the beam is homogeneous, and "that, within elastic limits, extension is equal to compression, under equal stresses, and their strict application is confined to the calculation of stress, strain, and strength within elastic limits. At the same time they are practically applicable for calculating ultimate strength."

I submit that the correctness of the theory, under these conditions, has been fully, in various ways, established in my "Manual of Rules, Tables, and Data," in the cases of iron and of steel, which are practically homogeneous, with a remarkable degree of accuracy. I have there given numerous examples of the application of the theory. In the case of cast iron the theory cannot be expected to apply for the breaking strength of ordinary castings, for the reason that they are not homogeneous. But even for cast-iron bars the theory is applicable within the elastic limits of resistance, as shown at p. 564 of the "Manual."

Let me add, in conclusion, that the elastic strength, or the greatest stress which the material is capable of sustaining within the elastic limit, is of much greater importance than the ultimate or breaking strength. For, in practice, it is necessary, in order to insure the permanency of a structure, that its proportions should be such that, under the maximum stress to which any piece is to be subjected, it should not be strained beyond the elastic limit of its strength.—I am, &c., D. K. CLARK.

S, Buckingham-street, Adelphi, W.C.,
October 29, 1877.

CHURCH OF ST. PETER'S, REGENT-SQUARE.

SIR,—I must thank Mr. William Woodward for his kind remarks in the first paragraph of his letter of last week. I trust that when my design is "carefully worked out" it will be a successful divergence from the "stock interiors of the day." With this object in view I have refrained from entirely obliterating every thought of the "man who designed it" (viz., St. Peter's), because, although I do not know much of the "choragic monument of Lysicrates," I feel sure that he who designed St. Peter's, Regent-square, knew nothing of Gothic, and I determined that none of the sham Gothic so prevalent should metamorphose an essentially Classic church, and I therefore chose a Renaissance style upon which to work; and the characteristics I retain are:—1st, the flat roof; 2nd, the present windows of nave; 3rd, the walls of nave intact; 4th, the portico and steeple; and I intend, where the ornament is good, such as in the present frieze round chancel, to use it up in my proposed restoration. I must utterly differ from Mr. Woodward as to the proportions of St. Peter's. A Classic church is not my beau-ideal, but if we have a parish church built in that style, and even in an inferior way, it is our duty to use the same, and to make a church of it as far as ritual

arrangements for choir, the re-seating of nave and other matters not sufficiently recognised in the early part of this century, are concerned, but that the proportions of many of these so-called Classic churches—St. Peter's included—were necessarily bad, is not, I venture to think, in accordance with facts. It is the un-eclesiastical arrangements, and not the stone shell, which are so painful a feature in these Georgian churches and their successors.

Has Mr. Woodward seen the late Renaissance churches of Bruges, Brussels, Antwerp, Rennes? I think he would find that poor St. Peter's are equally good proportions with them, and were it ecclesiastically furnished, just as it is, it would not look so very inferior by the side of them. With regard to the exterior, I should certainly do nothing but put the fabric in good repair. The "style," which seems so offensive to Mr. Woodward, marks an epoch in the history of the Church of England, and it would be vandalism in the extreme to remodel the outside where no necessities of worship or arrangement are concerned. I have now said my say as a professional man. As vicar of the churchwarden of the parish of St. Peter's for this year, I think if he will visit the church on a Sunday or Saint's Day, that with all its miserable arrangements he will find the Church of St. Peter is far from a "sepulchre," either spiritually or temporally, for we have an ardent ministry and a capital warming apparatus; and I am sure, for my own part, and that of my vicar, if Mr. Woodward will come and help us to carry out some of the sweeping alterations he suggests, by liberally subscribing to the funds of the church, which are very low, he will meet with a very warm welcome.—I am, &c.

WM. SCOTT CHAMPION.

North Petherton, Somerset, Oct. 31.

CAPITAL AND LABOUR ANTAGONISTIC

SIR,—There are two and very separate aspects in which the present strife between master and workman must be viewed. One is the broad question involving the adjustment of capital and labour; the other is the opposition on the part of the men to the importation of foreign hands. Now it is of no use to disguise the fact that capitalists and workmen have at present quite opposite interests. The capitalist really becomes one by profiting or deriving income beyond his expenses. This surplus is really the result of usury—it is, as one writer with whom I agree says, "capitalism." Now the workman contends, and with some fairness, that the spoil should be divided between them, not be taken exclusively by the capitalist. It is quite evident if England is to improve by her industry, if men are to work better than Sir Edmund Beckett says they do, this adjustment or division of the profit arising out of work must be more equal. We are constantly being told that English artists are inferior to foreign; we know that work now has not the same impress of care and thought it had when our mediæval buildings were executed. But the puzzle is quickly solved when we consider that the capitalist—the contractor—is endeavouring to get as much gain as he can—more than fair profit—by the labour of the skilled workman, while the workman, in turn, is attempting to restrict his labour. The contract system, every one knows, has been a cause of decline in British workmanship. It places capital in direct antagonism to labour; it supersedes thinking on the part of the artist, and produces such a disagreement as the recent *émeute* between capitalists and workmen. When we come to look at the skill of the workman and the money of the capitalist, as simply interchangeable products which one gives and the other takes, it is readily seen how absurd is the dictum that the capitalist should buy in the cheapest market and sell in the dearest. It is a fact no one will dispute that the greatest epochs of art were those in which these two necessities were reciprocally employed, and their interests became identical. Unfortunately, the relations between masters and workmen have come to be regarded as thoroughly opposed. The capitalist seeks to get his work done at the lowest price, and the workman either to scamp or to resist. Each strives to obtain a profit—an advantage over

the other. If we look at the matter in this light, it is absurd to argue that the work is performed with less skill, or that the workmen spend their time in idleness. It is the result of the system, and Sir Edmund Beckett's argument falls to the ground.

On the second question it is much to be deplored that the men have placed themselves in the position they have. By trying to influence foreign workmen they have unwittingly shown themselves as greedy of gain as their employers—they have prevented their competitors earning better wages, and have acted the dog-in-the-manger fable. They have no defensible ground to prevent the capitalist buying his labour at the cheapest market any more than it would be fair to prevent the working man. Trade exists for the consumer. But the whole question hinges on the former principle. Why, after receiving a fair return, should an overplus be sought on either side; or why should the capitalist want more than a fair interest on his capital after paying the outgoings? One is as justly entitled to the overplus as the other. If the masters or contractors have taken a contract low, of course it is their own fault, and they alone must be the sufferers in any trade dispute, though of course they are at liberty to get cheaper labour. Labour is wealth, and the more there is of it, and the better it is performed, the better it is for the public weal. Be it observed, however, that the limitation sought to be imposed on labour is the result of the system of making capital. Unfortunately, the just division of the wealth made by labour and capital is not likely to be attained till both masters and men can be elevated out of their personal selfishness and pride—a condition only possible by the exercise of moral strength which neither at present have reached. The *Times* and other papers have argued the question without a clear idea of the principles of political economy. We cannot make the average workman feel "an individual delight in turning out a workmanlike product," when a better example is not set him by his employer. Let it be understood also that the consumer suffers by any over-reaching on either side.—I am, &c.,

G. HUSKISSON GUILLAUME.

KENSINGTON VESTRY-HALL COMPETITION.

SIR,—With reference to the letter of your correspondent in last week's *BUILDING NEWS*, we, as the authors of one of the eight designs selected (by Mr. Whichcord), will be glad to co-operate with him in urging his happy suggestion for a fresh competition, limited to the above eight.—We are, &c.,

WALTER F. LYON, F.R.I.B.A.
J. M. FERGUSON.

CHURCH OF SKIRLAUGH.

SIR,—Will you kindly allow me to make known, through the medium of your excellent paper, that it is proposed to restore the church or chapel of Skirlaugh? Skirlaugh is a village in Holderness, a district of the East Riding of Yorkshire, which, although little known, contains several fine churches, especially Pahrington, Hedon, and that now under notice. In this village of Skirlaugh, from which he probably took his name, Walter Skirlaw, Bishop of Durham, built, towards the close of the reign of Richard II., a chapel universally admired by students of architecture as a specimen of Early Perpendicular work, and which, with the exception of the interior, remains nearly in its pristine state. It was, therefore, with much regret, that I heard, whilst staying at a parsonage in Holderness, a few days since, the subject of its restoration discussed, and grave misgivings expressed as to the result to be anticipated. The architect entrusted with the work is, it appears, a local practitioner, who has had little or no experience in the restoration of old churches, being principally known from the Wesleyan chapels which he has erected in the town of Hull and its neighbourhood. Under these circumstances I think there can be no doubt but that the duty of the committee is to submit the plans to some eminent ecclesiastical architect before proceeding with the work, as these examples of our national architecture are not the property of the few hut of the nation at large. Trusting that others interested in the preservation of our ancient churches may take the matter up and prevent another grievous sacrifice of old work,—I am, &c.,

ECCLESIOLOGIST.

Hull, October 29th, 1877.

Intercommunication.

QUESTIONS.

[5166].—**Stone.**—Is the Mansfield Woodhouse stone suitable for monumental work? If not, what other kind would be best for a head stone 4in. in thickness other than Portland, which I find invariably vegetates after a very short space of time?—F. R.

[5167].—**Tuck Pointing.**—Would one of your numerous readers inform me how to make good black tucking mortar? Please give materials and proportions. By so doing they will greatly oblige—AN ENQUIRER.

[5168].—**Dividing Rooms by Partition.**—Would some reader be kind enough to inform me as to the best method of dividing a dining-room and a drawing-room so that they may be thrown into one room when required? If a partition, is it not better to lower it into the cellar than to take it up into the bedroom over, or is there a better mode than either of these?—INEXPERIENCED.

[5169].—**Ceilings Gilded.**—Will some kind reader kindly inform me how ceilings are "china gilded," and if it is much more expensive than whitened only? Also if cornices may be "china gilded"?—ANXIOUS AMERICAN.

[5170].—**Boundary Wall.**—Must a boundary wall (for a builder's yard in a small village), 6ft. above the level of the ground, be kept to the building line, which is 18ft. set back, or may it be built up to the edge of the street?—BUILDER.

[5171].—**Boundary Wall.**—I should be glad if any of your readers would give me their opinion on this point:—A and B own adjoining land to each other; B builds to the utmost extremity of his land. Has B a right, legal or customary, to trespass on A's land and damage crop for the purpose of erecting his building? Should not B erect his wall, the mason standing in B's land?—FAIRPLAY.

[5172].—**Perspective.**—Would some professional reader kindly inform me of a work suitable for a student who wishes to learn how to delineate architectural elevations, &c., in perspective, the price, and where to obtain the same? Are the works of Dr. Brooke Taylor or Malton, or either of them, suitable?—ANXIOUS.

[5173].—**Architectural and Scientific Books.**—I should feel obliged if any of your readers could inform me if there are any libraries in London from which books on the scientific portions of our profession could be borrowed, and on what terms? I have tried Mudie's without success.—J. P.

[The Architectural Association Library is the only lending library for the books you require. Apply to the hon. sec., 9, Conduit-street, W.—ED.]

[5174].—**Retaining Percentage from Instalments.**—What is the proper understanding of the usual clause retaining a percentage on value of work executed by a contractor? I am told that the legal effect of this is, say, suppose contract to be for £1,000, a balance of one-fifth (or £200) should be retained "till the completion," if payments be made at the rate of 80 per cent. on value during progress. But this is not as most builders understand it, nor according to general custom. Say, for first instalment, if £100 of work be done, I should pay £80, but the £20 balance would be paid up next time, so that on completion there might be only, say, £20, £10, or less. I should like to know what is the proper way of looking at this?—R. B.

REPLIES.

[5160].—**Queen Anne.**—In reply to "Carver," the old brick buildings of the Temple, as Garden and Pump-courts, contain excellent specimens of cut brickwork and woodwork of this period. Bishops-gate-street, Aldersgate-street, and other streets in the City have examples also of "Queen Anne." Bedford-row is another locality full of fine work of this era, and Queen Anne's-gate contains some very choice specimens of the style. There are few of the old streets and suburbs of London that do not furnish some good examples of this kind of work. In the High-street and the Square, Kensington, in Grosvenor and Berkeley-squares may be found some capital old houses, dating from the 17th to the 18th centuries; and a fine example of a country residence, with ornamental gables, windows, doorways, and carved hrickwork, may be seen in the High-street at Putney. The *BUILDING NEWS* has given more examples of this kind of work than any treatise I know of.—G. H. C.

[5163].—**Testimonials.**—I should not advise "A. F. G." to alter the dates of his testimonials. Of course it would be forgery to alter date and the name of town. "A. F. G." had far better not touch up his testimonials to suit them to more recent appointments, but had rather obtain some new ones of later date to add to them. Why should not an old testimonial retain its value?—ARCHITECTUS.

[5164].—**Surveyor's Charges.**—The employer was wrong in paying the surveyor his fees, and he cannot properly deduct the amount from the contract. The receiver having completed the contract, should insist on full payment. It has been held that the liability to the surveyor shifts from the owner to the builder when the former has accepted the latter's tender so as to form a contract.—L.

Our Office Table.

THE brickmaking season is now finished. On the whole it has been a very favourable one both for masters and men. Owing to the number of new schools being erected in all parts of the kingdom, the result of recent legislation and other causes, the demand has been unprecedentedly great, the natural result being that bricks have fetched a capital price. Then the weather has been exceptionally fine; the brick-moulders and their gangs have thus lost but very little time, which, of course, made a considerable difference in their earnings. Brick-moulders, setters, and temperers have earned on an average from 50s. to 60s. per week each, and in some cases even more. In the large brickmaking district, of which Sittingbourne and Faversham are the centres, over 200 millions of bricks have been turned out this season. Of these no less than 60 millions were made by Messrs. Smeed, Dean, and Co., of Murston, near Sittingbourne, who are the largest individual manufacturers in the kingdom. It is remarkable what a quantity of bricks one man can mould in a season. To make a million is regarded as being excellent work, but there are several instances in the district referred to, in which 1,200,000 or 1,300,000 were made at one "stool."

LAST WEEK Mr. Daniel Percival Appleby, a well-known north country contractor, died, at the age of about seventy, at Barnard Castle. Mr. Appleby built many of the stations on the Barnard Castle and Darlington Railway, and also on the Tees Valley Railway. He also erected police stations and courts at Darlington and Barnard Castle, and at the latter town built the militia barracks. The deceased enlarged the county prison at Durham, and erected a large number of houses and shops at Barnard Castle and elsewhere. On the construction of the South Durham and Lancashire Union Railway, Mr. Appleby erected the Percy Viaduct, one of the finest of a series of bridges occurring on the line. He also assisted in the construction of Deepdale Viaduct and the Tees Bridge. In addition to these works Mr. Appleby alone constructed the Haggerleazes Railway, extending from Barnard Castle to Bishop Auckland, an undertaking beset with engineering difficulties, owing to the peculiar conformation of the district. He also doubled the line from Bowes to the Summit on the South Durham and Lancashire Railway. Commencing life as a cabinet-maker, the career of the deceased, although very remarkable, cannot be said to have been successful in a monetary point of view, as he died in comparative penury.

THE trial and sentence of Messrs. Swindlehurst, Langley, and Saffery, for their frauds in connection with the Artizans' Dwellings Company, seems to have taken many people by surprise; and some of the daily papers write about the affair as if a court of law had just established for the first time an entirely new reading of the Eighth Commandment. What the effect may be on the morality of directors of public companies and others in similar positions of trust we do not know; but it ought to sharpen the wits of those who, while honest themselves, are contented to leave things to the mercy of their more clever but less scrupulous colleagues. For the defendants Saffery and Langley we feel something like pity. The first bowed to an immoral and pernicious custom too frequent among members of his profession; and the second, who, while something of a charlatan, has busied himself at considerable pecuniary cost in political matters, was weak enough to be entrapped by the prisoner Swindlehurst, who, we firmly believe, was the originator of the crime. Any time during the past seven years we have expected his name to appear in connection with similar disclosures, though not precisely of the character of those which have lately attracted public attention. Had those who were supposed to look after the servants of the company during the earlier years of its existence awakened sooner to a sense of their responsibilities, and shown a little of the energy since displayed by the committee of investigation, the shareholders of the company would probably at this moment be a good deal better off.

We have received a copy of the first annual report of the "Bricklayers' Technical Educational Classes," which is an institution conducted for the instruction of those working men who appreciate the honour—there are 129 of them—"under the patronage of the Royal Institute of British Architects," "during the pleasure of the Council," with Mr. Frank E. Thicke as its president, and its headquarters at his office. Three classes have been formed—one in London, one at Greenwich, and the other at Chelsea, and the voluntary services of two teachers secured, of whose abilities we know nothing. An examination was held last December, when six prizes and three certificates were awarded—two of the prize-takers and one certificate-holder being on the committee of the institution—a rather uncommon occurrence. The substantial value of the "patronage" of the Royal Institute of British Architects seems to have resolved itself into three donations of two guineas each from members of that body; the mainstay of the funds has been a gift of twenty guineas from the Fishmongers' Company.

The first examination of Surveyors and Inspectors of Nuisances took place on Monday, the 29th October, at the rooms of the Medical Society of London. Eight candidates presented themselves, five of whom were successful in obtaining certificates of competence—namely, Mr. H. M. Robinson, surveyor, Ulverston; Mr. J. Parker, surveyor, Bridgwater; Mr. F. Booker, Inspector of Nuisances, Bradford; Mr. W. S. Prebbles, Inspector of Nuisances, Blackburn; Mr. Thomas Blanchard, Inspector of Nuisances, Evesham. Fifteen candidates have already entered their names for the next examination.

CLEOPATRAS NEEDLE is surpassed in height by a home-made modern obelisk, which has just been erected in the island of Guernsey. The monument has been constructed by public subscription as a memorial to the late Admiral Lord de Saumarez, G.C.B. The site is Delancey-hill, a lofty eminence close to St. Peter's Port, overlooking the roadstead and commanding the coast line of Guernsey for many miles, as well as the entire group of the Channel Islands. The memorial consists of an obelisk built up of finely-axed blocks of Guernsey granite. The shaft or needle is 78ft. high, which is higher than that of Cleopatra's Needle, to the proportions of which it generally conforms. This needle stands upon a pedestal of granite stepped at the base and standing 18ft. above the ground level, thus giving a total altitude of 96ft. to the memorial. On each of the four sides of the pedestal panels are sunk for the reception of bronze tablets with suitable inscriptions, which have yet to be inserted. The De Saumarez memorial was constructed by Mr. James Le Page, contractor, from the designs of Mr. A. C. Andros, M. Inst. C.E.

WATER SUPPLY AND SANITARY MATTERS.

BORNEMOUTH SEWAGE WORKS.—At a special meeting of the Bournemouth Improvement Commissioners, held on Tuesday week, it was decided, by a majority of 9 to 5, to adopt two outfalls for the town sewage instead of one, as originally proposed. It was also resolved that the present outfall sewer-pipe under the pier be replaced by another one to extend 1,370ft. into the sea, and that the second outfall be in a line with the main sewer, running down the Chine, at Boscombe. There were six tenders for the supply of 2ft., 2½ft., and 3ft. iron pipes for the purposes of a sewer outfall. It was decided that both outfalls should be constructed of iron pipes, 2½ft. in diameter, and the lowest tender for 1,370ft. of this size of piping was that of Messrs. Lefevre and Co., of London, amounting to £3,447, which was accepted. The highest tender for the same length and size of piping was that of Mr. T. W. Haynes, of Swindon—£10,000. The accepted tender is for one outfall only, and a similar amount of piping will be necessary for the second outfall just decided on.

RURAL WATER SUPPLY NEAR CHESTERFIELD.—At the fortnightly meeting of the Chesterfield rural sanitary authority, held on Saturday, Mr. Frith, the engineer, reported on the scheme for the proposed new water supply for the 14,000 inhabitants of Holmesfield, Cowley Bar, Dronfield, Woodhouse, Coal Aston, Upper Knowle, Troway, Ridgway, High-lane, Mesborough, Halfway House, Holbrook, Killmarsh, and other places in the neighbourhood. A stream which now flows across the moorlands, near Baslow, could be utilised as a source of supply, and an impounding reservoir could be constructed

at Fox-lane to hold 15,000,000 gallons of water. By this means a supply equal to 12 gallons per head per diem could be provided at an estimated cost of from £20,000 to £22,000. The consideration of the scheme was adjourned till the views of the persons affected shall have been expressed. The clerk to the authority was instructed to communicate with the Eckington Water Company with reference to the suggested purchase of their undertaking.

STATUES, MEMORIALS, &c.

BIRKENHEAD.—The Laird Memorial Statue was unveiled on Wednesday, at Birkenhead. The statue, which is of bronze, weighs about 50cwt., and stands 10ft. high, exclusive of a thin metal base. It is mounted on a pedestal of grey granite, the full height of the monument (with the pedestal) being about 23ft. The sculptor was Mr. A. Bruce Joy, of London. The statue was cast at Chelsea.

THE BLACK MEMORIAL.—The bronze statue of the late Mr. Adam Black, recently completed by Mr. John Hutchinson, R.S.A., was on Monday safely placed on the pedestal prepared for it in East Princes-street-gardens, midway between the Scott monument and the Wilson statue. The pedestal has been designed by the sculptor in a style harmonising with the architecture of the neighbouring monument, and is constructed of Binnie freestone. It has been arranged that Lord Moncreiff shall unveil the statue to-morrow at two o'clock.

CHIPS.

An aquarium is about to be erected for the newly-formed Channel Islands Museum and Institute of Pisciculture Society in St. Clement's-road, St. Heliers, Jersey. The plans and designs have been prepared by Mr. Charles Cole, architect, of St. Heliers, under the direction of Mr. W. Saville Kent, honorary secretary.

The directors of the Great Yarmouth Aquarium Company decided last week to raise capital at once for the erection of the large concert-hall, and the completion of the other buildings as planned by the architects, Messrs. Norton and Masey.

A new Roman Catholic chapel, dedicated to SS. Joseph and Teresa, was opened in Chamberlain-street, Wells city, on Tuesday week. The architect was Mr. Charles Hansom, of Clifton, Bristol.

A bust of the late Admiral Rous is being executed in marble for the memorial committee, by M. Raggi, of Devonshire-place, Portland-place, W. It is to be placed in the Jockey Club-room, Newmarket.

At a recent meeting of the Town Council of Salford held to consider the applications for the appointment of borough engineer, Mr. A. Jacob, M.I.C.E., consulting engineer to the borough of Barrow-in-Furness, was elected to fill the vacant post. There were, as is usual in such cases, a large number of applicants.

The ninth annual report of the Manchester and Salford Building Trades' Institute for Technical Education has just been issued. There are 84 students, and the number of certificates earned by them at the science and art examinations has been 26, including three Queen's prizes. Local prizes have been given by the Society of Architects to Mr. R. J. Bennett, Messrs. Holden and Son, and Mr. J. Murgatroyd. The finances of the Institute are reported as satisfactory.

The foundation stone of a new Free Methodist chapel was laid on Monday at Old Shildon. It is being built from plans prepared by Messrs. Thompson and Garry, Bishop Auckland, and will accommodate about 400 people, at a cost of £1,600.

The first of a series of lectures on art was delivered on Monday night at Paisley School of Art, by Mr. Stewart, the head master of the school. The room was decorated with a selection from the paintings and sketches in oil and water colour, executed by the students during the past year. The works numbered 180, and are said to have exhibited a decided improvement on those shown last year.

The City Council of York, on Monday, accepted revised plans and estimates for erecting an opening bridge of stone and bricks over the river Ouse at Skeldergate Ferry, submitted by Mr. Styan, C.E., the city surveyor, in conjunction with Mr. Page, C.E. Mr. Styan was authorised to proceed with the works of section 1, and to engage a surveying foreman. The estimated cost of the bridge is £38,363 5s. 3d. Messrs. Handyside and Co. are the principal contractors.

In our last issue the name of the contractor for Wakefield New Town Hall is wrongly spelt. It should be Mr. W. Holdsworth, of Bradford. His tender, as accepted, is £13,700, including completion of the tower. The building is to be of Bradford stone, not Huddersfield, as stated.

The 27th annual meeting of the Bristol, West of England, and South Wales Permanent Benefit Building Society was held on Thursday week. The report was of a satisfactory character, and showed that the item of £75,360 advances in the 1876 balance sheet, then regarded as a mere leap, had been followed by steady progress, the total advances or 1877 being £79,490.

The Jersey Chamber of Commerce have decided by a majority of 16 votes to 4 to abandon the harbour works commenced at St. Heliers, according to the plan of Sir John Coode, C.E., as they consider they cannot be completed except at a cost much beyond the means of the island. They propose that the breakwater at the Hermitage be altered and a pier added thereat in place of the larger scheme for a new spur of 400 or 500ft. from the south-west angle of Victoria Pier.

At the Corporation dinner at Stratford-on-Avon, Mr. Graves, of Pall-mall, mentioned that he has left by will all pictures of Shakesperian subjects in his possession at the time of demise to the Shakespeare Memorial Gallery, and offered to subscribe an additional £100 to the Memorial Buildings Completion Fund if 39 other gentlemen will subscribe a like amount so as to enable the nation to avoid itself of Mr. C. E. Flower's offer of £4,000 provided a like sum be subscribed to complete the library and picture gallery.

MEETINGS FOR THE ENSUING WEEK

MONDAY.—Royal Institute of British Architects.—Address by President (Mr. Charles Barry), 8 p.m.
Society of Engineers.—Paper on "Tube Wells." By Mr. Alfred le Grand. 7.30 p.m.
FRIDAY.—Architectural Association.—Address by Mr. Bowes A. Paice, President. 7.30 p.m.

SLATES — SLATES — SLATES.

Banzor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each; 28ft., 2s. 4d. per foot; 35ft., 2s. 4d. per foot.

DEALS — BATTENS — FLOORING.

Send for price list.—R. MAY & SON, Timber and Slate Merchants, Acorn Wharf, Old Kent-road, London, S.E.

Epps's Cocoa.—Grateful and Comforting.—By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure food and a properly nourished frame.—Civil Service Gazette.—Sold only in Packets labelled "JAMES EPPS & Co., Homoeopathic Chemists, London."

Trade News.

WAGES MOVEMENT.

LONDON.—The difficulty between the London masons and their employers is still unsettled. On Saturday the Strike Committee paid "strike money" to some 700 men—18s. per week, and gave to some of the recently arrived American workmen money to defray the cost of their journeys to different parts of England, Ireland, and Scotland, where they are likely to get employment. Each man was provided with a certificate from the committee stating he had joined the men on strike in London, the Americans who had signed the roll participating in the general payment. Upon the 3,000 masons belonging to the society there is a levy of 2s. per week per member, and in addition, all the metropolitan masons who have gone to work at the 10d. per hour—1,300 in number—pay a levy of 4s. a week each, so that the committee state they do not apprehend that they shall run short of funds, especially as the other trade societies throughout the kingdom are daily sending them money contributions. The cost to the masters of bringing the men from the Continent to London was about £4 10s. each. That of the importation of the American contingent reached close upon £100. The cost of passage by the Elysia was 28 dols. a head, or in the aggregate, £324 16s., and to this have to be added the expenses of advertising in America, of paying the agent there, of drawing up the contract, and for food and lodging a couple of days in London. All this has been virtually lost to the masters. On Monday the Masons' Committee memorialised the First Commissioner of Works against the use of the new Law Courts by the contractors as a common lodging house for the foreign workmen employed there, urging that such use of Government buildings upon which advances had been paid, was illegal. The committee are also considering whether they cannot bring the contractors there under the Truck Act for detaining the foreign workmen's wages on account of food and board. On Tuesday, thirty-nine Canadian masons, on their arrival from Liverpool at the Midland Railway station, Kentish-town, were conveyed to the White Horse Tavern, Fetter-lane, instead of Mr. Dove's works, Islington, as originally intended. During the day they were constantly visited by delegates from the Central Strike Committee, and a large proportion of them were induced to go off with the men on strike to the "Sun" in Mason-street. Very few of them have gone to work. On Wednesday a further contingent of forty-three German masons arrived in London, and were taken to the new Law Courts, where they are to be hoarded and lodged while they remain in the employ of Messrs. Bull and Son. There are now 121 masons at work in the courts, of whom eighty-eight are foreigners.

THE BUILDING NEWS.

LONDON, FRIDAY, NOV. 9, 1877.

BEDFORD PARK ESTATE, TURNHAM GREEN.

AN attractive estate of about 80 acres, known as the Bedford Park Estate, near Turnham-green, has been recently laid out to provide middle-class dwellings of a superior kind. As we have illustrated in our pages many of these buildings, devote a page of our lithos to some this week, and intend to give other examples, it may not be uninteresting to speak of the estate itself, and the character of the residences that have been already erected. Our first impressions on visiting the estate were considerably favoured by its semi-rural character. Its old timber has not been ruthlessly destroyed, as is usual on speculators' estates; there is the absence of that conventional and stereotyped appearance so common on estates let to builders about London, while the proximity of the estate to the new junction at Hammer-smith renders the situation highly advantageous to professional and business men. From the station, the land stretching in a northerly direction still shows traces of its pristine condition, when the old Manor House (still standing) was surrounded by its meadow land and hedgerows. Three roads have been formed, converging to a point near the station. Taking the left road, called the Avenue, we are struck by a diversity of single and semi-detached blocks, each standing in a liberal plot of land, and divided by sufficient intervals to prevent the idea of being cramped for space. The plots are about 75ft. in depth by 50ft. in frontage, and the buildings are set back from the roadway some 15ft. or 20ft. with front turfed gardens. We must not omit to mention that there is a pleasing contour in the line of the roads by which the grouping of the houses is agreeably brought into play; they have also been planted with lime trees. The plots have been built on both sides for a considerable distance from the end, and we come first to two detached villas of red brick, one on each side of the avenue, with tiled roof and gables, the flank of which is exceedingly well treated with a canted bay window, which breaks into the roof and is finished by plain square tiled gables. These are of three stories. As we have already illustrated them (see p. 621, Vol. XXXI.), we may here only refer to the criticism the arrangement provoked in our pages at the beginning of the present year. The elevations, plans, and perspective view we then gave will enable our readers to form a good idea of the kind of house. A dining-room, drawing-room, six bedrooms, and bath-room, besides offices, have been provided at a cost of about £750, the rent being £65. We certainly grumble at the small dining-room, the insignificant entrance, and low hall, and the chance of a visitor stumbling over the first tread of the staircase, which is chiefly of winders; but there is, nevertheless, a genuine feeling displayed in the exterior grouping of the parts. The front canted window, below a gabled hood, has a charm about it. We pass on to notice some semi-detached houses by the same architect, the plan and elevations of which we also illustrated (p. 36) in our first volume of this year. Exteriously we have one of those simple but very piquant treatments which we meet with in the old farmhouses of a hundred years since, with red-tiled double overhanging gables over bay-windows of two stories, tile-hung between the windows. The exterior is of stock brick, with red brick in bands, and tiling,

the roof covered with a pleasing brown tile, the woodwork being grained oak. There is little to find fault with, but when we enter one of the pair we find this exceedingly picturesque exterior but the shell of a very mediocre interior—we do not like to say deceptive. There is little that carries the same spirit of work outside; we appear, when we enter, to lose the architect. The plan is certainly not faultless, and we note some objections that we find have been carefully avoided in the more recent houses; these are that the front door may possibly, when it is opened suddenly, knock down any visitor or guest who may be coming out of the drawing-room at the same time, and who may unintentionally have unobserved that the said doorway is temporarily closed when the front door is opened. To add to this blunder the kitchen door is hinged to open outwards in the same small lobby, insufficient in size for the house, while the four steps down to the kitchen are certainly uncalled for. The break of the lobby into the drawing-room also has been avoided in other houses, while the scullery and pantry are here a little too concentrated. We notice also that the winders of stairs, after passing a mezzanine store and closet, do not give headway for a tall man, and it would be desirable to omit the partition, we think, which now rather spoils both front bedrooms. In other respects the rooms are convenient and of good size, though if the dining-room behind had been made the size of the drawing-room, it would have been better. Six bedrooms and bath-room are provided, and, what is of great concern, there is no underground basement. The rent, we believe, is £45. Having passed two pairs of these houses, we come to two similar blocks of semi-detached pairs, whose exterior elevations show another hand, hardly so happy, rather spotty in effect, and displaying more effort. The fronts are of stock brick, relieved by tiled bays and red brick introduced into the gables, the woodwork being grained. What the value of the white terra-cotta panels is, inserted over the doorways and in the gables, it is difficult to divine; however, the fronts are neat, and not common, and we refer our readers to our illustrations of them, p. 192, Vol. XXXII. There is a roomy hall, with stairs ascending sideways in front of doorway; a large front room with square bay, and a side narrow light, with casements, a centre ceiling flower of rococo design, and marble chimney-piece; and the dining-room behind is smaller, and has sliding sashes; the kitchen behind hall is fitted with dresser, cupboard under stairs, and pantry, and a kitchener, in rear of which is a small scullery, with place for coals, and w.c. in rear. Upstairs there are two large bedrooms, a bath room, and w.c., and two smaller ones. Some useful closets are got under the upper flight, which leads to two other bedrooms obtained in the roof. We may state a side passage is provided between these pairs, with doors leading to back garden, but we do not notice any accessible coal store. The rent is £55, gas and water laid on. These houses are from the designs of Messrs. Coe and Robinson. We next come to a semi-detached block of stock-brick and red-brick dressings in an unpretending, though quaint, simple style, roofed in one straight roof of red tile, with deep cove, but having a pleasing centre dormer in it. The sashes and window-frames are painted white, and the features, though exceedingly plain, have the thorough ring of Queen Anne about them. Nothing protrudes from the front but a small canted bay window to each house, terminating at the ground story with a massive cornice painted white, while the doorways at the sides have red-brick pilaster jambs, worked in a thoroughly homely English fashion, carrying a square flat-gauged arch of cut

brick, with an oval moulding at the inner edge. Between the entrance and bay window is a narrow light, while above it is a carved red-brick panel, set in an antiquated framework of brick, with pediments over. These houses have been designed by Mr. Norman Shaw, A.R.A., whose skill as a renderer of the spirit of Queen Anne is unsurpassed. We note that the stock red bricks are set in white mortar, which gives a cheerful air, that the red brickwork is introduced in the jambs of front door and windows above the arches, window-sills, and dressings; that the high roof is tiled with the Broomhall channelled tiles, pronounced by a bold cove of rough stucco, and that the entrance is protected by a boldly projecting flat hood, with deep edge members, supported on cut wooden brackets—a bold design. There is, perhaps, a weak look to the flat-gauged arches of the doorways. We enter one of the houses, and find ourselves in a spacious lobby, with inner folding doors, glazed with small leaded lights, within which we come to an ample hall, made larger by a clever canting off of the angle of the front parlour or drawing-room. The stairs wind round on the outer and return side; the doors of the front room and back parlour and kitchen are within easy compass, and the rooms are spacious and well-appointed. Entering the front drawing-room we find it lighted by a roomy bay and a side window. The glazing is in the conventional Queen Anne fashion, above the transom being in small panes, while the main lights or casements are in large single sheets. The upper side canted lights open outwards at the bottom, as well as the front lower casements. The chimney-piece, we noticed, consisted of a plain square-shaped stove, with straight bars, with a border of 6in. blue enamel tiles, outside of which was a frame or moulded architrave of unpolished dark-grained wood. Over the top three cut brackets rested, carrying the mantel-shelf of wood, with gilt panels between the brackets, each having a spray of flowers painted in the centre. The back room has a three-light window, the centre part forming casements, with large sheets of glass in the centre of each, the narrower side and upper lights with small squares. A coal-cellar is under the stairs, and the kitchen has a good range (placed rather askew across the angle), a large dresser, and is well lighted. Behind is a scullery with a larder rather small, perhaps, lighted from the side. Ascending the stairs we get three good bedrooms, a bath-room and w.c. over hall, and stairs, the latter lighted and ventilated at the side. There are 3 attics above. We illustrate the plans and elevations of these unique houses in our present issue. On the opposite side of the road we find a similar block to this, and the other blocks have been judiciously made to alternate with those on the other side. Thus we find two of Mr. Godwin's blocks opposite two of Coe and Robinson's, and vice-versâ. Taking up the eastern converging road, called the Woodstock-road, we commence with a single house, at the south entrance to the estate, designed after the previously-noticed single model by Mr. Wilson, with a three-storied tile bay-window breaking into a steep tiled roof on the flank, but having in the rear a railed flat over the offices. This is of red brick, gabled in front, and there are 9 rooms, the stairs being in pitch-pine, and characteristically designed. Messrs. Lloyd are the builders. Beyond these three blocks are in progress from Mr. Norman Shaw's design, while further on we see the same design apparently in a more advanced stage. Entering one of these double-detached blocks we find a variation in the plan: the halls are larger, with front lobbies, the front rooms are about 20ft. by 14ft., and have the addition of a large bay

window, which is made a feature in front. These bays are railed as a balcony to the first floor windows, and are of the whole width of each house, except the entrance. The roofs have hipped ends in some cases, and are gabled with half hips in others. We hope to illustrate these, and one or two of the detached kind shortly. As far as they have gone, we note a decided improvement in the planning and character of the recent houses erected on this estate; errors and crudities of the earlier designs have been rectified, the results of experience seem to have been carefully noted and acted upon, and many of the houses, hardly finished, are let or sold. During the last twelve months the estate has been considerably enlarged by the acquisition of more land, and it now consists of over 80 acres, on which it is intended to erect 900 houses of a similar design to those described. These will be supervised for the freeholder by Mr. Norman Shaw, and the quality of the workmanship is guaranteed by local supervision. It has been the endeavour to secure on the estate a high class of residence, and it is contemplated to erect a subscription reading and billiard room, and a new church commences with the coming year. Messrs. Robertson and Simms have been the builders of some, and Messrs. Lloyd and Co., and Messrs. Curths and Ross of other houses—the latter firm having commenced in the Woodstock-road. We congratulate the freeholder upon what we hope will be a successful venture in supplying the middle classes with residences fitted with every modern appliance, and of an architectural character that takes them out of the commonplace groove of the manufacturing speculator.

THE ARCHITECTURAL SESSION.

THE session, with its customary activity, has come round again, and a survey of the papers to be read may suggest some reflections of practical interest. With the exception of one or two trifling deviations in regard to the order of the programme the Institute's bill of fare for the ensuing term may be pronounced rather above the average in suggestions of value. Archaeology does not engross, and we have no dissertations, alas! on Cleopatra's Needle or obelisks in general. "Middle-class Houses in London," to be read by Mr. W. H. White, Fellow, on the 19th inst., is an important theme, though we must confess we have had enough of the prologue and apologetic already, and ought to look for something less discursive and more practical than we have yet heard. The subject hitherto has been handled more as a new theme of which architects and the public have been presumed to know but little. It has been approached from one side only. It is time some proofs of the practical method of the system of building in "flats" in London were brought forward. Descriptions of Scotch and Parisian models have been copious; the modes of construction have almost become tiring, and we now look for well-authenticated data of the commercial success of a scheme in our own great cities. At present there is a strong presumption that the self-contained houses in our suburbs, inadequate and unsatisfactory as we must confess them to be, yet retain the good opinion of the public. There is a strong national prejudice for isolation and self-contained houses, and we cannot shut our eyes to a disinclination growing in some quarters to the co-operative plan of dwelling. At the same time there is vast room for improvement in existing dwellings of this class; the plan of the ordinary middle-class house is deficient in necessary accommodation, uneconomical in the service and rôle of daily work, and unsanitary to a degree. These are faults we have con-

stantly exposed, but as long as the speculative builder has the sole voice, and architects do not care to set better types before the public, the evil has to be endured. The cost of materials and labour has rather given an impetus to house building, and, despite commercial depression, the manufacture of the conventional house in the suburbs continues with unabated vigour, in utter defiance of progressive ideas of domestic convenience, and of regard to recent utterances of art and social science congresses. It is somewhat remarkable that one class of architects is reviving the features of the old English home, with all its isolated completeness, just at a time when the communal principle is being agitated in another quarter. With a complacency of purpose almost amusing we find every peculiarity of Jacobean times has been introduced, but little consideration has been displayed for modern requirements.

Looking down the list, "Notes on St. Alban's Abbey" will be an acceptable change from the above subject. As to Mr. Locoock Webb's paper on the "Law of Easements," of the great importance of the latter knowledge to the profession our weekly digest of legal intelligence affords ample proof. Passing a paper by Mr. Horace Jones on "The New Metropolitan Markets," and one on "The Architecture of Norway," by Mr. E. P. Anson, F.G.S., both interesting matters, we come to a most important question, which it seems a pity the Institute could not have arranged as an opening subject, or at all events at an earlier day than the date notified (4th February, 1878).—a question now of absorbing interest to the building community. We allude to a paper by Mr. Thomas Brassey, M.P., on "The Rise and Fall of Wages in the Building Trade." We trust the discussion on this subject will be worthy of the importance of it, and its great interest to the profession. No set of men ought to be better able to form an opinion on the question than those who are brought into daily connection with building operatives. The question involves a great deal more than a consideration of the immediate causes of a rise or fall, such as a glut of work or an accession of workmen, and must be traced back to the relations existing between capital and labour. The effect of the present antagonistic aspect of those two great forces in modern workmanship and art presents another but not unimportant point for the consideration of architects and those interested in building.

Professor Barff's paper on "The Prevention of Corrosion in Iron" will be a valuable contribution to the art of iron construction, and will receive the full attention it deserves. There can be no doubt but that one of the greatest reasons for the hesitation of architects to the employment of iron has been the difficulty of protecting it from the corrosive effect of the atmosphere. Professor Barff has placed architects and engineers under a deep obligation to him for having investigated the matter. That gentleman has instituted a number of experiments, and has discovered a means of protecting iron from the injurious action of the atmosphere. His process is the result of a study of the effects produced in which the chemico-magnetic properties have been considered. Some time ago the United States Board instituted inquiries into the corrosion of metals, but the facts investigated have not been collated. Prof. Barff will no doubt be able to inform his hearers of the comparative value of the various processes now in use. The chemical disadvantage of sulphur joints in masonry will be another practical paper of great interest by Dr. Alder Wright; and Mr. Chatfield Clarke's remarks on popular criticism,

as a *finale* of the sessional work, will have special claims on the attention.

The Architectural Association opens with a fair list of papers. We note that Mr. J. J. Stevenson is appearing in another character with a paper on "Gothic Architecture." Are we to have the Strawberry Hill Gothic over again, or the earlier Revival examples eulogised and thrust upon us as a new architectural revelation? We hope that Mr. Stevenson is not going to inflict upon us another sensation on the no-surrender principle, though we are very much afraid his anti-restoration ideas are leading him rather astray as a teacher of the younger members of the profession. Has he tired of "Queen Anne," or is he about to give a fatal and parting blow to Gothicism? Whichever it may be, we hope he will be moderate this time, and that any anti-architectural crusade may be left for a more propitious occasion. Mr. J. D. Sedding, at the next meeting, is to follow suit on the revival of later styles of Gothic. Would not this paper have been better a little farther off, or are the two papers indicative of a revulsion from the earlier forms of Gothic we have lately had so much of to the later styles? From all appearances, from the attitude at present of the Queen Anneites, and from anti-restorationists' predilections, it would appear that we are about to plunge from the twelfth century English and French Gothic into another Perpendicular mania. Recent symptoms have hinted the change, and even the followers of muscular Gothic of the extreme sect are beginning to fall, almost unwarily, into the later spirit. At any rate, two papers—one on Gothic and the other on the revival of later styles—look ominous, and almost like a combined assault. Mr. Lewis F. Day will read a paper on "Ornament," and Mr. Hugh Stannus is to read another on "Architectural Ornamentation." Coming from these gentlemen we may expect something a little in advance of the ordinary treatment of this now almost threadbare subject. But ornament has still to be treated philosophically—a direction marked out by Owen Jones and Digby Wyatt. In the discussion of "Restoration v. Conservation," to be opened by Mr. William White and Mr. R. E. Pownall, we may hope to have the vexed question and views of the Restoration Society placed on a somewhat more practical ground. Not the least useful part of the programme is the paper on the new "Model Bye-laws in Relation to Public Safety, Health, and Comfort," by Mr. F. Douglass Mathews, which will be discussed by Messrs. Blashill, Plumbe, and Robins—gentlemen well able to take their respective sides on such a subject. Of other topics, a paper on "Rude Stone Monuments," by Mr. T. Roger Smith, must not be omitted.

ART IN THE BOARD SCHOOL.

THOSE who may have been interested enough to have inspected the drawings on view a few days ago at the Board School Offices on the Embankment—being the annual results of various metropolitan schools—will be impressed at the growing taste for drawing evinced by the scholars of these public institutions. The fact itself of so large a collection may well be regarded as a sign of the yearning for art exhibited by the younger portion of our industrial population. The variety of the subjects also may be taken as a gauge of the different capacities of the students, and that this talent, like others, may be developed in various ways. The works were generally by pupils from 10 to 18 years of age, of both sexes, Hackney and Lambeth divisions being very largely represented. Those we examined were simple outlines, such as the outline objects given by the Government Schools of Art—maps, perspective delineations,

tions, flowers, drawings from models, landscapes, and some portraits. Even architectural subjects found their youthful aspirants. Thus we saw a number of tracery windows, some very carefully and pains-takingly executed, others indicating want of geometrical knowledge. Regarding these latter subjects we are disposed to doubt the wisdom of giving pupils of no preliminary art-knowledge such objects of study. In scarcely one of them did we discern the correct principle of Gothic window drawing. We repeatedly found the subordinate arcs drawn from the wrong centres, the circles and other parts of the tracery shown without regard to the intersection of the members, and so on. The teachers were evidently entirely ignorant of the value and function of the various lines, or they would never have permitted some of these representations to have passed them. Every line in a technical drawing has, or should have, a meaning, and the teaching of ordinary object-drawing, it must be impressed, is not to be regarded as a due preparation for technical delineation. Of other works we noticed a water-colour, "View of Tintern Abbey," presumably from a copy, but bad alike in perspective and tinting, though the youthful aspirant in this branch of art was described on the ticket prefixed "years 19, months 5." We take it that he was 19 years and 5 months old, though we could understand a boy of 5 years 9 months, turning out such a drawing, as creditably proficient. But let us pass on. We come to a pencil portrait of no less a personage than "Alexandrovitch, grandson of the Emperor of Russia," significantly printed below the drawing. We hope the boy has not got quite such a head. Worse, however, and still more painful as an instance of portraiture, is the head of "A Wounded Soldier." We have seen agonised countenances, but this one really prompts a smile rather than sympathy. "A Girl's Head," too, is sorrowfully out of drawing, and we trust the Haekney schools will a little curb the aspirations of some of their juvenile artists by giving them a few elementary lessons in facial proportions and feature expression before they attempt fully-shaded portraits. It may be suggested also that the fancy for copying prints of royal and illustrious personages—such as Napoleons, Wellingtons, and Kossuths—is not the healthiest sign nor most natural training in art. The Lambeth schools—such as those of Albany-road, James-street, &c.—exhibit a less ostentatious kind of art, and there are some creditable performances of juvenile talent. The City, Greenwich, and Tower Hamlets are also represented by drawings displaying more or less merit. Perhaps the most interesting works are those contributed by the junior pupils—copies from prints, toy-books, domestic animals, &c. Some of these are quaint but characteristic instances of infantile delineation. Geographical maps are, we think, one of the best and most instructive kinds of drawing that can be taught in elementary schools. They may be said to be inartistic, but the faculty required to draw correctly the outlines of countries is really only second to that of drawing outline geometrical or folial forms. The discipline of copying outlines in which both the eye and mind are called into exercise, and the aid such maps afford in the study and recollection of geographical knowledge, cannot be justly undervalued. Exhibits of this art are numerous. After outline the most valuable art training is undoubtedly perspective, either copies from models or from rules, and the principles of this art as taught in our art schools have been followed. We very much question the use of landscape and flower drawing to elementary students, save perhaps as an inducement in girls' schools. Those examples we saw, with very few exceptions,

indicated the lowest knowledge of art: they were rather caricatures or travesties than copies.

While there is every cause for congratulation on the art effort displayed in our Board Schools, we cannot avoid saying there is evident a misdirection of talent and art capacity. It will be argued pupils have been encouraged to use their pencil; it will be said, too, that by leaving them to develop in their own way their love of drawing, they have taken kindly to a source of improvement that would have, in all probability, otherwise been checked. We admit this, but at the same time there is a scientific method of instruction—there is a mode of leading a youth's taste in a direction likely to give him a greater stimulus to exertion. There must be always more satisfaction experienced by the youthful student in letting him feel that his steps are sure, and that he can compass the work he undertakes, than in making it evident that the subject he tackles is too difficult for him to master. Many a boy becomes disheartened by being set a task beyond his ability: he gets disgusted, and throws up the task as irksome; very often he does not care to return to it. But make him believe that he has mastered his lesson, that he can draw an outline correctly, and he begins to feel an unspeakable pleasure in the work, which he resumes with greater confidence. Object models seem to afford the very best initiative. These may be selected from familiar things—household utensils, furniture, &c. By being placed at different heights and positions, the pupil is taught the principles of perspective in the only practical way possible. But object-lessons, we believe, may be made instructive and entertaining if our schools taught other subjects—such as physiology, botany, zoology, mineralogy, and geometry by them. Decorative art could be taught by grouping together models of stems, leaves, and geometric figures—setting the young pupil to draw combinations of them. In the Polytechnic Schools of the Continent—as at Hanover—sets of models designed on anatomical principles are used with great success, and we know the different tastes of the students can be exercised by having a quantity of models in plaster, papier mâché, or some cohesive substance, to illustrate various branches of knowledge. Cubes, pyramids, and spheres, while excellent for the teaching of perspective, are rather too abstract for children, who would be more pleased by representative models or toys, which they might advantageously be set to combine themselves and copy. If art knowledge is to be taught upon rational principles, the pupil should be induced to exercise his taste on familiar objects modelled and coloured. The number of attempts in landscape, animal, and flower drawing in these school exhibitions testify to the necessity of supplying models and representations of every-day life in sufficient variety and gradation to afford interest to the pupil without having recourse to bad copies of pictures and prints.

ILLICIT COMMISSIONS.

"The profits acquired by the servant or agent in the course of, or in connection with, his services or agency, belong to the master or principal."—CHIEF JUSTICE COCKBURN.

"Remember that what is now and then done may get a momentary reputation or applause, but what is done every day will be the basis of character and ultimate reputation."—LORD PALMERSTON.

IN the early part of this year our pages were occupied in somewhat exhaustively discussing the question of "commissions." Many letters upon the subject appeared also about the same time in the *Times*, and in the July number of the *Westminster Review* appeared a paper upon the subject, based to some extent upon the

Times correspondence, and a reprint of this paper, which has been very carefully compiled, has been recently privately circulated. Another letter, from Mr. John S. Storr, appeared in the *Times* of the 5th inst., containing an allusion to the architect insisting on the "contractor giving him 5 per cent. on each certificate, besides the 5 per cent. paid by the client," this letter calling forth an article in the same newspaper upon the subject. All this shows that there is not any intention to allow the matter to sleep, and points unmistakably to the conclusion we urged in these columns, that the practice obtaining in the architectural and kindred professions, of accepting in various ways, and under various guises, money to which the recipients have not any moral or legal right, must sooner or later become a criminal offence, easily recognised and easily punished. Probably few readers of the articles in these pages at the beginning of the year anticipated that before its end a case of great public interest would be determined, bearing strongly upon the subject of illicit commissions, resulting in the ruin and imprisonment of three men, for acts which are said to be similarly committed every day by those who are paid by their clients to protect their interests in every way, and to involve them in no more expenditure than is absolutely right and just, by men flourishing in their iniquity—architects and surveyors who are the first to exhibit warmth because masons are trying to obtain one penny per hour more for their labour, but who at the same time are concocting schemes for acquiring, not an extra penny per hour for work done, but as many pounds as can safely be drawn out of their clients' pockets for work not done. And what is the result of all this? It is public suspicion of the most damaging kind to the architect who endeavours to be honest. It is almost impossible now for architects to recommend to their clients any speciality without being greeted, if not in words certainly in thought, by "Ah, he is after his commission!" We have now before us the printed circular of an artist in stained glass windows for church and domestic decorations, from which we extract the following:—"The prices here quoted will be found upon comparison to be about three-fourths of the usual charge; in fact, as low as can be to be compatible with good work, which is in all cases guaranteed. Notwithstanding, I can allow architects and other professional gentlemen a liberal commission, say of 10 to 15 per cent. (according to amount of order and style of work)." This circular we have only just received, and no doubt it has been circulated in thousands, showing to some extent that the practice is known to be common; and how is it to be dealt with? There must be prompt and decisive action taken if the public suspicion is to be removed; and, as regards the architectural profession, the question arises, Who is to take such action? Who is to endeavour to put a stop to the practice before the profession is still more damaged by a bunch of architects on their defence at the bar of the Old Bailey? Certainly, the indignant protests of the leaders of the Royal Institute of British Architects in the columns of the *Times* will not remedy the evil, because such protests simply show, what every one knows, that there are many architects who are honest, whilst it is also pretty generally known that there are many who are not; and yet, although the Institute as a representative body includes in its lists of members only a proportion of the number of men in practice, still that body is the first which must be looked to to cleanse its name from the imputations which have been cast upon it. The new session has commenced; let it not finish before an attempt at least has been made

to rid its rooms of the black sheep. Until this is done, and done thoroughly, there is not much hope of ultimate improvement, and it may be concluded that the system of accepting bribes has become so entwined round the honest part of the business that separation, unless by criminal procedure, is impossible.

But there is surely a practical method of ascertaining whether or not the Institute is as pure as we believe it to be. The stigma has a foundation or it has not, and we are sure that the members would be glad to rid themselves of that stigma in something like tangible form. What objection could there be, then, to a little sifting and inquiry upon a few points, embodied perhaps in the following form of questions:—

1. Are you aware that it is the almost general custom of houses dealing in, say, gas-fittings, chimney-pieces, stoves and ranges, ornamental tiles, &c., to allow architects selecting the goods a discount at the rate of, say, up to 25 per cent. on all articles ordered through them?

2. Have you at any time had dealings with such discounts, and, if so, how have you arranged them?

3. Give your reasons for such arrangement?

4. Have you ever employed a quantity surveyor? If so, do you consider that the selection of that gentleman is a labour not included in the customary charge of 5 per cent.?

5. Have you in such cases so charged your client?

6. Have you at any time received any part of the commission of the quantity surveyor, you not having participated in the labours for which that commission is charged?

7. If so, in what manner have you disposed of the money—retained it or returned it to your client? In the former case give your reasons for the retention.

The above questions, or others in the same strain, should, accompanied by a letter from the Council, be sent to every individual member of the Institute, with a space left for his reply at the side, the paper to be at once filled up and returned; and, should no reply be received, say within two weeks from the date of the circular, the silence, unless properly accounted for, to be considered an admission that one or more of the discounts have been applied to the uses of the architect himself, and that he is not in a position to explain or justify such application. When the period for the return of the circulars had elapsed the Council to send to the professional journals a copy of the circular and a list of the names of the gentlemen who had, and a list of those who had not, replied thereto, to be published simultaneously and without comment, after which it might be considered how far the rules of the Institute enabled it to deal with the gentlemen who had not thought fit to reply to the circular, or who had admitted the receipt of the discounts and perhaps attempted to justify it.

In this way there would be shown a determination to either rid the Institute of the, say, doubtful members, or to prove as far as possible in a practical manner that the indignation which we have alluded to was quite warranted by the facts of the case, and that whatever might be thought of the architects outside the Institute, those within it are what they are supposed to be—honest professional gentlemen. We are convinced that neither the outside public nor those more intimately connected with the profession will believe in its purity until some really decisive action is taken, and not merely repudiations in a general form, which have no more weight than that which attaches to the opinion of the writer.

We leave the subject for the consideration of the profession, trusting that it will

be taken up in a proper spirit by the Institute, and that the result will be what we anticipate—viz., that its members will be found more honest than some people think, and that the portion of the article in the November number of the *Nineteenth Century*, by Mr. Forbes, on "Russian Corruption," does not apply in the slightest degree to the "corporate representative of professional practice in architecture throughout the kingdom."

COLCHESTER CASTLE.

IT will be remembered that at the meeting of the Royal Archaeological Institute, at Colchester, in August of last year, Mr. George Buckler's view that Colchester Castle is a Roman building was assailed by no less an authority in archaeological matters than Mr. J. H. Parker, C.B., who contended it was a Norman castle. Mr. Buckler has thought fit to publish a further book on the question. Last year we examined a pamphlet written by this gentleman, in which he attempts to prove that the castle is Roman in workmanship, in which various "keeps" are compared, and the writings of archaeologists examined. The evidence brought forward by Mr. Buckler in this pamphlet is such as to create a doubt, if it does not settle the question. We are not prepared to enter fully into the merits of the case. There are few archaeologists who could demonstrably prove the difference between Norman and Roman workmanship of the period referred to. Mr. Parker, in his remarks at the meeting, said that "the archway was a very good specimen of the commencement of the 12th century, with all the ornamentation of the end of that period." He further said, in the quadrangle, it was most distinctly a Norman castle, built at the end of the 11th century; and he asked who ever heard of fireplaces in the Roman period? He also remarked that the ornamentation was added 50 years later, at which time also the grand Norman gateway must have been built, as it was in the 12th century style; that no vestige of Roman work existed, "except the materials of which it was composed, and which were utilised in consequence of their being to hand, and were doubtless the ruins of the Roman wall." Mr. Parker admitted the resemblance of the bricks to Roman, and pointed out one of the 4th century, and undoubtedly Roman; and maintained that the castle was not as supposed a "keep," but "a large Norman castle, intended to assist a small garrison in keeping a large and discontented town in subjection." He referred to Rochester as being in the same style, though of 50 years later date. Mr. Buckler returns to the charge, and replies to several points raised by Mr. Parker. He says:—"Probably Mr. Parker spoke too fast when he said that the large castle was intended to assist a small garrison, that the building showed work of two centuries and ornamentation of two periods, that there was one brick of the 4th century and a buttress of Roman build." The author also reminds Mr. Parker that he accompanied Dr. Bromet to Wheatley in 1846, and found a fireplace about 3ft. high, built of brick in a Roman villa (*Arch. Jour.*, II., 352). He mentions also one found by Mr. Lysons in a Roman villa at Witcombe in 1818 (*"Archæologia,"* XIX., 181; *Arch. Jour.*, XIII., 92). The coldness of this climate compelled the Romans, says the author, to add to the hypocaust system. No doubt, as Mr. Buckler says, the climate of Britain demanded a general modification of architectural arrangements and details of Roman buildings in this country, and between Roman buildings in Rome and Roman buildings in Britain there must have been differences. The author next refers to correspondence on the subject that has appeared in the *Essex Standard* and other papers, and to the Rev. H. Jenkins's controversy with the Rev. E. L. Cutts in 1853, and to a pamphlet written by Mr. Jenkins in the same year, proving the Roman origin of the building, and that it was the templed citadel of Claudius, or the temple which Tacitus describes as raised to Claudius at Camulodunum as a symbol of Roman dominion. We can hardly see the practical value or interest in discussing a matter about which "doctors disagree" so much, and

Mr. Buckler has done more service in collecting the *pro's* and *con's* which he now presents to us in a second pamphlet, than in continuing a controversy that will never, probably, be satisfactorily determined—not, at least, to the satisfaction of both parties. Whether the castle was erected by the Romans or by the Normans with Roman materials, appears a matter beyond present conjecture. The masonry certainly exhibits many indications of Roman workmanship; we have the septariae and tiles of a homogeneous structure rather than that made up of débris; the features, such as the gateway, are simple, and bear a strong resemblance to Roman work. But, on the other hand, we have several details that suggest the Norman style, and upon which archaeologists will continue to rest their opinion.

FASCINE RIVER DAMS.

THE navigation of the Mississippi river has been a source of constant study and watchfulness for generations. Certain obstructions, however, render the passage impossible in many parts. In a paper read before the American Society of Engineers by Mr. Edward P. North, C.E., an account of various constructions is given that may be of interest. The great river is rendered unnavigable in some parts by gravel bars, which prevent the passage of boats at low water. In 1874, 25,000 dollars were voted to the improvement of the river from the Falls of St. Anthony to St. Cloud. Just below the latter place are the so-called Thousand Isles, where the river is spread out by gravel bars, and it was at this part of the river that certain dams were constructed. Stone could not be procured, and gravel could not be easily got. It was, therefore, decided to use brush dams. These were built of fascines secured by stakes and gravel or sand. The average height of the dams were 3-3ft., and 1-62 fascines were used per lineal foot, and these fascines varied in diameter from 9in. to 18in., and in length from 15ft. to 22ft. These were made from willow, swamp maple, black and burr oak brush, nearly all but the first being the tops and trimmings of stake timber. They were usually tied with five bands of spun or lath yarn, each band consisting of two strands wrapped twice round the bundle and tied in a square knot. Five men were employed as a gang of fascine-makers, one cutting brush, one cutting and carrying, and three at the trestles, which were 2in. x 4in. pieces driven into the ground and connected at crossing by a carriage bolt. Regarding the construction of the dams, the fascines were first tied into mats between parallel poles, and rafted into position. "One row was placed across the bottom parallel to the current with the brush end up-stream, and staked back. A single row was then placed lengthwise of the dam, about 3ft. up-stream from the butts, and staked through each bundle under it. Gravel was then filled in to cover the tips of the lower row, and make a plane surface to the transverse fascines. The succeeding courses were placed parallel to the current, except where the dam was unusually high, when another transverse course was placed, care being taken to have at least one course parallel to the current when the dam was finished." The courses were stepped forward 2½ to 3ft. in the usual way; stakes were driven into the bed of stream, and to the surface of water or dam. After completion the stakes were cut off flush with the surface of dam, and the whole covered with gravel, carried horizontally about 6ft. up-stream. The gravel passed through a 2½ ring, and about 40 per cent. was sand. The dams were left about a foot above low water. An improvement followed. About 3ft. of water was found on the bar of one island, and an average gain of over 1ft. below that, due to erosion, and the increased amount of water in the channel. An inspection made after the river was frozen, showed these dams "to be unexpectedly tight," and most of them were covered with thick ice. Only a few showed leaks or injury, but the chief damage, according to Colonel Farquhar, Corps, U.S., who prepared the plans, has been from the log-drivers, who made cuts through them, and nearly all the breaches described have been made in this way, it is

thought. In the portions not touched the dams are described as uninjured and tight. This use of fascines appears to us to present a simple mode of embanking our rivers in flood time, wherever brushwood can be obtained, and those in charge of river works may be informed that brushwood laid in well-compacted courses, and staked, and then covered or filled in with gravel, or faced with stone or rubble, present impregnable barriers to river currents, where earthen or other banks have been known to fail.

SKETCHING CLUB COMPETITION.

ON Wednesday, 31st October, 1877, the fourth annual competition between the sketching clubs of the Schools of Art in the metropolis took place at the Dudley Gallery, Piccadilly, which was kindly lent by the committee for the purposes of the competition. Five sketching clubs engaged this year in the competition—viz., the South Kensington (Male and Female), Lambeth, West London, and the Gilbert (St. Martin's)—and a total of 202 sketches in oil, water-colour, chalk, clay, and plaster, were contributed. The gentlemen who very kindly and considerably undertook the office of adjudicating upon the works this year, were: Sir John Gilbert, R.A.; Mr. W. F. Woodington, A.R.A.; and Mr. A. Legros, who spent some considerable time in examining the sketches, and finally made the following awards:—Award of honour to that club which produced the best aggregate of work, to the Lambeth Club. The prizes of £3 each (the money for which is provided by the different clubs) were awarded as follows, for the best sketch in each of the subjects named:—For Figure: "A Critical Moment"—Mr. H. G. Ghindoni, Gilbert Club. Landscape: "A Grey Day"—Mr. J. W. Wilson, Gilbert Club. Sculpture: "A Critical Moment"—Miss H. Montalba, South Kensington Club. Animals: "On the Look-Out"—Mr. Montefiore, South Kensington Club. Design: "A Decorative Panel"—three prizes of £1 each to Mr. C. Reich, Mr. W. Swain, West London Club; Mr. Pearce, Lambeth Club.

VENTILATION AND SHAFTS.

IT is stated by a writer in *Van Nostrand's Magazine*, that a confined column of air 55ft. high, at 54° temperature, when heated to a temperature of 114°, expands to a height of 61·07ft.—that is to say, if the height of the flue is 55ft., the column of air within it at that temperature becomes lighter than the outside air by the weight of a column of the density of the air within, and 6·07ft. in height. The sectional area of shaft can be found by dividing the quantity discharged per unit of time by the velocity per unit of time, and the general formula for velocity is found by dividing the quantity discharged per unit of time by the sectional area. It is found better in practice not to have the shaft larger than that determined by rule. It is better to have it a little smaller, as the discharge can always be quickened by increasing the heat. When the sectional area of flue is larger than required, a down current of cold air takes place at the corner or on the outside of the hot air current which passes upwards along the axis of flue. These down currents produce eddies of smoky chimneys. Square elbows retard the velocity, and should be avoided. It is also pointed out that the flues leading to the various stories of a building should not be of the same size, but should be regulated according to the horizontal distance from the source of supply. The longer flues should have slides so that a part of their sectional area can be cut off. A certain loss of heat takes place by conduction through walls. Pettenkofer has shown that by diffusion the air of a room may be changed. It was found by experiment that, with a difference of 40° between the outer and inner air, the ventilation through the walls amounted to 7 cubic feet per hour for each square yard of wall. Hence ventilation may be assisted by increasing the amount of exposed wall surface. Mr. Rafter says one way of applying the vacuum method of ventilation is to carry smoke flue from basement furnace up through a shaft, from which openings into rooms are

made. The same results may be produced in suites of apartments by fireplaces or by small flues near the floor, in which gas jets are kept burning. It is also contended that in warming by heated air the current should be introduced at or near the ceiling. Cold air should be introduced in connection with the warm current, in order to regulate temperature, both being under control. Warming by stoves is not recommended except for economy. Perfect ventilation requires an expenditure of force, and is not considered automatic. On this point we join issue with Mr. Rafter, and we think that by adopting the natural method of ventilation—namely, low inlets and high outlets—the expenditure can be considerably reduced, and ventilation made constant, and, in a great measure, self-acting.

SIR PAUL PINDAR'S HOUSE.

ANTIQUARIES and lovers of old London architecture will be grieved to hear that the well-known houses, Nos. 170 and 171, in Bishopsgate-street Without, once the residence of Sir Paul Pindar, are being demolished. The lapse of time, indeed, had rendered their doom irretrievable. For some years they had been used as a printer's workshop, and the interiors had so completely suffered from neglect and alterations that there was scarcely an apartment left in its integrity. We visited the houses just before they were sold for the old materials, and an examination only convinced us that their removal had not been considered with undue haste. Entering a dark passage, and ascending an old staircase that had apparently suffered considerably from botching restoration, we entered a small back room, now called the kitchen, lined with panelling in a very dilapidated state. The ceiling of this room was the *chef d'œuvre*. Its design consisted of a circular pattern, with flat ornament, the centre circular panel containing the subject, "Abraham offering up his son Isaac." Scroll-work patterns, arranged to radiate from the centre, were enclosed in another circular moulding, outside which were intersecting semicircles, the angles of the rectangle being filled up with conventional scrolls of an Elizabethan character. A dentil cornice surrounded it. The design was certainly a most interesting and excellent instance of plaster decoration. Another and smaller room contained a panelled ceiling, divided into coffers by moulded members with decorated soffits. The panels were filled with relief-ornament wreaths and foliage. Another specimen showed a very handsome rectangular pattern, with a centre square, and surrounding panels decorated in Classic taste; while a still more ornamental ceiling was to be seen in a very mutilated condition in one of the rooms in Half-Moon-street, consisting of intersecting soffit mouldings, dividing the ceiling into one centre, four elongated, and four corner panels. These were filled with foliage and wreaths in high relief. We may remark that there was not one of these ceilings entire, owing to the erection of partitions, which had cut off portions of them. The walls of the rooms possessed no remaining features of interest; they had dadoes and upper wooden panels, with plain oval mouldings. No chimney-pieces remained in their entirety, though the marble panels and mantels of one or two indicated old work. We should say that at some time the cornices and carvings of these had been removed or carried away by tenants. With the exception of an old doorway, with a honeysuckle enrichment over the architrave, in the front parlour of first floor, executed in a thoroughly Classical spirit—without question the frieze of an entablature that once existed, though the cornice had been removed—there was little to strike the connoisseur. The staircase had apparently been divested of its interest, except its old balusters of twisted design, for the handrail was certainly modern and out of keeping. One or two bold ovolo architraves struck our attention, thickly coated with layers of whitewash. Indeed, the old woodwork remaining was entirely covered up in this way. The members consisted of the usual forms found in old buildings of the reign of James the First or Queen Anne. A few of the genuine old wooden cornices to the rooms might be seen in parts where not cut away

by modern alterations, with their full quantum of members, but sadly choked up with dirt and whitewash. Externally, at the back, there was a fine deep-cut brick cornice of slight projection, but there is little else remaining of note. A few old iron grates remained. We noticed in the lodge in Half-Moon-street one very bold pattern, with consoles supporting the side hobs, richly cast at the sides. A subterranean passage was found from one of the cellars, leading, it is supposed, to Finsbury, but choked up with rubbish. We do not know if correct drawings or photographs have been taken. The two houses are to give way for the new Metropolitan Free Hospital—a fitting erection to take the place of this fine example of Domestic London architecture.

BOOKS RECEIVED.

Common Sense for Gas Users, by Robert Wilson, C.E. (London: Crosby Lockwood and Co.), is a really useful little work—not for gas companies or engineers, but for gas consumers, gasfitters, and others. The author declares that in 99 per cent. of the cases where the gas companies are blamed for bad light and heavy bills, the mischief is really caused by unscrupulous and ignorant gasfitters. That this is the case in many instances we are firmly of opinion with Mr. Wilson, although hardly to the extent he asserts. Every gas-consumer, however, may soon find out the real criminal by studying this plainly-written and comprehensive catechism. *Temple Bar*, by E. W. Godwin, F.S.A. (London: B. T. Batsford), is a reproduction from a contemporary of an illustrated description of the old City gateway, which before very long will, it is to be hoped, cease to encumber the Strand. *The Church Builder for 1877* (London: Rivingtons) has completed its annual volume for 1877, and is, as usual, interesting and useful. We are glad to note that the enlargement in size, inaugurated at the commencement of the year, has been attended with a considerable increase in circulation. *Partnerships*, by James Ball (London: Butterworths), is No. 5 of the popular and useful series of monthly Law Tracts, edited by the author. *Multurn in Parvo Gardening*, by Samuel Wood (London: Crosby Lockwood and Co.), is a perfect *vade mecum* for the enthusiastic and ambitious horticulturist. If all can be done on an acre of ground that Mr. Wood tells us, the sooner we all betake ourselves back to our primitive occupation the better. *Sheep*, by Joseph Darby (London: Dean and Son), seems an instructive treatise on the varieties, points, and characteristics of sheep, with descriptions of their diseases and modes of cure. As a book for agricultural reference it should have been better bound.

The parish church of All Saints, Langport, was reopened last week, after restoration, at a cost of £2,000, under the superintendence of Messrs. Foster and Wood, of Bristol; Mr. Davis, of Langport, being the contractor.

The foundation stone of a new church has been recently laid at Rattoo, county Kerry. The building has been designed by Mr. J. F. Fuller, F.S.A., Dublin. It is Gothic in design, and will be composed of uncoursed rubble masonry, with Portland dressings in the buttresses, tracery, mullions, &c., of windows.

Mr. D'Eyncourt has given judgment on the summonses whereby the Chelsea Vestry sought to recover from the owners of some property in Smith-street, in that parish, the cost of repairing a road, owing to a steam-roller having broken through the arch of a cellar attached to the defendant's property. He decided that the working of a steam-roller was not ordinary traffic, and that the accident was wholly due to the neglect of the vestry. He dismissed the summonses against both defendants, and allowed their costs.

A new mission church was opened last week at Dirk-hill, Horton. The building, a neat structure, surmounted by a bell-turret, has been built in the half-timbered style, from the designs of Messrs. T. H. and F. Healey, architects, Bradford. The total cost will be about £500.

Mr. George Smith, a well-known Edinburgh architect, died last week at the age of 81. He had been well known locally in the profession for over half a century.

The Hartlepool guardians on Monday instructed Mr. Clayton, their architect, to prepare plans for a series of structural improvements of the union workhouse, including the building of a lying-in ward, a convalescent ward, and nurses' apartments.

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ILLUSTRATIONS.

VILLAS AT TURNHAM GREEN—"BUILDING NEWS" CLUB DESIGNS FOR STREET FRONTS—HOUSE AT HALLITHWOOD, BOLTON—WESLEYAN CHURCH, HIGHFIELD—CARDIFF MUNICIPAL BUILDINGS.

OUR LITHOGRAPHIC ILLUSTRATIONS.

TRINITY CHURCH (WESLEYAN), HIGHFIELD, SHEFFIELD.

SOME of the leading friends connected with Brunswick Chapel, Sheffield (to which circuit Trinity Church, Highfield, belongs), determined a year or two ago to erect a new place of worship to meet the necessities of the rapidly growing district. One of our illustrations this week is the result of their efforts, and the work is now in an advanced state. The ground floor is divided into nave, aisles, and transepts. There are three galleries, one over each transept, and one over vestibule, and accommodation is provided for 920 adults. In the basement are class-rooms, board-room, and school-room for over 350 children. The building is of Dunford Bridge wall-stone, and Hollington stone dressings. The tower and spire rise to a height of 140ft. The entire cost, exclusive of site, will be about £8,000. Mr. J. D. Webster, of Sheffield, is the architect.

HALLITHWOOD, NEAR BOLTON-LE-MOORS.

SITUATED on the crest of a wooded hill approached from Astley Bridge, this old hall presents an unusually picturesque appearance. The title of "Hall-i'-th'-Wood" is in our day slightly inappropriate, though there yet remain evidences of its former applicability. In plan Hallithwood seems as ill considered as possible, simply being a conglomeration of rooms, with no proper access to them. This comes of additions made without thought or care apparently. Of the staircase (illustrated) it would be superfluous to remark on its excellence as a bit of antique design, the whole of the turning, moulding, and carving being so thoroughly in harmony with the material—viz., oak. I have not shown the upper flights, as they are much a repetition of the lower. The stair to basement is appropriately screened by balusters closely placed, and the effect of this arrangement is extremely good. I was sorry to note that the stair had shared the fate of the beautiful hall table, having had the usual number of coats of oil paint. This hall table is of a stone colour. Unlike many other halls that occur to me, this is comparatively bare of wainscot panelling, enriched ceilings, and the like. The interiors are consequently disappointing. Of history Hallithwood has little of moment. The building is of two dates, the timbered portion being the earlier, and was probably erected in the latter part of the fifteenth century. The stone south front was the work of a member of the Norreys family, and is dated 1648. Over the south door are the initials "A.A.N." But the chief interest of the place is in its connection with the world-wide name of Crompton, who lived here A.D. 1753, and invented his famous "spinning mule." Hallithwood thus claims to be the very cradle of English spinning manufacture. Notwithstanding the "let alone" policy of non-restorers, I am sure they have here an exception that requires restoring care. The south gable

for some reason is boarded up; some of the windows are bricked up (the effect of Pitt's window-tax), finials are used to "decorate" the garden or orchard, and altogether, although aspect, position, and surroundings are all pleasing and favourable, time and neglect have left indelible traces that mar its appearance as a habitation, and incline one to look upon it rather as a picturesque ruin.—I am, &c., WALTER K. BOOTH.

THE NEW MUNICIPAL BUILDINGS, CARDIFF.

THESE buildings, which consist chiefly of a new council chamber, offices for town clerk, surveyor, and financial clerk, with police station, police-court, and superintendent's residence, are an addition to the existing Town Hall. The plans show the general arrangement of the various rooms, and in the view the council chamber and town clerk's offices occupy the chief story of the high range of buildings, finished by pediments, forming a new superstructure to what is now a two-story block at the rear of the Town Hall. In the design of this part of the front it was necessary to carefully consider and preserve the existing openings; and thus the centre portion only of the façade up to the first cornice line is built up from the ground, the flanks below the pediments up to the same line being old work, at present faced with stucco. In front of this block a large space has been reserved as a police parade ground; all the other buildings to the left, which form the police-court, magistrates' rooms, station-house, and residence, filling the rest of the Westgate-street frontage, being quite new. The elevations towards Westgate-street appeared in the BUILDING NEWS of April 20, 1877. The work is being carried on rapidly by Mr. Jacob Biggs, contractor, Roath, Cardiff, who took the contract for £13,000. The architects are Messrs. James, Seward, and Thomas, Cardiff.

BUILDING NEWS DESIGNING CLUB.

THE designs for a street front illustrated today, were, with others submitted in the same competition, reviewed in our last issue, on p. 445.

VILLAS ON BEDFORD-PARK ESTATE, TURNHAM-GREEN, W.

THE piquant design for villas, illustrated today by elevation and details, is by Mr. R. Norman Shaw, A.R.A., on the Bedford-park Estate. Our remarks upon it will be found on the first page of this week's issue (451 ante).

COMPETITIONS.

HALIFAX SCHOOL BOARD.—This board is about to erect a Board School at Haugh Shaw for 800 children. Ten sets of drawings have been received in competition for the best design for the school. Mr. Adams, the architect to the Leeds School Board, to whom the decision was referred, has decided that those submitted by Messrs. Leeming and Leeming, architects, Northgate-chambers, Halifax, are entitled to the first place. The board meeting in committee on Friday last confirmed the award.

SOUTHPORT.—Considerable dissatisfaction seems to exist with regard to the competition for the new market at Southport. A correspondent of the *Southport Daily News* declares that Alderman Sutton, who is the chairman of the markets committee, and the ruling spirit in the whole of that committee's transactions, is the brother of one of the competing architects and that the plan which has been always at the head of the list is the one prepared by Messrs. Mellor and Sutton. Before any designs were sent in, it is said that some of the local architects had stated that they would not waste their time and money in a competition which was even at that time rumoured to be a foregone conclusion. The same correspondent asks what are the leading features of the No. 2 design, "Sanitas?" The committee would not give this the first prize because, says Alderman Sutton, "some portions of the plan are a mistake." "There are four steps up to the market, and the committee all agreed that steps were objectionable." "The windows are closed instead of open work." "The aisles are narrow and cramped, being only 10ft. wide;" and "too much accommodation is provided for wholesale

purposes." There certainly are proper objections. But why give give such a faulty design a prize at all? It is true that this design was only put upon the list of six at the eleventh hour; and will any one in Southport be astonished if they learn that "Sanitas" was designed by a clerk in the office of the borough surveyor? Perhaps not. The design No. 3, "Experientia docet," is considered unworthy of either the first or the second prize, even although it had "rather a showy elevation," because "it has not a sufficient number of entrances to East Bank-street," and "as to the ground arrangement of the plan it would not answer at all." Let me ask again why should this design be selected for a prize? Alderman Sutton may hoodwink the unpractical gentlemen who have the bad taste to be associated with him in committee. He may even throw dust in the eyes of the other members of the council; but he cannot blind the architectural world to the fact now so patent, that justice has not been done. His own words in respect to the 2nd and 3rd designs prove it, and his own conscience must bear witness that he has done wrong in respect to No. 1. It is all humbug for the committee to say that they did not know which plans were by Mellor and Sutton. If any of them are so defective in architectural skill as to be unable to distinguish a plan they have once seen, simply because the frame and mounting have been added since their last inspection, they displayed little ability for the work they have undertaken to perform at this time for the ratepayers of Southport, and there can in that case be little wonder that the result of their critical research has been such a sad failure. It is well for them, it is well for all of us who have to pay the premiums and pay for the erection of the market, that the council have wisely refused to receive their verdict. If the council were to act fairly to all parties, a competent professional man, such as Barry or Waterhouse, should be employed to give in a report as to the merits of the designs, and if this is done the money spent in this way would be well laid out. If any such gentleman is selected, it would be well perhaps that steps were taken to give him full scope, free from collusion. The authors of "Salus Populi," the design which stood second on the selected list of six, also point out that a first-class local firm is prepared to execute their design for the sum named, and that therefore it was unjust to them for Alderman Sutton to state that in reference to excessive cost "the general opinion of the committee was that all the designs would come under the same category." At a meeting of the council, on Wednesday week, the report of the markets committee was referred back for further consideration.

THE CHADWICK MUSEUM, BOLTON.—Eleven sets of plans have been received by the Town Council of Bolton, in competition, for the new museum to be erected in the Park, through the munificence of the late Dr. Chadwick.

St. Matthew's Church, Harwell, near Dideot, was re-opened last week, after the erection of an organ and other works in the chancel, executed under the direction of Mr. E. Dolby, architect, of Abingdon.

The restoration of the chancel of St. Mary's Parish Church, Chelmsford, is being carried out under the superintendence of Mr. A. Blomfield, M.A.

At Stockton-on-Tees Police-court, on Thursday, the 1st inst., Francis Boyes, builder, was fined £3, and ordered to pay 9s. 6d. costs, for deviating from the approved plans, passed by the Corporation, for new houses in Spring-street. The information was laid under the 82nd section of the Stockton-on-Tees Extension and Improvement Act, and was supported by Mr. George Edwards, borough surveyor.

The prizes and certificates gained by the successful students of Merthyr Tydvil during the past year were distributed on Thursday evening, by Mr. G. T. Clark, of Dowlais.

The Michell Free Library was opened by the Lord Provost and Town Council of Glasgow, on Thursday last week, at the temporary premises in Ingram-street East. It was founded by a bequest of £70,000, left by Mr. Stephen Michell, who died in 1874, and now consists of 16,000 volumes. The premises have been lent, free of charge, by Mr. Neil, until a permanent library shall have been erected. It is proposed to put the Free Libraries' Act in force in Glasgow, in order to increase and improve the undertaking so well founded.

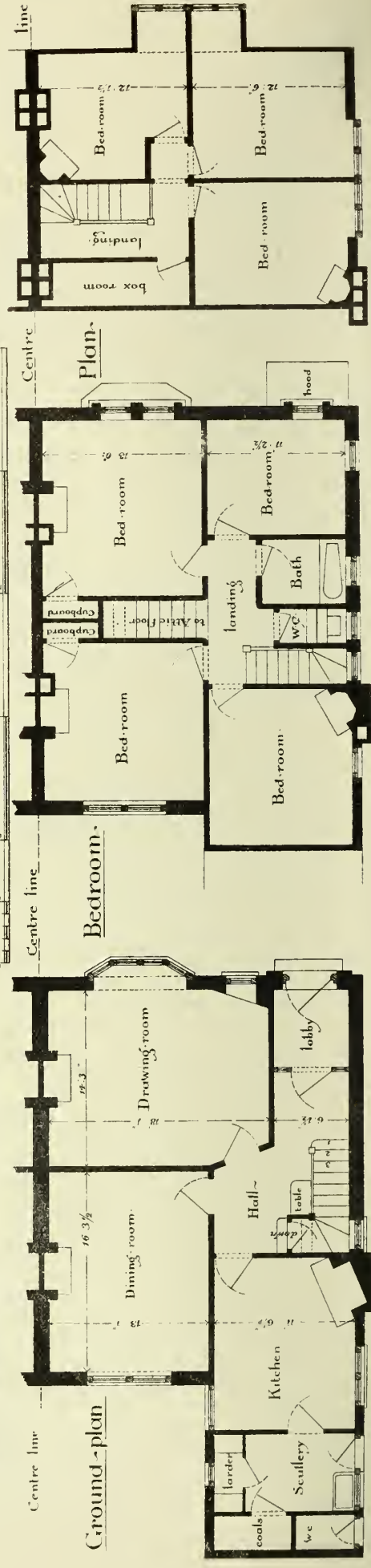
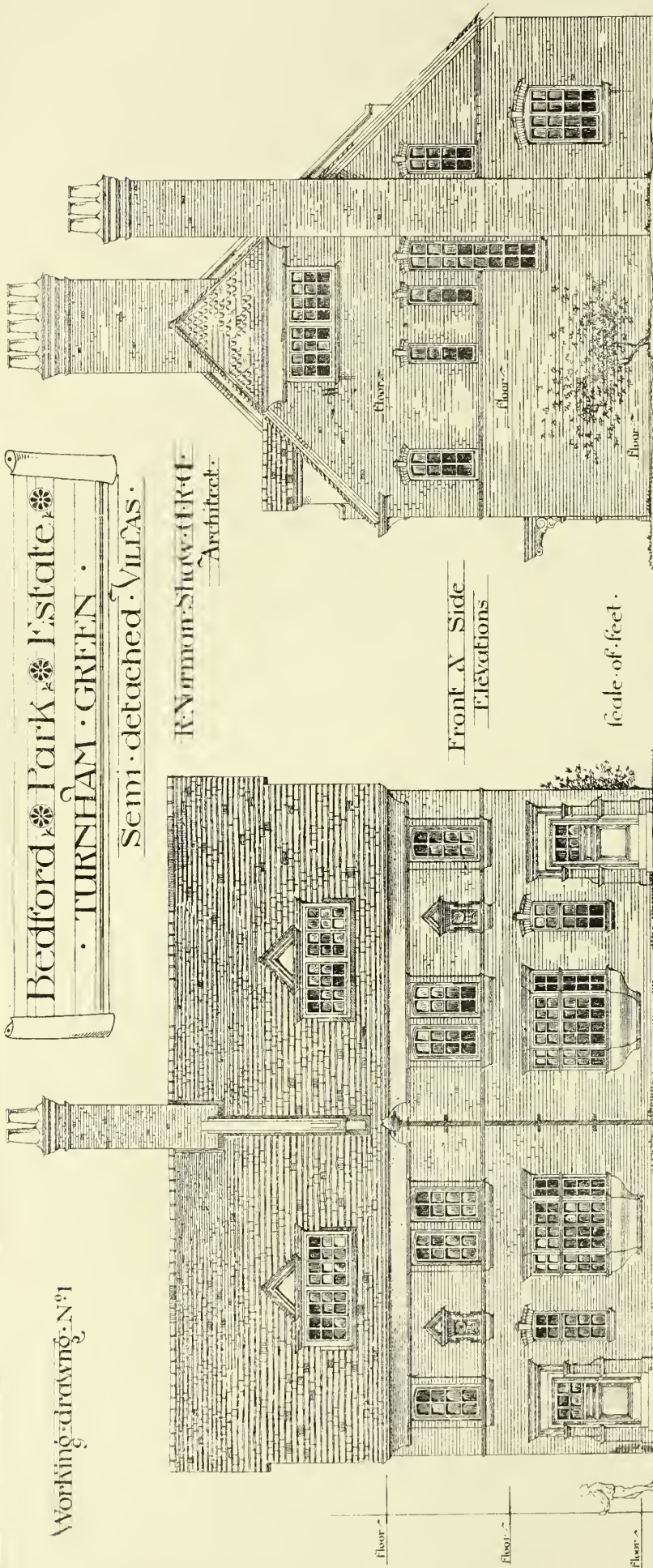
Art classes are about to be started at Dorking, the Working Men's Institute having been secured for that purpose.

Working-drawing, N^o 1

Bedford Park Estate
TURNHAM GREEN

Semi-detached VILLAS

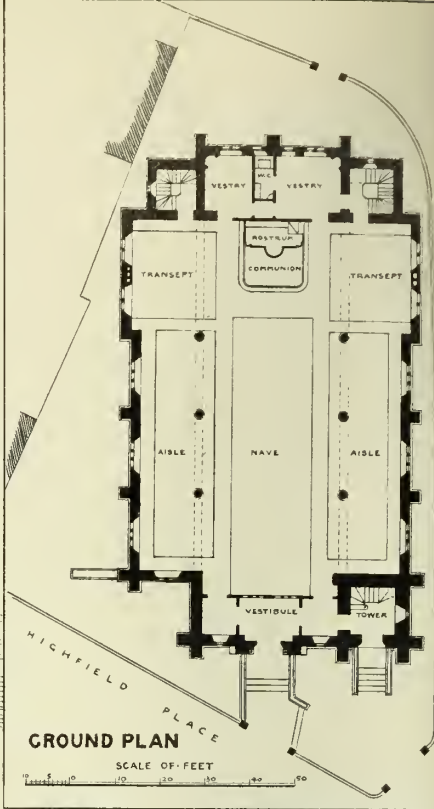
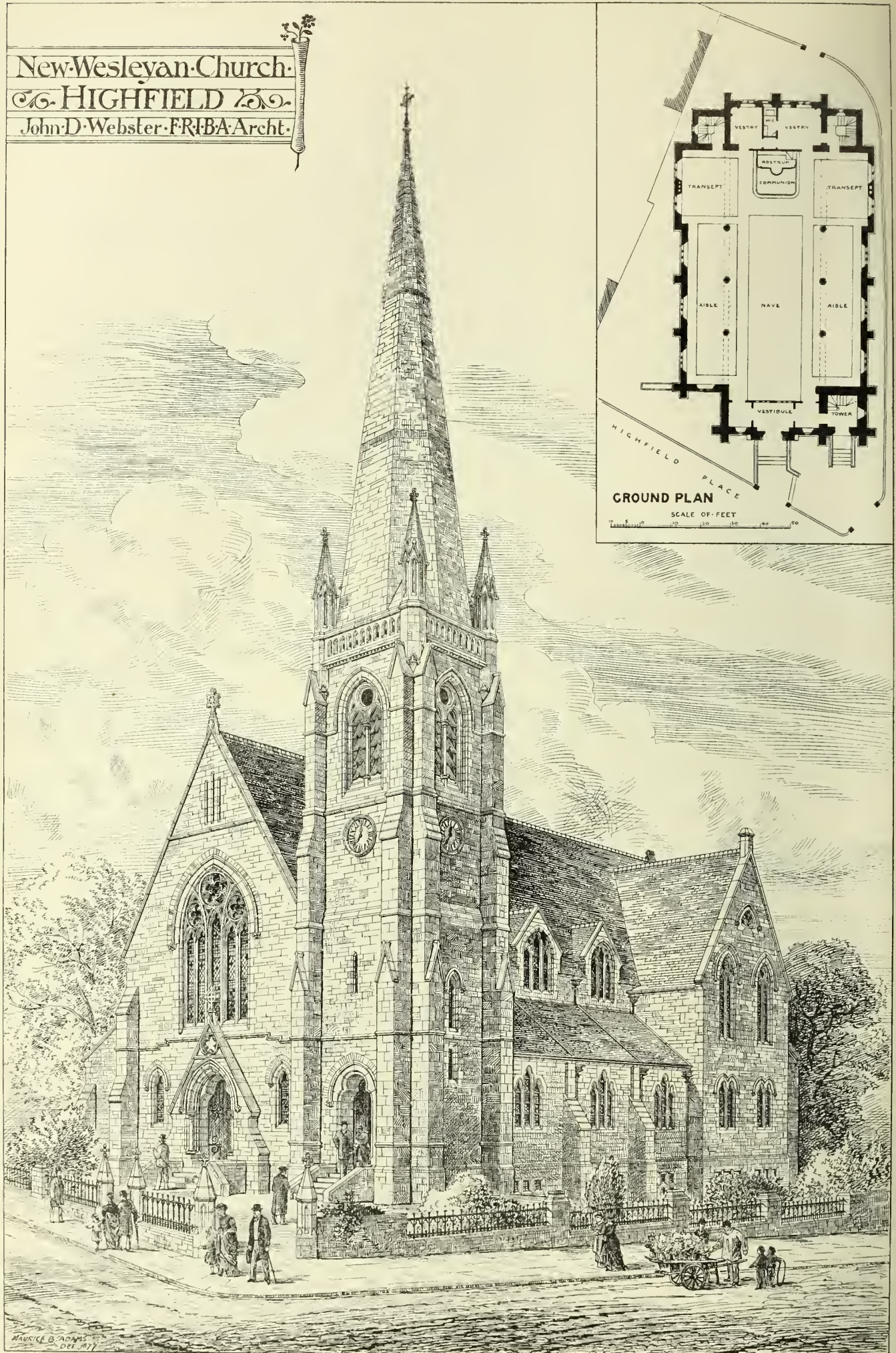
R. Norman Shaw, R.C.S.A.
Architect.



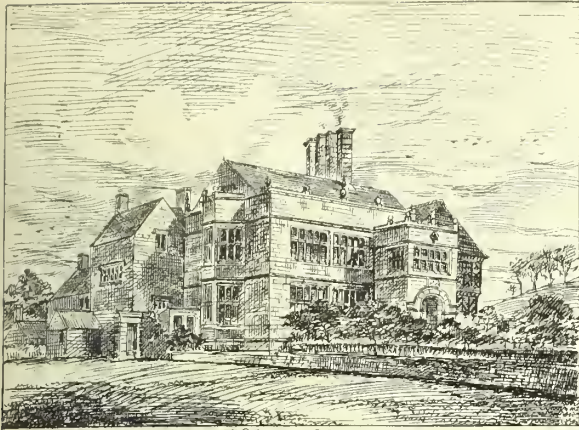
MAURICE B. ADAMS DEL.

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New Wesleyan Church.
HIGHFIELD
John D. Webster, F.R.I.B.A. Archt.



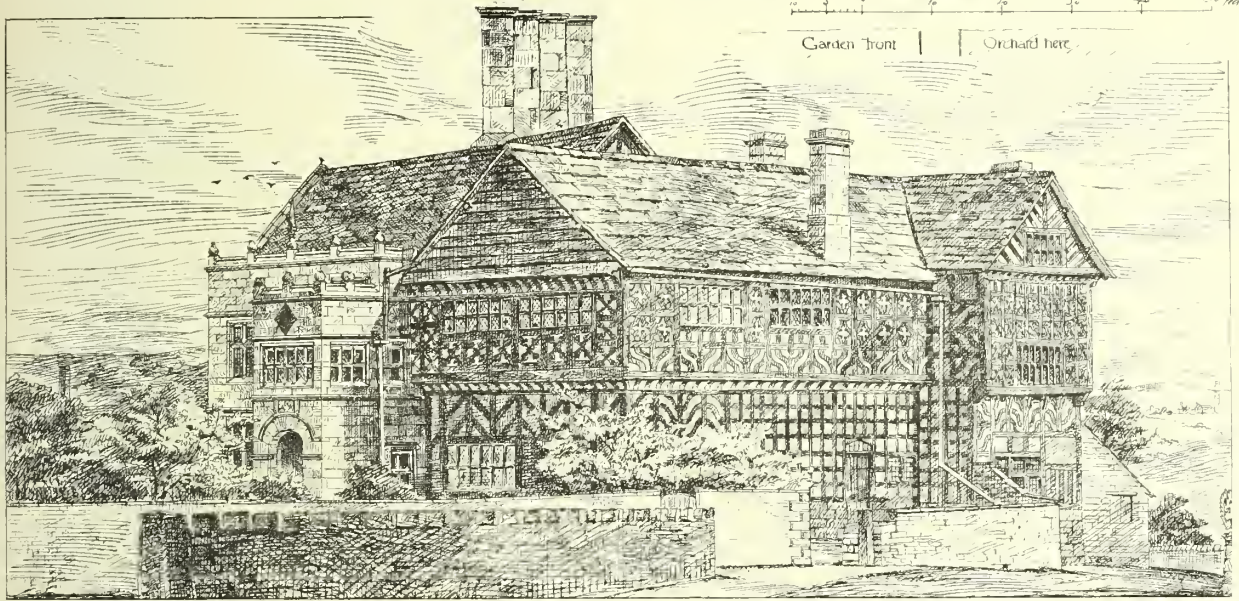
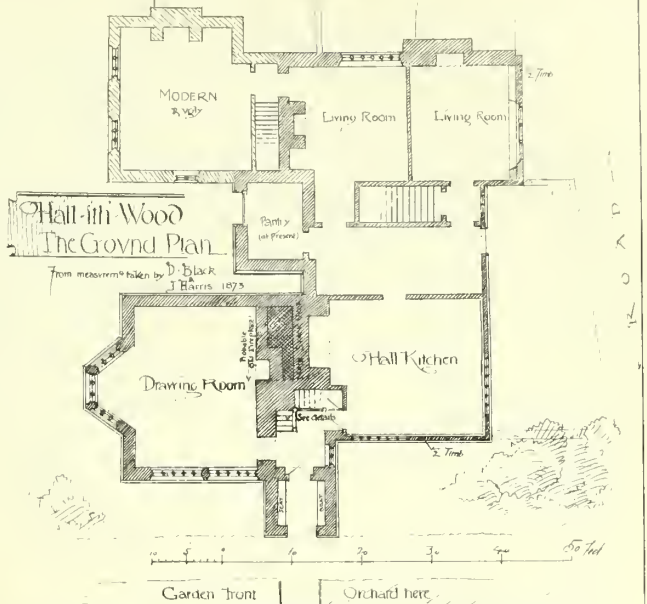
MAURICE B. ADAMS
Dec. 1877



View from SW 2nd 77

HALL-ITH WOOD near Bolton

Walter K. Booth, ar.



Hall-ith Wood
Bolton Le Moors

The Staircase
with full Details engraved

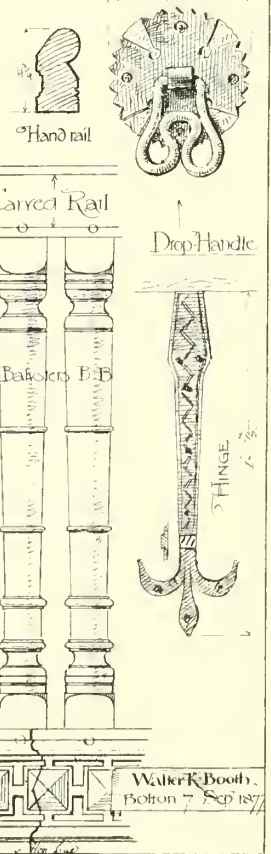
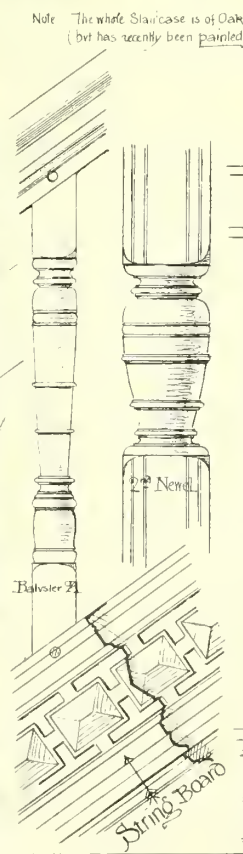
Landing 5

Hall Floor

Scale of feet 1 2 3 4 5



Carved Rail



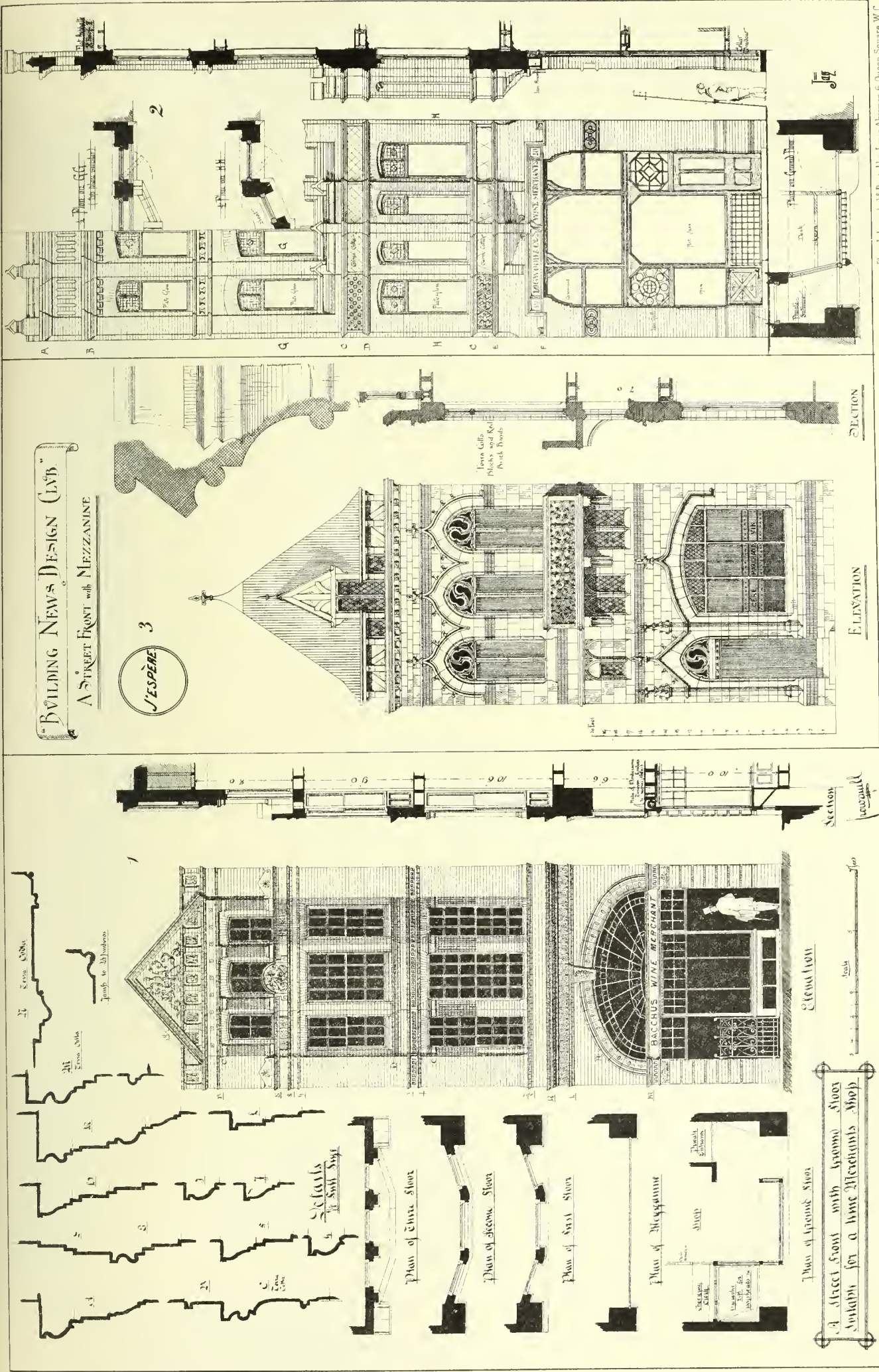
Note The whole Staircase is of Oak (but has recently been painted)



Carved Rail

Drop Handle

Walter K. Booth,
Bolton 7 Sep 1877



"BUILDING NEWS" DESIGN CLUB
A STREET FRONT with MEZZANINE

J'ESPÈRE

F. ELEVATION

SECTION

ELEVATION

SECTION

Plan of Ground Store

Plan of Third Store

Plan of Second Store

Plan of First Store

Plan of Mezzanine

A street front with ground store suitable for a fine Merchants Shop

"BUILDING NEWS" DESIGNING CLUB

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening of the session 1877-78 of the Institute, on Monday evening last, was marked by a large attendance of members, who manifested their animated interest in the proceedings by frequent bursts of applause. The President, Mr. Charles Barry, F.S.A., occupied the chair.

The following gentlemen were elected to membership:—As Fellows: Thos. Lainson, 170, North-street, Brighton; Richard Phené Spiers, Carlton Chambers, Regent-street; and Thos. H. Watson, 9, Nottingham-place, W.; and as Associates: B. E. Entwistle, Liverpool; E. W. Farebrother, Louth; and H. Hayman, Louth. The President announced the deaths, since the close of the session, of the following members:—Messrs. Raphael Brandon, Gilbert R. Blount, R. L. Roumieu, and Karl Frederick Büsse. Mr. F. P. Cockerell, hon. sec., stated, amid applause and laughter, that during last session he announced the death of M. Henri Révoil, of Nismes, but had since found out it was a mistake, for M. Révoil was alive and well.

THE NEW CLASS OF HONORARY ASSOCIATES.

The PRESIDENT read the following list of names of 41 gentlemen who have expressed a wish to join the new class of honorary associates:—The Right Hon. the Earl of Dartmouth, Right Hon. Lord Houghton, F.R.S.; Right Hon. Lord Crewe, F.S.A.; Right Hon. Lord John Manners, M.P.; Mr. Justice Hannen; Sir Walter Farquhar, Bart.; Sir James M^cGarel Hogg, Bart.; Sir John Hawkshaw, C.E.; Frederick Leighton, R.A.; E. W. Cooke, R.A.; J. Alma Tadema, R.A.; G. B. Richmond, R.A.; Captain Douglas Galton, C.B.; Alfred White, F.S.A.; Locock Webb, Q.C.; Frederick A. Philbrick, Q.C.; J. Evelyn Liardet; Frederick Reade; Professor Erasmus Wilson, F.R.S.; E. Woods, C.E.; J. F. Bateman, C.E.; J. Fowler; G. F. Watts, R.A.; George Grove; Herbert C. Saunders; E. Oldfield; T. Woolner, R.A.; Osgood Field; A. B. Mitford; G. A. Spottiswoode, M.A.; W. Spottiswoode, LL.D., F.R.S.; H. P. Jones; R. H. C. Nevile; John Wolfe Barry, C.E.; W. G. Harrison, Q.C.; Edward Woods, C.E.; Rev. J. Robins, D.D.; E. Harry Woods, C.E.; E. Armitage, R.A.; Thos. Hawkesley, C.E.; Jas. Abernethy, C.E.; E. F. de Kierzkowski. The reading of the list evoked considerable applause at the mention of the most generally known names. The President also read a recommendation for election of Mr. Fred. Ouvry (the hon. solicitor to the Institute) as honorary member, signed by himself and a long list of Fellows. Professor G. Von Neureuther, Royal Academy of Arts, Munich, and Professor Scholander, Royal Academy of Fine Arts, Stockholm, were elected by acclamation as hon. and corresponding members. Donations to the library of volumes and money were announced by the secretaries, and acknowledged by a vote of thanks.

PRESENTATION OF PORTRAITS.

The PRESIDENT said he had, in virtue of his office, the pleasure of presenting to the Institute a very beautiful work, by Mr. Richmond, R.A., which he thought all would consider a striking likeness of their past President, Sir Gilbert Scott. He had to present the portrait on behalf of the subscribers, and would mention that when they went to Mr. Richmond to ascertain if he would undertake the commission he expressed the great pleasure he should, as an artist, feel in painting a fellow-artist's portrait. He hoped they would for many years rejoice in having Sir Gilbert Scott amongst them, and that in years to come, after they all, and their friend himself, were dead and gone, succeeding members of the Institute would feel a pleasure in looking at the portrait. They were rich in one sense that evening, for he now had to call on Mr. Wyatt to present a portrait of his late brother, Sir Digby Wyatt.

Mr. T. H. WYATT (who was visibly affected) said he had a duty of a somewhat melancholy nature to perform—to hand over the portrait of one who had passed away, he was grieved to say, beyond recall. This portrait of his brother was the gift of his friend Mr. C. C. Nelson, who was too unwell to be present. For many years past Mr. Nelson and his brother had

deliberated in that room in the interests and for the advancement of the Institute, and he felt it gratifying to have to hand over this tender mark of Mr. Nelson's regard for his brother. They had been anxious that the portrait should be presented by Mr. Richmond, but he declined to undertake a posthumous portrait based on photographs, and referred them to an Italian artist, Signor Ossiani, whose work was now before the members.

THE ASHPITEL PRIZES.

The PRESIDENT presented the Ashpitel book prizes to Messrs. J. J. Lough, F. Bagallay, and J. Wilson, the candidates who most highly distinguished themselves in the architectural examination of 1877, and the Ashpitel medal to Mr. G. W. Brown. These having been awarded the President delivered his

INAUGURAL ADDRESS.

At the outset he would congratulate the members that during the past year the Institute had gained some internal strength in organisation, and also that it and the profession it so worthily represents have been more appreciated and better regarded by public bodies, and by the public, than has been the case for many years. He should divide his observations broadly into those connected—1. With the inner life of the Institute—*i.e.*, its relation to its members—the progress and opportunities for mutual advancement and good fellowship. 2. With its outer life—comprising its relation, past and present, with the Government and those public bodies with which it may be naturally more or less associated, and with the public generally. 1. As to its inner life, we have, he said, been passing through a year as remarkable and important as that when the Institute was first founded. The members have considered whether their organisation might be made better—more powerful and cordial as between themselves, and more really useful to the public. With this view more than one committee of earnest men have laboured, and the result is the revised bye-laws, which will for some time to come guide and govern our action. Differences of opinion, on details, existed certainly, and proved the vitality of the Institute and the general interest felt in its laws by the profession, but the advice of the committee has been substantially adopted in all essential points. The number of professional members of the Institute in 1877 is larger than at any time in its history, while the new class of honorary associates has already numbered in its ranks not a few distinguished men who are not professional. It had been felt by all that the noble aims and objects of the architectural profession were not always understood, and seldom fully appreciated by the public. If architects are not invariably credited by the public with the double effort to be the “accomplished artist,” and at the same the “trusted agent,” it may be because too little personal intercourse has hitherto existed between practising architects and those outside their ranks, who take a real and earnest interest in their work, and would fain know more of it if opportunity were given. This opportunity will be given by the creation of the new class, and through it our artistic brethren in the other walks of fine arts, of painting, and sculpture—our amateur architects, of whom many are distinguished and entitled to our respect—our Church dignitaries, whose duties in the sustentation, care, and repair of our national cathedrals and churches, lead them so frequently to express their desire to know more of architecture in its practice than they do—our civil engineers, who have such great power, from the magnitude of their works, to create a “nightmare” or a “joy for ever”—our antiquarians and archaeologists—our members of each House of Parliament, who have often to decide questions relating to our art and practice, and who sometimes so piteously confess their inability from lack of knowledge to do so to their own conscientious satisfaction—may, by becoming honorary associates, gain much of the special knowledge they desire—will doubtless learn that architects have nobler aims than are represented by 5 per cent., and, albeit that represents their livelihood, can and do put it in a secondary posi-

tion in relation to their clients, whether they are the public or are private individuals—and we shall see that one of Johnson's definitions of the term “honorary”—*viz.*, “Conferring honour without deriving gain”—*i.e.*, I presume, “pecuniary gain”—is entirely applicable to every gentleman on the list. Our new associates will, I hope, be led to take a livelier interest in architecture, regarded as a fine art no less than a practical science; while, on the other hand, I can promise them a most cordial reception within these walls. I trust that the numbers of the new class will very rapidly increase as its objects and opportunities become known. The more permanent and distinctive constitution of your council must also have a great effect for good in the future of the Institute. For myself I feel that my whole real strength consists in being a unit of the strong and united council you so wisely chose last June. A third measure of much importance is the disregard of the place of domicile in the matter of mutual subscription. I had hoped to have welcomed you in a more commodious meeting-room, but the council felt that, although with the sum already promised they might have begun the alterations, it would be more prudent to ascertain what additional rent the annual income would bear before they committed the Institute to an additional yearly charge. The subject will be taken up, however, without delay. With reference to our numerical strength, an increase of twenty has taken place in the two classes of Fellows and Associates since this time last year. They now number 635, against 615 at that time, exclusive in both cases of honorary fellows and the now abolished class of contributing visitors. The library has increased in value, and is now open continuously throughout the year, from 10 a.m. till 9 p.m. and members of the Architectural Association, the architectural classes of the Royal Academy, and those at King's College and University College, have access, on a proper recommendation, at an annual fee of 5s. It is hardly possible to overstate the value of such a facility as this to the young, poor, but clever student, or how many good architectural reputations of the future shall be due to the opportunities of reference and study thus afforded. Our income (exclusive of trust-funds or special donations) has improved to the extent of nearly £100 a year, now standing at £1,805, against £1,715 last year. During the year the subjects brought under notice have been at least equal in importance and interest to those of former years. The paper by Mr. Stevenson opened up a most interesting question, and one likely to agitate the architectural profession and their clients for some time to come. While there could be no doubt of the talent of the writer in humorous, good-natured satire and well-turned epigrams, yet that will not compensate for the absence of that sort of argument which convinces, and which shall lead the judgment and practice of the hearer to follow the advice of the orator. The line of thought taken by Mr. Stevenson, and those who style themselves the “Preservers of Antient Buildings,” seems to be that though architecture has confessedly, for as many ages as we have record of, been continually changing and adapting itself to the tastes and wants of the people, yet when we approach the particular epoch of Queen Anne's time they tell us we are to stay our hands, acknowledge that an architectural millenium was then at last attained, confess our absolute incapacity as artists, and suffer our old buildings—whether domestic or ecclesiastical—to remain untouched, however unsuitable to our requirements, in order that “a link of history” may not be lost. I do not hesitate to traverse this issue under both heads—the æsthetical and the practical. I will not admit that in an age when, in consequence of the vitality of that “love, reverence, and religion” (which is so pathetically said to have passed away), more study and real learning has actually been given to the production and judicious preservation of old buildings than for several preceding generations, and when more real work is done in one year than in ten years of former times, all that study and all that earnestness and all that work shall lead to no result creditable to our age. We living in it cannot, of course, presume to pronounce defi-

nately on the comparative value of our work with that of those preceding or to succeed us: posterity must do that. But I venture to think that the works of a Scott and a Street, and of my own father, will tell a noble story of our time, and that it will need all the learning and patient study of the young men of the present day, to whose criticisms we have listened, to equal or surpass them. Nor can I, for one, believe that such result will be achieved to the satisfaction of posterity through the medium of that curious mixture of all proportion or no proportion, as it seems to me, called the Queen Anne style, which seems just now to find so much favour. These remarks apply to our domestic and public buildings; but how much stronger does the argument become when applied to our cathedrals and churches throughout the land! Surely in dealing with them we have no right to forget or ignore the original all-important intent with which they were erected, for which they were then well-adapted, but now are often ill-adapted, though equally needed—viz., for the public worship of God. That originally was, and must still be, the primary (almost the exclusive) thought, far before æsthetic considerations or the idea so strongly urged on us that we ought to regard our churches as ruinous records or museums of the artistic ideas (good sometimes, but often very bad and hideous) of generations past. No: let us have some confidence in ourselves, and with all humility, yet without fear, deal with our old buildings, and especially our churches, as our forefathers in architecture uniformly did—adapting them, altering them, and even removing them altogether if thoroughly unsuitable to our needs; preserving their historical features with all loving care when possible, but subject as regards our ecclesiastical buildings to the above primary necessity. It is in consequence of such treatment by past architects that our old buildings have not lost, but largely gained, in interest for students; and so it may be, I hope and believe, with many of the restorations and adaptations of our time, taking them as a whole, to the students of the future.

—The President closed this first part of his address by a series of brief biographical notices of the members deceased during the past year. The professional careers and leading works of Sir Digby Wyatt, and Messrs. Edmund Sharpe, Charles Mayhew, Raphael Braudon, Robert L. Roumieu, and Gilbert R. Blount were reviewed in appreciative terms. We have already made full biographical reference in these columns to most of those included in the list, but quote the President as to the last two:—The late Mr. R. L. Roumieu served his time as an architectural pupil of the late Mr. Benjamin Wyatt, and for many years carried on a successful practice, at first as the partner of the late Mr. A. D. Gough, and afterwards on his own account. His ancestors were of French nationality, and among the Huguenots who settled in England after having been ex-patriated. It was probably due to this circumstance that Mr. Roumieu was intrusted with the design and erection of the French Hospital in Victoria Park, and was appointed surveyor to the French Hospital Estate at St. Luke's. Among his principal works are the Victoria Iron Works, Isle of Dogs; the Prudential Assurance Office, Ludgate-hill; East St. Pancras Schools, and several warehouses and business premises in the City. Among the country mansions which he designed or made additions to are "The Cedars," "Fairfield," and "Hillside," Harrow Weald, and the "Priory"; the last erected for Sir James K. Bruce at Roehampton. He was also commissioned to lay out several estates in and near London. He is succeeded in practice by his son, Mr. Reginald St. Aubyn Roumieu.—Mr. Gilbert R. Blount belonged to an old Roman Catholic family. He started in life as a civil engineer, being one of Brunel's pupils. In this capacity he was engaged in superintending the Thames Tunnel works when one of the floods occurred, and he narrowly escaped with his life. Mr. Blount was for some time in the office of our past vice-president, Mr. Sydney Smirke. He was afterwards appointed architect to Cardinal Wiseman. His practice chiefly consisted of works executed for the community to which he belonged. The Roman Catholic monastery near Dorset-square was erected from

his designs. He was a gentleman of very courteous manners, and much respected among the friends who deplore his death. Of our foreign members I have to record the loss amongst them of Karl Frederich Büsse, Wilhelm Zahn, and T. Stein, of Berlin, and of Axel Nystrom, of Stockholm, the first and last of whom died in 1868. 2. Passing to my second head—the outer life of the Institute during the past year—I naturally allude first to the graceful recognition of the Institute by our royal patron the Prince of Wales (as President of the British Section of the Paris Exhibition) by placing its President on the Royal Commission. It remains for us to show by the character, originality, and excellence of the works to be sent to the architectural portion of the British Fine Arts Exhibition that the confidence has been justified. The Local Government Board recently applied to this Institute to aid them with advice and suggestions on the new code of building regulations, in course of preparation by the Board, with the hope of introducing throughout the kingdom general rules to be observed uniformly, and to take the place of the confused and conflicting codes of regulations now in force, consequent on the absence of intercommunication of the numerous local boards by whom these regulations have been issued; one result whereof is the confusion that exists very generally, to the distraction of architects who, in all good faith and innocence, find themselves often transgressing some local rules. The council appointed a committee, of which Mr. Whichcord is chairman, and their report of advice was eminently practical—endeavouring to give the public all needful protection in the construction of buildings, public and private, without vexatiously hampering the action of professional men. That report has been most gratefully and gracefully acknowledged by the Local Government Board, and many of the emendations and suggestions have been adopted in the tentative "Draft Code of Bye-Laws for regulating Buildings," which the Board have lately issued. Again, the advice of the council has been sought by the committee of the House of Commons, still sitting on the question of "Copyright in Design of Works of Art." The necessity of some kind of recognised law on this subject has long been felt by architects, for the custody of—and property in—their original designs, as embodied in their drawings, has been the subject of frequent painful disputes, which, if contested in the courts of law, would entail on the professional man (who is rarely wealthy) much mental vexation and considerable cost, whether he were or were not successful. The consequence is, a thorough confusion of practice exists. No actual issue has ever been tried out in one of the superior courts. The "Copyright Commission" fully realised how unsatisfactory this is, and admitted that architects had a case for protection. How that was to be afforded, and to what extent limited, is a very difficult subject to settle, but there is every disposition to treat the subject in a manner satisfactory to architects if the members of that commission can possibly see their way to do so. It is hoped that the commission will present their report this year. I must lastly advert to the submission by the Metropolitan Board of Works, under the Act authorising the formation of Northumberland-avenue, of the designs for intended buildings to form its frontages, which had been prepared by the intending lessees. A long and careful correspondence ensued. It was urged by the council that consideration of the permanent appearance of large blocks of buildings in our finely-laid-out new streets should be allowed to have no small weight, even if some pecuniary sacrifice should be made (a result they believed would at least be doubtful), and that the Metropolitan Board of Works should remember the impossibility of correcting an error once made in such materials as stone and marble, however much it might be desired on all hands to do so when too late. In the issue the Metropolitan Board required the lessees of the most important block in the whole avenue to modify their design to meet the views expressed by the council. In this the valuable aid of the superintending architect of the board was readily given, both to the board and to the council, with impartiality and with the best effect.

Finally, although the council could not give an unqualified approval, even of the modified design, they felt that the board at their instance had gone as far as they could be expected to do in requiring alterations which might seriously affect the expenditure by the man who was to pay an enormous ground rent, and expend a very large sum of money on the buildings, and they therefore passed the modified design, receiving an assurance from the Metropolitan Board that they would require that the treatment of the buildings on the adjacent ground not yet let should be consistent with such design. I have the authority of the superintending architect of the board to say that since that time the lessee has frankly recognised the value of the suggestions made to him, and has agreed to some further modifications, likely to be improvements on the design so passed. You will not forget that in the course of last year an animated correspondence took place in the public papers on the subject of "illicit commissions," as they were called, being commonly paid (as was alleged) to professional men by others than their clients, and without their cognizance or consent. The charge was made indiscriminately against men of various professions, and among them architects. I felt it a duty to combat the truth of this charge against us, and especially as regarded the members of the Institute. Some communications have taken place between your council and Sir Edmund Beckett, who has proposed a bill to the House of Commons which shall inflict a small penalty as well as affix a stigma of dishonour on all who might be proven guilty of such practices. That bill was introduced too late to become law last session, but is to be pushed forward this year. It has the full sanction of the law officers of the Crown, to whom it had been referred by the Home Secretary, and the meeting will be glad to hear that so far from making the charge so general as he and others certainly did in their correspondence in the public papers, Sir Edmund Beckett desires it to be understood that so far as he is concerned he does not wish to say or imply that it is common with architects, though he is aware of some instances of those who called themselves by that name having adopted this dishonest practice. Many subjects of great practical interest to architects will no doubt engage attention during the coming year, among them the "Metropolitan Streets Bill" of the Metropolitan Board of Works, and the project for the better supply of drinking water to this huge and still increasing city. The question of the extension and concentration of our public Government offices is likely again to become prominent this year, and I would call attention to the report on the subject by a committee of the House of Commons, and to the evidence as to whether, in the interest of the public, architects of acknowledged experience and with full public responsibility for their works should not be employed on our public works, rather than they should be entrusted to the unknown talent, without any personal responsibility, of some salaried officer of a "department," who, as one witness very pertinently told the committee, would on his discovering his own talent to be of a superior order soon give up his salaried official position for an independent one with all its risks, but also with the incentive to exertion and aid to talent that all feel when a credited result is publicly acknowledged and identified with the man who has achieved it. The committee content themselves with pressing on Parliament very strongly the absolute necessity of something being done at once to remedy the serious inconvenience and risk arising from the present system of housing our public officers in separate private houses, often small, unhealthy, and divided from each other. Let us hope that, should a public competition take place once more (as is not improbable) the subject of which shall be to deal with the question as a whole, the miscarriage and injustice of action which followed a similar competition in 1857, and which I have good personal reasons for remembering, may be avoided. I would also advert to the progress of archaeological discoveries in Greece, and to the completion of the survey of western Palestine. In conclusion, I think it will be well for us in the papers to be read very often to choose subjects of a thoroughly practical character. A

charge is frequently reiterated against architects that they think too exclusively of the artistic effect and external beauty of their buildings, and disregard partly or altogether the important questions relating to the health, comfort, and convenience of those who are to live therein. I recently heard a noble lord in a public address made by him roundly assert that architects were "ignorant" of all these matters, alluding to questions of ventilation, warming, and drainage. Again, the City Librarian said the other day that the banes of libraries were architects and the gas. It was indeed well said in reply by a non-professional defender of the architect, that if those about to build libraries or other buildings really knew their own wants, and could intelligibly explain them, there would be fewer of such complaints. The undeserved blame for all the mistakes of clients—their imperfect perceptions—their non-power of realisation of their requests are heaped on the devoted head of the unfortunate architect. We cannot expect this state of things suddenly to alter, but we may learn from our detractors a lesson of Christian submission to unmerited blame, and also learn how needful it is in these days of extensively diffused scientific knowledge and inquiry to pursue exhaustively our inquiries into these subjects, and to do our best to put ourselves in a position to challenge our accusers to the proof of their assertions from any buildings erected under the care of architects of experience, when they have been treated with due confidence by their clients. Let us welcome, then, the discussion of these matters, and it may be we shall do more thereby to add to the power of the architects of the next generation to carry out large works—beautiful works—and works distinguished by their sanitary excellence, than we ever can by the more exciting discussions whether architecture attained its maximum excellence in the thirteenth century or in the days of Queen Anne.

Sir GILBERT SCOTT moved a vote of thanks to the President for his address, which, while very comprehensive, was, he considered, a marvel of condensation. He would join in the congratulation that had been expressed in it with reference to the changes in the Institute's organisation, although he could not quite concur in all, especially that relating to the equalisation of subscriptions from all members, because it appeared that more work, and equal judgment, were expected from country than from metropolitan members, and fewer advantages afforded. However, he hoped the provincial members would respond with enthusiastic feeling. Referring to the list of deceased members, Sir Gilbert alluded to the regret which they all felt at the loss of such men as Edmund Sharpe, Talbot Bury, and Digby Wyatt, and at the distressing circumstances under which Raphael Brandon—than whom a better-hearted fellow never lived—had ended his career. As to the restoration question—(laughter)—he would not venture to dwell upon the President's remarks on this vexed matter, for of Queen Anne he wished only to say *de mortuis nil nisi bonum*.—Mr. WYATT seconded the motion of thanks, and bore testimony to the personal exertions which the President had bestowed on the improvement of the Institute.—Mr. WHICORD, as chairman of the committee, concurred in this statement, and in a somewhat long speech dilated on the work of reorganisation which has been carried out. The 41 members proposed for the new class of hon. associates had given in their names in response to the personal invitation of three or four members of the council, and if these could bring in such an accession of strength, how many then might, by a rule-of-three equation, be expected to be introduced by the whole 600 members of the Institute? If they might apply such a calculation the result would exceed the number the most optimist could conceive of.

The vote of thanks having been put by the proposer and carried by acclamation, the President briefly responded and announced that at the next general meeting, to be held on the 19th inst., Mr. William H. White will read a paper on "Middle Class Houses in London and Paris."

ENGLISH WORKMEN AND FOREIGN WORKMEN—A NEW PROBLEM.

A SOMEWHAT startling phase in the conduct of business in the building trade, and in building, and even architecture, is now, if not actually going on, at least beginning, or being tried to some extent. It is the systematic employment of foreign workmen as substituted for our own workmen. It would obviously be quite impossible to over-estimate the importance of such a movement, even if it be but at first a small one, for how much must it needs imply in some way or other, or in some direction or other? German workmen, it would seem, are those at present who have thus been taken, or thought most useful, as substitutes. We propose here to look at the matter in a fine-art point of view, and as a development of a new executive power and feeling in art action, as in masons' work and "carving," both in wood and stone. Do not let us be misunderstood, for there is no special novelty in the fact of there being here in London, and at work of some kind—a German, or a Frenchman, or an Italian. There are plenty such at work every day here and there. We are thinking of the principle involved in the fact of its being possible, even in idea, of putting aside—as at the Law Courts—our English art action in an English building; emphatically so, and substituting for it a new energy, and tone of artistic and executive thought and handwork.

It is somewhat difficult to see where to begin so wide a subject, and one going into so many channels of inquiry. We might commence by asking whether, in the length and breadth of this small island, there is yet one single example of a building—e.g., a small church or out-of-the-way chapel—which still shows the handwork of the original workman on it? Is there such a one, and if so, where is it? If there, indeed, by mere chance be one, it must show what the English workman was, and by comparing his work with foreign work of about the same date, we should see what value relatively it had—whether much better or much worse, or about even, as to power of work, differing, of course, as to nationality of expression. No one likely to read this will, we may suppose, refuse to admit that there is a difference, and a wide one too, between the work of a French workman and the work of an English workman. No one hardly but detects it almost at a glance. And if this be so with the Frenchman, it is certainly so with the Italian and the German. If any should pause here to doubt as to this difference, all doubt must cease when the French, German, and Italian Gothic of the middle ages are called to mind. We owe them to the hands and brains of their several nationalities. The architectures and their accessories differed as the nationalities and languages differed.

We can but mention here a somewhat singular instance of this distinctive difference between the work as executed by our own workmen and the same kind of work as executed by the Continental workmen. It is, it is true, not in or about a building, but in "furniture." There is now a vast trade going on in foreign furniture, and very much that is now visible in the London shop windows is of foreign manufacture, though often spoken of as English. We somewhat disturbed the equanimity of an eminent salesman but the other day by pointing out to him what was foreign and what English in his store, for all of it, to the general eye, came under the but commonly too general and universal designation of "home make." But there was no doubt about it, and could be none, if artistically looked at, and this is what we are now doing. A little surprise at this distinctive difference being so readily seen may be felt, and it may be contended that, if well paid, all workmen are upon the whole alike, and that accident, and the character of the design have a good deal to do with it. No doubt, but the difference in the character of the work, when it leaves the hands of the workman, is too marked and evident, when looked at attentively, to be mistaken. We are not here disparaging or commending, but only pointing to a fact, and a vital one, but too little noticed.

We might perhaps, by way of illustration,

and to make a difficult matter the more clear, and to call attention to it the more vividly and intelligibly, ask those who are interested in this problem—and all ought to be—to look at carefully, and to study—we know no better word—French work in almost any material, or in any class of objects, whether on a building or in what are termed "knick-nacks," and fancy goods. No one who does this will deny the fact of the wonderful artistic skill and lightness of hand, and refinement of eye, not only of the French designers and artists, but of the French workmen. It may be somewhat hard to duly account for this, and a good deal of philosophic talk might be expended in the effort to come at a satisfactory conclusion about it. It is not of the hand only, but of mental organisation, and comes of the two jointly, and is always in perpetual and unconscious action and operation. It takes us indeed, commonplace as the subject of it may seem, to the foundations of art action, and to the *rationale* of that power which has produced the finest and most finished art all the world over. That the French have this power in a very high degree there can be no doubt, and so have the Germans, and it is from Germany that most of the art furniture we are speaking of comes. And if this be so in furniture it must needs be so in building and architecture, and in the details of architecture it must needs show itself conspicuously. It might be curious to see in the same building this meeting together of two things so different.

It must needs, therefore, if it should come about, become a fact not a little singular to note this special proposed if not actual substitution of foreign workmen as substitutes for our English art-workmen in such a building, or collection of buildings rather, as the New Law Courts. We may suppose, without going out of the way, the architect of this group of structures to have strong English proclivities, and to aim in the details of these buildings at a special and emphatic English expression. We can hardly ask for a foreign Gothic expression here close to Temple Bar; and most surely there is no need of it, for the English Gothic of the 13th, 14th, or 15th centuries, and we care not which is taken, is or was as good (some will think better) than any Continental phase of it. We may assume, therefore, that English Gothic is intended—a revival or copy of that of the past of Gothic art as once in vogue in this country, when no other style of art existed here to disturb the universal feeling for and constant use of it for all and every building purpose. It is true that here we may see evidences of many sources and precedents from the Gothic of the Continent; but it is an English structures, or rather series of buildings, and British workmen have hitherto put it together. It may be somewhat too curious a thought, but what would a simple-minded Early English Gothic man, with his limited folio of precedent, if he had any at all, have done here, with just the same wants to supply for British lawyers?

We are not here, however, thinking so much of this special building, or of the importation of foreign workmen to help in it, whether masons or carvers, or whatever other trade they may follow, as of the difference it indicates between our modern and to-day's system of work and art action and of that of the past, not only here in this country, but all the world over. We might, for illustration sake, take almost any one of the individualised styles of architecture and art, and follow it to its beginning in the workshop, and watch the workmen as they gradually bring the raw material into form, and could we but actually see this (and we can mentally) we should soon perceive that the style and special feeling guiding the work, its special and individual character, could only be got by and through the very men who invented and brought into form such national and individualised style of art. We doubt whether there ever was an exception to this absolute rule in art. To cite but a single instance—e.g., the Chinese. We might cite, too, all and every style and phase of art and architecture, no matter where practised, and the result would be found the same. It may be proved, too, by the attempts that are made every now and then to imitate or to copy some work, though it be but toy-work of Oriental

origin, as the French have so often done. No one, we may suppose, is or can be for a moment deceived by such work or such designing. It is always "failure."

But what a lesson ought this not to be to our working men? We do not here mean so much as a question of more work or no work, as the fact, startling as it ought to be to the men, of the possibility of substituting at a moment's notice another and a foreign means to do their special work, and to take it all out of their hands, and to substitute other hands and brains—no one seeing anything, perhaps, on the whole, but gain—artistic gain, may be. The principle and idea here involved does not, indeed, depend on the fact of its becoming a reality or no, and the temporary loss of work is but a very small item in the matter. It penetrates far deeper than this, and indicates how little is thought of work as work. All is generalised, and the work itself, and its value and character, disappear all but in the mere matter of convenience or inconvenience. If one man will not do the work, why another will. It is not thought to be a question of power or capacity. We cannot but think that the time will come when the work of carrying out a building executively will come to be regarded, not as a thing for mere accident and chance and the labour market to regulate, but it will come to be thought a mode of expressing the individuality of the art style of the time and the power over the material of the artist workman. What a chance do the Law Courts yet offer for at least a trial of this! C. B. A.

INSTITUTION OF CIVIL ENGINEERS.

THE Council of the Institution of Civil Engineers have awarded the following premiums:—
1. A Watt Medal, and a Telford Premium, to William Worby Beaumont, Assoc. Inst. C.E., for his paper on "The Fracture of Railway Tires."
2. A Watt Medal, and a Telford Premium, to William Cawthorne Unwin (has previously received a Telford Medal), B.Sc., Assoc. Inst. C.E., for his paper on "The Resistance of Boiler Flues to Collapse."
3. A Telford Premium to Robinson Souttar, for his paper on "Street Tramways."
4. A Telford Premium to Isaac John Mann, for his paper on "The Testing of Portland Cement."
5. A Telford Premium to William Anderson, M. Inst. C.E., for his "Experiments and Observations on the Emission of Heat by Hot-water Pipes."
6. A Telford Premium to John Baldry Redman, M. Inst. C.E., for his paper on "The River Thames."
7. A Telford Premium to Henry Robinson, M. Inst. C.E., for his paper on "The Transmission of Power to Distances."
8. A Telford Premium to Alexander McDonnell, M. Inst. C.E., for his paper on "The Repairs and Renewals of Locomotives."
9. A Telford Premium to Richard Henry Brunton, M. Inst. C.E., for his paper on "The Japan Lights."
10. The Manby Premium to Charles Norman Bazalgette, Barrister-at-Law, for his paper on "The Sewage Question." The Council have likewise awarded the following prizes to students of the Institution:—1. The Miller Scholarship to Percy Ruskin Allen, Stud. Inst. C.E., for his paper on "Machine Tools."
2. A Miller Prize to Arthur Cameron Hurtzig, Stud. Inst. C.E., for his paper on "Submarine Foundations."
3. A Miller Prize to Charles Graham Smith (Mr. Graham Smith and Mr. Watts have been elected Associates of the Institution since the date of the presentation and reading of their papers), Stud. Inst. C.E., for his paper on "The South Reserve Piers and Floating Landing Stage at Birkenhead."
4. A Miller Prize to Richard John Gifford Read, Stud. Inst. C.E., for his "Comparison of the Merits of Wrought-iron Plate and Trussed Girders for Single-span Railway Bridges."
5. A Miller Prize to Nicholas Watts, Stud. Inst. C.E., for his paper on "Mechanical Puddling in the Manufacture of Iron."
6. A Miller Prize to William James Chalk, Stud. Inst. C.E., for his paper "On Waves, and on Structures designed to resist their Force."
7. A Miller Prize to John Charles Mackay, Stud. Inst. C.E., for his paper "On Engineering Explosives." The Council invite communications on various subjects under the Telford Fund, the Manby Donation, the Miller Fund, &c. The list includes about 50 subjects. We note the Construction of Warehouses and other Buildings to Resist Fire, and the relative merits of Stone, Brick, Iron, and Timber; the Warming and Ventilation of Buildings; the Storage and Filtration of Water; the Expedients of Irrigation in India; the Different Plans of Opening Bridges; the Management of Underground Waters in Mining Districts; the Design and Construction of Masonry, Dams, Caissons, &c.

A dinner was held one evening last week at the Bull Inn, Chelsfield, West Kent, to celebrate the opening of lime works at Halstead. Mr. Lawrence Brown, the proprietor of the works, occupied the chair.

Building Intelligence.

BRADFORD.—The foundation stone of a new Baptist chapel was laid in Birksland-street, Leeds-road, on Saturday. It has been designed in Classic style, and for architectural effect reliance will be placed more upon proportion and bold treatment than lavish ornament. The Leeds-road elevation is divided into three portions, the centre one being carried higher than the wings, and furnished with a projecting cornice, and divided into two stages vertically, the lower one being a portico of three bays. The wings contain the gallery staircases. The columns and pilasters have Corinthian capitals, and the windows are circular-headed. In plan the chapel is a parallelogram 63ft. 3in. × 49ft. 8in. on the ground floor. At the rear of the building are three vestries, that in the centre being 25ft. × 20ft. 9in. Over this vestry is the organ-chamber, and a choir-room is provided over that to the left. The chapel is to accommodate 784 persons, and the total amount of the contracts is £5,580. Mr. J. P. Kay, of Leeds, is the architect, and the principal contractors are—Messrs. Hindle, Verity, and Co., bricklayers and masons; Toothill and Balmforth, joiners; Nelson, plumber and glazier; Dixon, plasterer; Thornton, slater, and Higginbotham, painter.

BRUTON.—The parish church of Bruton—one of the finest of the Somersetshire examples of 15th century Gothic architecture—was reopened on Thursday, the 1st inst., after restoration, undertaken only just in time to save the fabric from absolute ruin, so far had decay in timber and dilapidations of walls proceeded before professional aid was sought. The work of repair has been one of much difficulty. The whole of the north wall and nave arcade had to be rebuilt, having been thrust considerably out of the perpendicular by the weight of the timber roof. There yet remains to be executed the alteration of the modern incongruous chancel into one which will harmonise with the nave, and for this plans have been prepared. The works were commenced in 1871, under the direction of Messrs. Slater and Carpenter, architects, of London, and, since the death of the senior partner in that firm, have been superintended by Mr. R. Herbert Carpenter. The contractors were Messrs. Clark and Son, of Bruton. The total cost of the restoration, so far as carried out, has been about £4,500.

DAGENHAM.—New schools recently erected at Beacontree-heath, by the School Board for Dagenham, South Essex, were formally opened on Tuesday week. The style is Gothic. The buildings are entered by a covered colonnade, and are divided into three large school-rooms, those for the boys and girls being each 35ft. × 17ft., and that for the infants 33ft. × 17ft., with class-rooms, withdrawing-rooms, lavatories, and closets attached to each. Half an acre of land is enclosed for a playground. The total cost has been £2,100, and accommodation is provided for from 150 to 200 pupils. A teachers' house is being erected on the site. Mr. G. Death, of Dagenham, is the builder, and Mr. E. C. Allam, A.I.C.E., the architect.

DISS.—The great Perpendicular church of St. Mary, Diss, Norfolk, was re-opened on Sunday week, after restoration of the chancel and the erection of a new organ. The works in the chancel are an extension of the scheme proposed by Mr. A. E. Browne, architect, of London, from whose designs a reredos was erected eight years since. The walls have been panelled, the deal pews have been removed, and oak choir stalls erected, divided from the nave at the chancel arch by a low oak screen; another screen separates the chancel from the south aisle, and the northern chapel is entirely occupied by the new organ just opened. This was built by Messrs. J. Rayson and Sons, of Ipswich, and has cost about £400. The chancel floor has been repaired with black and red tiles. The walls above the panelling are to be painted with ornament and texts from Mr. Browne's designs. The removal of the west gallery—a cumbersome structure dating from the period of the early Georges—upon which the old organ stood, has effected great improvement in the lighting and ap-

pearance of the nave, and has opened up a richly-carved fifteenth century door, set into a doorway of the sauc period as the tower above it—1296. Mr. Bishop was builder.

EASTBOURNE.—The foundation stone of a new church, to be dedicated to All Saints, was laid at Silverdale, Eastbourne, on Thursday, the 1st inst. The church will be Early English in style, and is being erected by Messrs. Carruthers and Son, builders, of Reigate, from the designs of Mr. Streetfield, of Great Marlborough-street, London, W. It will consist of a nave, north and south side aisles and porches, chancel, and narthex. Over the latter there is proposed to be added a large tower, on the north side of the chancel an organ chamber, and on the south side a vestry. These three features do not, however, form part of the present contract, and depend on the influx of sufficient funds. The whole of the exterior walls will be of Portland and Forest of Dean stone, used in alternate courses. The roof will be an open timber one covered with tiles. The pulpit, to be of stone, will be placed at the north-west angle of the chancel. The dimensions of the nave are 97ft. 6in. × 31ft. 6in., and those of the chancel 31ft. × 26ft. The church will afford seating accommodation for 874 persons, to be increased to 1,020 when the organ chamber and vestry have been added. The present outlay is £9,500.

GREENGATES.—New Sunday buildings were opened next the Wesleyan Chapel in the Shipley and Bramley-roads, Greengates, on Saturday. The schools are in plan T-shaped, and are arranged on the class-room principle. The upright stroke represents the entrance corridor, on either side of which are the infants' room, and board-room, each 22ft. by 15ft., and a library and class-room. The principal school-room, 50ft. by 30ft., and 22ft. 6in. in height, is placed across the top, and has a second approach from the chapel. This room has a platform, is decorated with stained glass in the end windows, and, like the other rooms, is furnished with red deal fittings. The style adopted by the architect, Mr. J. P. Kay, of Leeds, has been a simple form of Gothic. At the intersecting of the roofs is a bell-turret. Both chapel and school have been fitted with hot-water apparatus by Mr. John Tennant, of Leeds. The contractors were—Masonry, Mr. W. Hargreaves, Rawdon; joinery, Messrs. J. and E. Burke, Calverley; plumbing, painting, and glazing, Mr. A. Higginbotham, Idle; plastering, Mr. A. Weather, Calverley; and slater, Mr. J. Thornton, Eccleshill. Messrs. Powell Bros., of Leeds, supplied the windows. The total outlay has been about £1,500.

IRCHESTER.—The memorial stone was laid last week of a new Primitive Methodist chapel at Irchester. The chapel has been designed by Messrs. J. Kerridge and Sons, architects, Wisbeach, and Mr. Roberts, builder, of Wellingborough, has been commissioned to erect the building. The structure will be of brick, faced with white Whitticks and Wellingborough pressed reds. The structure will form an oblong, measuring 40ft. by 26ft. 2in., having a flat panelled ceiling.

LEEDS.—A new public hall near the Fish Market was opened on Saturday. The architect is Mr. Thomas Ambler, and the cost of the building is £7,000. The style is Gothic, and the building consists of three stories, with basement and attic. On the ground floor there is a large dining and coffee room (41ft. by 36ft.). Adjoining the main apartment are a reading-room, smoke-room, lavatories, &c. On each side of the entrance is a staircase leading up to lecture-hall, measuring 72ft. long by 36ft. in breadth; and, inclusive of a gallery erected at the east end, it will be capable of seating an audience of about 450.

METROPOLITAN BOARD OF WORKS.—On Friday this board accepted the tender of Messrs. Mowlem and Co., amounting to £12,000 (the lowest received) for the formation of carriage and footways, sewers, alteration of roads, and other works in connection therewith, between Farringdon-road and Wilderness-row. Sir J. Bazalgette, as engineer to the Board, submitted a report with reference to the prevention of floodings in Balham and Wandsworth, in which he recommended that the

sewage of Balham be diverted from the low-level system, so that in the coincidence of a heavy shower with a high tide the surface water and sewage may not be locked into the sewer till the outlet is cleared, and further that six railway engines be purchased from the Great Western Company for pumping purposes. The entire cost of the scheme will be £40,000, of which £26,000 will be required for the alterations at Balham. After a full discussion, trenching on the general question of the wisdom of permitting the building upon land below the level of high tide, the recommendations were adopted, with only two dissentients. As to carry out the entire series of improvements under the Artisans' Dwellings Act, in the 22 unhealthy areas in the metropolis, for which Parliamentary sanction was obtained last session, would cost £475,000, and displace 20,000 persons, it has been decided by the board only to undertake at present two schemes, those relating to the areas near Essex-road, Islington, and Bowman's-buildings, Marylebone. For these areas—which have been the first selected because they lie near the line of the proposed new street from Charing-cross to Bloomsbury—schemes were submitted by the works committee, and were generally approved. With reference to that part of the report of the select committee of the House of Commons on the Metropolitan Fire Brigade, which relates to the structural supervision and control of theatres and music-halls, it was agreed to apply to Parliament next session for power to give effect to the recommendations. Six months' leave of absence was granted to Mr. Newall, principal clerk in the superintending architect's office, on account of illness. The Building Act committee reported that they had considered the bill to be brought forward next session to amend the Metropolitan Management Act, 1855, the Metropolitan Building Act, 1855, and the Acts amending the same; and, having regard to the extreme importance of early legislation on these matters, they believed it to be undesirable that further amendments of the law as to buildings and streets should, as had been suggested last week, be introduced into it. This report was adopted, and the bill was referred to the Parliamentary committee to be finally settled and deposited. A report was received from the solicitor to the board as to the Great Wild-street scheme under the Artisans' Dwellings Act, and the Parliamentary committee was directed to give the requisite Parliamentary notice and deposit the scheme.

PRESTON.—New local board offices have been erected at Fulwood, in Preston, by Mr. T. Harrison Myres, A.R.I.B.A., of Preston. The building comprises a board-room, with entrance-hall, which admits to board-room on the right, and to an office or weighing-machine room on the left. On the first floor there are four large bedrooms and one smaller, the whole of the rooms being well lighted, ventilated, and heated, and of good height. The frontage in Garstang-road of the main block is 39ft., and the buildings occupy an area of about 170 superficial yards. The style adopted is modern. The buildings are of brick, with stone dressings and ornamentation. Enclosing the front garden is a strong and effective iron railing. The whole buildings have been successfully carried out by sub-contractors for sums in the aggregate of £937.

RAINFORD.—On Thursday week the memorial stone of a new parish church was laid at Rainford. The building will be in the Gothic style, and will seat 550 persons. Its total length is 113ft. 6in. by 48ft. 2in. wide, the total height of the nave being 46ft. to the pitch of the roof. The church is divided into nave, chancel, and two aisles; the former of which is 77ft. long, the chancel being 31ft. deep by 19ft. wide. On the south side is a small chapel, which is faced on the north side by an organ chamber. In the rear of the organ chamber is the minister's vestry. The church is being built of Runcorn stone, dressed with local wall stone, relieved with red stone bands. At the north-east corner of the building is the tower, which is 18ft. square at the base, but at present will only be carried to the height of 26ft. The architects are Messrs. Aldridge and Deacon, Liverpool; and the contractor, Mr. H. Yates, of Liverpool.

WOLVERHAMPTON.—About a fortnight ago one of the pinnacles to the tower of St. Peter's Church was blown down, doing damage to the extent of about £200. Repairs will be completed as soon as possible. Mr. Christian is the architect who has conducted the recent restoration of this fine old building. The Church of St. Jude is having a stone spire placed on the top of the present square tower, the corner pinnacles having been taken down. St. Mary's Church has just been repaired and renovated at a cost of about £700, the whole of the walls and ceiling having been repainted, all the woodwork varnished, and the organ removed from the end of the church to the gallery in the south transept.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published November 9 contains articles on Hydrophobia, The Sanitary Value of a Dry House, The Yorkshire Association of Medical Officers of Health, Infantile Mortality, The Antiseptic Treatment of Zymotic Diseases, The Quarterly Report of the Registrar-General, The Excessive Infantile Mortality at Macclesfield, Small Pox in the Isle of Man, Books Received, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, The Editor's Table, Cleanings, &c. Price 2s. Annual Subscription, Post-free, Eleven Shillings.—31, Tavistock-street, Covent-garden.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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N.B.—American and Belgian subscribers are requested to remit their subscriptions by International P.O.O., and to advise the publisher of the date and amount of their remittance. If the last-mentioned precaution is omitted, some difficulty is very likely to arise in obtaining the amount. Back numbers can only be sent at the rate of 7d. each, the postage charged being 3d. per copy. All foreign subscriptions, unaccompanied by an additional remittance to cover the extra cost of forwarding back numbers, are commenced from the next number published after the receipt of the subscription.

Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—K. and Co.—C. and H.—E. B.—J. D. W.—W. C.—P. S. S.—A Singed Moth.—J. O. S.

"A. B." writes to us anent our article on "Designers and Draughtsmen," and asks us, in reference to the Hove schools, whether "the Brighton architect got his design from London, and if so the extent of his indebtedness," &c. (We cannot inform our correspondent.)—

"LIVERPOOL." (We cannot possibly find time to give the names and prices of elementary books. Refer to back volumes.)—ALFRED BIRMINGHAM. (An "inch cube" is used in the measurement of timber, and means 12 cubic inches. Your last statement is right.)—J. SULMAN. (We do not know the address. The information was gleaned from a local contemporary.)

"BUILDING NEWS" DESIGNING CLUB.—Drawings received: A. L. B. (Your design did not come to hand.)—"Lubin," Bombay. (Your letter received, and shall be taken into consideration.)—"Marmion."—Medicus.—Fleur-de-Lis.—A. L. B.—RECEIVED: Thos. Stokes. (We have mislaid your letter. Can you repeat request?)—Pupil.

CHURCH AT SKIRLAUGH.—Will "Ecclesiologist," who wrote about this church last week, send his name and address.

Correspondence.

"FREE CHURCH ARCHITECTURE."

To the Editor of the BUILDING NEWS.

SIR,—Although much has been written from time to time, both in the BUILDING NEWS and elsewhere on the subject of church-building for congregations, it still remains an exceedingly interesting topic for inquiry; and, indeed, with all that has been done and said, much remains to be worked out in reality. Among the first who endeavoured to strike out in a

more reasonable form of plan for buildings of this class was Mr. James Cubitt, and his success in this matter is well worthy of note in the large chapel he is now building in Islington for Dr. Allon. Mr. Cubitt has been followed by others with more or less success, and we have several notable examples: for instance, Mr. Newman Hall's chapel and schools, Westminster-bridge-road, by Messrs. Paul and Bickerdike, may be named as among the foremost, as it is probably the most expensive, if not the largest, work of the kind yet erected. There are also many works of less magnitude, but of much merit, and of these Mr. John Sulman is the architect of not a few. Last week, for instance, a view was given of a building proposed to be erected at Beckenham from this architect's designs. The purpose of the building is described, and the title reads "Congregational Church and Schools." The planning seems well adapted for this object; and of this I have nothing to say; neither would I venture to remark upon the design as a whole, architecturally considered; but it would be interesting to inquire why a sanctus bell-turret is made a feature of, in a building erected ostensibly for preaching purposes, and where the doctrine held and taught is quite at variance with that creed which in ages gone by caused the sanctus bell to be used, and furnished the reason for screening the chancel from the main part of our churches. Such an arrangement in a Congregational chapel or church, whichever it may be called, is, to say the least, unnecessary and unmeaning, although it is more than often employed. The reason is perhaps not far to seek, and may be described as a straining after the ecclesiastical, an endeavour to assume a "churchy air." But why, in the interest of all that is good and truthful in architecture, should those who design buildings of this class, persist in so vain an assumption? The external character or plan of buildings built for a purpose at once repudiated, surely ill-befits Congregational or Nonconformist chapels generally; and this is the point to which I wish to draw attention; and it is, to quote Mr. Sulman's own words (see BUILDING NEWS, Nov. 12, 1875), "the useless attempts to adapt the Ritualistic type of church to Congregational worship that I so strongly condemn."

"Free churches" are, of course, erected for a recognised purpose, which, as every one knows, is for preaching—in plain language, they are "preaching houses"—then why not treat them as such? If Gothic architecture be thought more suitable than a Classical treatment, by all means use it, only let it be in the true spirit of the style. I am content to use Mr. Sulman's terms when writing to the *English Independent*, in 1875:—"If we do but seek to increase our culture and appreciation of the beautiful, and take our stand on common sense, avoiding all deceptions, shams, and fripperies of mere prettiness, and endeavour to express in our buildings the great principles of our Church life—freedom, simplicity, and truth—there is a future of great promise opening out for Free Church architecture."

Now, I venture to suggest that it is scarcely in the spirit either of good art, or of the above prophecy, to use a sanctus bell-turret on a Congregational chapel—even though it concealed a patent ventilator—as I believe it is proposed to do in the case before us. If it be found necessary to employ a ventilator, use it just where it is most wanted and can best do its work—only let it be a ventilator and nothing else. I have already had the good fortune, in the course of some private correspondence on other matters, to be favoured with the opinion of my friend, Mr. Sulman, on the question of "Free Church architecture;" but it would certainly be a further advantage, now that he has given the world his design in question, if he would tell us why the particular feature already referred to was used as shown in the illustration of the building published last week?—I am, &c., MAURICE B. ADAMS.

COMMISSIONS.

SIR,—I am in receipt of a circular from a stained glass manufacturer, in which he says that he allows "architects and other professional gentlemen a liberal commission, say of

10 to 15 per cent." What his past experience may be I don't know to warrant his making this insulting announcement. I can tell him that this statement of his will assuredly prevent his getting any work from me, and I have no doubt it will so influence many. His declaration of intention to cheat his paymasters—for that is what it amounts to—proves him to be dishonest, and he is bent on corrupting others—the villain! It is said there is an Act to be introduced into Parliament purposely to meet such breaches of trust, and a good thing, too. But, Sir, the fault is not all one side. Doubtless there are professional gentlemen (!) who habitually take bribes. I hear from tradespeople frequently of such things. Those who are guilty of these mean, rascally practices are deceived if they think that what they do in secret is not afterwards published—not publicly certainly, for the over-tender law of libel prevents that—but it gets abroad from mouth to mouth, and their characters are estimated accordingly. What is wanted, however, is a thorough exposure, and then perhaps the thing will be checked.

But even architects who are too honourable themselves to accept a *douceur*, yet are not careful to see that their managers or assistants are not transgressing. This is not uncommon, and the architect, through his carelessness, may sometimes get the discredit of its being supposed that the money goes to him. And in many cases, it is not that money is offered by the tradesman, but it is actually extorted from them, and by those who call themselves gentlemen. I know a glaring case of this kind, the which, on becoming known, resulted in the "professional gentleman" giving his unfortunate victim—a foreign artist—a blow in the face. Afraid of injuring his prospects that blow the artist did not resent, but the person referred to—the aggressor—may be sure that there are English hands which are waiting opportunity to pay him back for his cowardice.

Unhappily the innocent have to suffer for the guilty. The whole architectural profession is at the present time in ill odour, and those who are honest have to pocket sneers and innuendoes, the which are not more agreeable from being wholly undeserved.—I am, &c., M.

"DEPOSIT" COMMISSIONS.

SIR,—Make what use you like of this; it speaks for itself.—I am, &c., J. F. F.
Dublin, Nov. 6, 1877.

"DEAR SIR,—Adverting to ours of October 8th last, we shall be glad of an opportunity to tender for the heating of . . . If a deposit is required for a copy of the plans, we shall be happy to remit.—Yours truly,
"Liverpool, Nov. 5."

THE CHURCH OF ST. PETER, REGENT-SQUARE.

SIR,—One asks for a fish, and receives a serpent. I ask Mr. Wm. Scott Champion to indicate the position of "the vast amount of good design," which he states is to be found in this church, and all I can gather from his letter of last week, as a reply to that inquiry, is, that "where the ornament is good, such as in the present frieze round the chancel," he intends to use it up in the proposed restoration; but where is the "vast amount of good design?" Well, Sir, on Mr. Champion's kind invitation, I, last Sunday, visited the church, and almost breathlessly sought the "ornament in the frieze round the chancel;" by dint of some exertion, in consequence of the rays of light proceeding in the wrong direction, I found it; and, if I am not mistaken, it is composition or plaster ornament of the pattern well known about the time it was put up, and I estimate its value when new at 1s. per foot lineal.

As regards the proportion of the interior, I should say that, supposing the galleries absent, it is depressive; with the galleries, which have too much width for the height from the ground to the soffit, it is very depressive. The Ionic columns, which carry the galleries, are in themselves tolerably right in proportion, but they are too small. There must be scale about columns if they are to be successful. There is a little playfulness about the flutings, or rather beadings, of the shafts, and also in the caps, which is not charming. The roof is flat, and being of large span, shows skill in trussing.

I have seen some of the late Renaissance churches in Bruges, Brussels, and Antwerp, but not Rennes, and I never expect to find unadorned Classic proportions in a Renaissance church, particularly in French or Belgian Renaissance; but this St. Peter's Church is intended to be a very strict following of Greek design, and yet it is bad, in my opinion, because the worst profiles have been adopted, because semicircular arches have been introduced

when straight heads would have been more in accordance with the style, and, therefore, in harmony with the surroundings; because the whole of the ornament is too small for its position; because there is no affinity whatever between the steeple and the church—no growth, a simple sticking in of a feature apparently intended to give the idea of crushing the roof, and yet not doing so; because all the oversailing members and projections are too flat; and because there is a gloomy cadaverous look about the whole, which is not to be found in the glorious Greek architecture which the designer of St. Peter's attempted to take as his model.

I should like Mr. Champion to understand that it is not the "style" which I think offensive—it is the want of style; and when, at a comparatively trifling cost, such an exterior as St. Peter's can be converted into a style in harmony with that of a proposed new interior, I think it "Vandalism" not to so convert it. And now, having had my say, as Mr. Champion puts it, as a professional man, I must admit that the service struck me as showing much more vitality than it did some time ago; but good music is impossible when the choir is at the east end of the church, and the organ at the west, and when that organ is as thoroughly worn out as I trust the "style" is in which the church has been designed; and, in reply to the final part of Mr. Champion's letter, I have the pleasure to inform him that I "subscribed to the funds of the church" last Sunday.—I am, &c., Wm. WOODWARD.

TWO QUESTIONS.

SIR,—Allow me to ask your readers two questions:—Firstly, is it really the practice of architects to take commissions? I have received two circulars offering various rates of commission for the introduction of business. One of these I have lost, but the other is now before me. It came from the neighbourhood of Edgware-road, and called attention to the low charges for "plain and stained-glass windows," adding the following paragraph:—"Notwithstanding, I can allow architects and other professional gentlemen a liberal commission of 10 to 15 per cent." Secondly, is it known to the officials of the London School Board that the schools built in London are much more expensive than they ought to be? I ask this because such care is taken to explain that if the schools were on the 9ft. basis the cost would be so much per head—never less than £9 odd—while provincial schools are being built at £5 and £6 per head; indeed, your columns contain a notice of a school at Bedwelty (page 443) by Mr. Blessley, architect, erected at a cost of £4 per head.—I am, &c., OBSERVER.

BARROW-IN-FURNESS TOWN-HALL COMPETITION.

SIR,—Can any of your readers say what steps are being taken in this matter, the designs for which were sent in on the 15th of October? "An architect of standing" was to be appointed as assessor to advise the committee. It is to be hoped the long list of competitors in which local influence has been the chief assessor will not be increased by the addition of another "frightful example" in this case.—I am, &c., FAIR PLAY.

Two stained-glass windows have just been erected in the chancel of Christchurch, Eaton, near Norwich, in memory of the Rev. F. Weston, at whose expense the chancel was erected. Mr. Augustus E. Brownes, architect, of London, designed the windows, which have been executed by Messrs. Heaton, Butler, and Bayne.

Memorial stones were laid on Saturday of Sunday-school buildings next the Wesleyan chapel, at Low Moor, near Bradford. On the ground floor are to be provided 7 class-rooms, and above these an assembly hall, fitted up for seating 500 children. The cost will be about £2,100. Messrs. Andrews and Pepper are the architects.

The annual exhibition of works of the students in Leeds School of Art is being held this week in the Mechanics' Institution. The display is a selection from the 2,596 works produced in the school during the year ending April last, and includes a number of original designs and of sketches from nature, the latter being a new feature. The Department and local prizes are to be distributed in the Albert Hall this (Friday) evening.

At a special meeting of Oxford Town Council, held on Monday, it was resolved to establish a first-class grammar-school, the Corporation granting a site in the centre of the city of nearly an acre, as well as £3,000 towards the building, and £1,000 a year towards maintenance.

The School Board for London decided on Wednesday that in the future preparation of plans for new schools, it is advisable, wherever practicable, that there shall be one class-room for each 60 children, together with provisions for the occasional assembly of an entire department of scholars.

In celebration of the completion of the Finches mansion, near Lindfield, Sussex, the workmen, numbering about 140, were entertained at dinner on evening last week. The architect, Mr. Thomas Lainson, F.R.I.B.A., of North-street, Brighton, presided, and the builder, Mr. Mark Deacon, of Norwood, Surrey, occupied one of the vice-chairs.

Intercommunication.

QUESTIONS.

[5175].—Powers of Local Boards.—A regular reader of your "Intercommunication" column since its first appearance, I have never asked to write in it till now, when I should be obliged by your permitting me to invite opinions on the following:—1. A local board in a provincial town refuses me permission to have a trap or stepway or rolling way of any sort from my basement story, to hoist goods through, because it would be in the public footpath although this is situated in a by-street, and where there is absolutely no thoroughfare, and though offer to adopt any suggestions they may make for security. It would only have projected about 3ft. 6in. I have put the same thing frequently in London. To what extent are they justified in this refusal? If not, nothing about the matter in their bye-laws, but of course they have discretionary powers to any extent. 2. I understand they also refuse to sanction even a fixed iron grating or dead light or aperture of any sort in the same position—namely, in the footpath to light basement. Can they have any right to do so, and should I be justified and safe in defining them? I have no doubt that the opinions and advice of your various correspondents will be of use to others, as well as to—DILEMMA.

[5176].—Quantities—Surveyors' Charges.—A rural sanitary authority employ an engineer to prepare plans for sewage works; these are duly adopted, and advertisements issued, and intending contractors are informed by the advertisement that bills of quantities may be obtained from the engineer. The lowest tender was accepted, and the contractor officially informed of such acceptance; but instead of proceeding with the works at once, they have been delayed by the authority for twelve months and will probably not be carried out at all. If the work had been proceeded with, the contractor would have been liable for surveyor's charges; but who is liable under the circumstances detailed above? Recent legal decisions (if any) would oblige.—W.

[5177].—Modelling Wax.—I am anxious to do some modelling. Will any reader kindly give me any information with regard to the use of modelling wax, or other material equally good, and where it can be obtained?—INQUIREE.

[5178].—Surveyors and Inspectors of Nuisances.—In your columns of last week you report on the first examination of surveyors and inspectors of nuisances. Would you inform me what examination is required to pass before gaining a certificate or from whom I could gain this information? An answer through your intercommunication column or by note would greatly oblige—T. S.

[5179].—Binding "Building News" Plates.—Probably many of your readers have had the valuable illustrations which accompany your paper bound for reference. I should be obliged for any suggestions as to the best way of doing it. Two ways suggest themselves:—To have books of suitable size, with guards to which to paste the sheets, or to bind them up in books. I am doubtful whether the margin is in all cases sufficient for the latter course. A third course is possible—to keep them in portfolios classed according to their different subjects; but think that in this way they would be very liable to be lost. I should be glad if those who have had their bound in books would say what number they have found convenient to include in one volume; also under what heads they have classed them? In the case of the same drawing extending over two pages, the guard-book or portfolio seems the only possible course.—A. C.

[5180].—Ink-Papers.—Can any one tell me whether the ink-papers, which produce ink by merely infusing them in water, are still sold? They were to be obtained a very few years ago.—L. C. R.

[5181].—Clearing Pieces.—I have asked more than one joiner what these are, but without success, and shall feel obliged by a reply in these columns. The term is used in connection with some part of shutter boxing.—S. A.

[5182].—Joists Laid Rounding.—If care is taken to prevent settlement in a building by laying the joists rounding, what is considered the most scientific method of giving common joists this kind of camber, and how is it carried out in practice?—S. A.

[5183].—Board School Space.—I observe in the BUILDING NEWS of the 19th of October that there are tenders for two Board Schools for the London School Board—Mr. E. R. Robson, architect—viz one at Deptford for 792 children (the accommodation on the nine and eight basis being for 84 children). Will any of your readers (through your medium for intercommunication) kindly inform me what is the principle to be understood by nine and eight basis, as I have always understood that the Council of Education required 10 superficial feet per child?—PUPIL.

[5184].—Hydraulic Pressed Tiles.—Would any of the numerous readers of the BUILDING NEWS kindly inform where I can obtain hydraulic pressed marble tiles, and about the price per yard, and oblige—A. B. C.

[5185].—Payment for Quantities.—Will some reader inform me at what stago of a building's pro-

gress are the quantities generally paid for? Some three months ago a builder commenced a contract under my supervision, for which the quantities had been supplied, though unfortunately they were not ordered by the proprietor. I have every reason to believe the builder to be a dishonest man, and I have applied several times for payment, but get only evasive answers. What is my best course to take? Can I withhold the final certificate until they are paid for?—YOUNG ARCHITECT.

[5186.]—Archæological.—Will any of your correspondents kindly inform me as to where and from whom I may obtain the *Transactions* of the Royal Archæological Institute of Great Britain of their annual excursions.—B. PRIESTLEY SHIRES, Leeds.

[5187.]—Board of Health and Building Line.—I should like to ask, through the medium of your paper, whether a board of health can compel a person building upon a corner plot of land, not only to set the front of the building back to building line, but the flank wall also, to the building line of the side street, and, if so, under what Act they obtain their authority?—ALPHA.

[5188.]—Crown of Large Oven.—I should be glad if some of your readers of "Intercommunication," would oblige by stating their experience as to the best material for grouting the crown of a large oven built entirely of fire-bricks.—W. HURST.

[5189.]—Corporation and Private Interests.—A corporation erects a wall and promenade at their own expense, on land belonging to, and by permission of, the proprietor; after being in use six months, "for the convenience of the public," charges the said proprietor a promenade rate. Would it be legal to erect a building on the said wall without special permission of corporation? A remark on the above will oblige.—STUDENT.

[5190.]—Velocity of Discharge from Sewer.—Will any of your numerous correspondents kindly give a solution to the following:—What is the velocity and discharge from an egg-shaped sewer 5ft. in depth by 3ft. 4in. in width at top when running half full and a fall of 6ft. in the mile?—NEMO.

[5191.]—Inaccessible Heights.—Will some reader kindly inform me what is the rule for ascertaining the height of a tower, &c., whose height is inaccessible?—ANXIOUS.

REPLIES.

[5164.]—Surveyors' Charges.—I should say the surveyor who prepared the quantities was in the position of a creditor of the builder as much as any of those who supplied him with materials, &c., and, consequently that the receiver is entitled to the amount, as he has completed the contract.—ARCHITECT.

[5164.]—Surveyors' Charges.—Can "L." kindly furnish particulars of the cases to support his theory, as it seems absurd that an insolvent builder can obtain a contract for a large amount, and obtain, perhaps, £100 or more for the benefit of his creditors? H. L.

[5165.]—Girders.—In reply to Mr. Langham's question, the term "fixed" at ends, as applied to a girder, means a perfectly rigid fixing, which is practically impossible, and, therefore, in making calculations, the only safe plan is to neglect this element, and consider the girder as supported only. It is manifestly impossible, unless the bearing ends are of considerable length in comparison with the girder, to fix the ends; and unless a considerable weight of wall is above them, the ends do not even approach that condition.—G. H. G.

[5166.]—Stone.—I should recommend "F. R." to use the Hopton Wood stone instead of Mansfield. It can be polished or otherwise. If he prefers Portland, give it a coat or two of lime-water to prevent vegetation.—LEVERSHA.

[5168.]—Dividing Rooms by Partitions.—There are two ordinary modes of dividing rooms—one is by folding doors, and the other by sliding doors, hung either above or made to run in a groove in the floor. Both these plans require, of course, side space for the doors, when thrown open. If a partition be adopted, the best plan would be to allow it to drop into the cellar below or a casing made for it; the partition being counterweighted by chains or cord-pulleys at the sides. The partition may be made in two or three parts, and let down. But, perhaps, the simplest kind of partition would be a revolving one, the roller being fixed in the floor, either above or below. In fact, a revolving wooden shutter might be made to answer the purpose. Another expedient occurs to me that may be even more architectural in appearance. Erect in the position required hollow casings or plasterers on such side of the room, with opening lids, and fix in such a revolving shutter or partition. These could be worked by means of a handle giving motion to a cog-wheel.—G. H. G.

[5168.]—Dividing Rooms by Partitions.—In reply to "Inexperienced," the best movable partition that I have seen is one invented by Mr. D. J. Williams, of 57, New-street, Birmingham, in whose office I saw one in work a short time ago. Mr. Williams would, no doubt, furnish him with all particulars respecting it. It neither takes up into the bedroom, nor lowers into the cellar, the floor being perfectly free from any obstruction when not in use.—G. E.

[5170.]—Boundary Wall.—If "Builder" will apply to the surveyor of the local board of the district no doubt he will obtain the information he requires.—HENRY G.

[5170.]—Boundary Wall.—I have recently had to deal with two similar cases. One a builder's yard wall, the other a garden wall, both of which have been allowed to be built up to the footpath.—J. P. O.

[5171.]—Boundary Wall.—B has no right, "legal, or customary," to trespass on the land of A for the purpose stated. B should build "overhand" from his own side.—L.

[5171.]—Boundary Wall.—In my opinion, B is bound to build the wall from his own side; but in such cases an arrangement is usually made, either by compensating the adjoining owner for damage done to crops, or by executing the work at a suitable time of the year.—H. L.

[5172.]—Perspective.—Burchett's "Linear Perspective" (price 6s., Batsford, 52, High Holborn) is the best work on the subject that I have seen. If "Anxious" studied this book, and got some friend to explain the method of starting an architectural perspective, he would soon be able to draw a simple building—the rest comes by practice.—H. L.

[5174.]—Retaining Percentage from Installments.—"R. B." has been wrongly informed as to general custom. The conditions of contract usually state that "payments shall be made at the rate of 80 per cent. as the work proceeds," so that in a contract of £1,000 a balance of £200 would be due to the contractor, just as stated by "R. B." in the first part of his communication.—H. L.

[5174.]—Retaining Percentage from Installments.—"R. B." should have set out in the question the exact terms of the contract. If they bear his suggested interpretation they must be of a very extraordinary nature. The usual system is to pay by instalments 80 per cent. of the contract sum as the works proceed, and the balance of 20 per cent. within a specified time after completion.—L.

[5174.]—Retaining Percentage from Installments.—"R. B." will find that the course he mentions is "not as most builders understand it, nor according to general custom." In the case referred to a balance of £200 would be retained until the completion.—J. P. O.

The re-building of St. Nicholas Church, Colchester, from Sir Gilbert Scott's designs, by Mr. Dobson, contractor, having been almost completed, a faculty for the demolition of the church of St. Runwald—the last remnant of the Middle-row which formerly blocked the centre of Colchester High-street—has been applied for. The removal of St. Runwald will be a matter of but little regret, for it is small, inconvenient, and out of repair, seems to possess no features earlier than the 16th century, and all internal details have long been hidden under successive coats of paint and whitewash.

An inquest was held at Chorley, Lancashire, last week, on the bodies of two men killed by the falling in of the roof of Messrs. Smethurst's mill, which ought to suggest to owners of factories the dangers of attaching apparatus to roofs without calculating if the extra strain thereby involved has been allowed for by the designer. At the inquiry, Mr. Saville, contractor, of Chorley, gave evidence as to the construction of the roof in question. It was a slated iron framework, and had been loaded with spinning appliances to rather more than half the calculated breaking weight, without allowing for the centre belt-holes in the rafters. The roof was both badly constructed and badly tied, and the rafters should not have been loaded more than a fourth of the breaking weight. Mr. Wood, of Bolton, a member of the firm who erected the roof, attributed the collapse to the hanging of pickers upon the rafters, for which strain the roof had not been calculated, and a verdict of "Accidental death" was recorded by the jury.

An iron drinking fountain has just been despatched from Glasgow to Ceylon, to be erected in Kandy, the coffee capital of the island, as a memorial of the visit of the Prince of Wales. The ground basin is 14ft. in diameter, and is octagonal in form. On the outer dwarf wall are four iron figures of boys bearing water-jars, and around the centre column are disposed four similar figures, holding dragon-heads, which likewise emit water. Groups of dolphins and storks complete the ornamentation. The work has been executed by Messrs. George Smith and Co., of the Sun Foundry, Glasgow.

At a public meeting, held at Sutton, Surrey, on Wednesday week, it was resolved to take steps for erecting a public hall in a leading thoroughfare, for the use of the inhabitants, and that for this purpose a joint-stock company be formed, with 4,000 shares, at £1 each. Two alternative sites were suggested for the hall, and a committee was nominated to take further preliminary measures, and report back.

The interior of the Alexandra Opera House, Sheffield, has just been renovated and redecorated. The ceiling is divided into 15 medallions, and 33 others ornament the walls. Each shows a bright ground of green or pink within geometrical designs of darker tints, with figures of goddesses, battle-pieces, and landscapes. No two are alike, and all were executed by hand by Parisian artists. Messrs. Smith, Ward, and Williams, of Sheffield, were the general contractors for the decoration.

Our Office Table.

ACCORDING to the London correspondent of the *Scotsman*, Mr. Layard, famous of old for his Assyrian researches, has succeeded in obtaining for the British Museum some interesting antiquities from the neighbourhood of Lake Van, which, it is hoped, will tend to throw light upon the ancient kingdom of Van, the people of which are known to have been consistent and formidable opponents to Assyrian rule, and to have contributed to accomplish, with the Medes and Cimmerians as allies, the overthrow of Nineveh in B.C. 609. The incoming of Oriental antiquities seems to know little solution of continuity, and it is only recently that the trustees of the British Museum received a valuable series of antiquities from the site of the ancient city of Zergul, in Babylonia, where they were unearthed by a party of Arab excavators working in the employ of a Hebrew dealer in antiquities at Bagdad. A torso in black basalt, of a figure of large size, is perhaps the most important object of the whole series, which includes a large number of bricks and sepulchral cones inscribed with the legends of several early monarchs. The torso in question bears the inscription of a king called Hammurabi, who reigned in the seventeenth century before Christ. This inscription is bilingual, and is one of the very earliest of the kind extant, and the occurrence in it of several new words and phrases renders it an object of much philological significance, as well as of much value in the way of illustrating the earlier history of the Babylonian empire.

The annual meeting of the Birmingham Builders' Association was held on Monday; the Vice-President (Mr. E. Davies) in the chair. The annual report of the committee, with the statement of accounts, was taken as read. In the report reference was made to the satisfactory settlement, by the standing committees, of various private disputes between employers and operatives.—The Secretary reported that a notice for the alteration of working rules had been received from the stonemasons, but from no other branch of the trade. The stonemasons asked for extra mess-room accommodation, and an attendant to assist in the preparation of their meals; also for alterations with regard to overtime and apprentices. The matter was referred to the committee. The following officers were elected for the ensuing year:—Mr. J. Garlick, president; Mr. J. Webb, treasurer; and Messrs. J. Barnsley and W. J. Whittall, auditors. The following gentlemen were elected as a committee:—Messrs. E. Davies, B. N. Smith, C. Jones, jun., J. Horsley, J. Jeffery, W. Partridge, C. Barker, T. Surman, J. Moffat, W. H. Parton, W. Bloore, W. Brooks, W. Sapcote, G. Lidzey, J. Preece, W. George, W. T. Bennett, and T. Dibble.—After votes of thanks had been accorded to the officers of the past year, the chairman presented to Mr. J. Webb, the treasurer, a testimonial, in the shape of a very handsome massive bronze timepiece and a pair of vases. The gift was accompanied by an illuminated address, expressing appreciation of Mr. Webb's long and valuable services to the association.—Mr. Webb suitably acknowledged the presentation and the meeting terminated. The fourteenth annual dinner of the association was given in the evening, in the Great Western Hotel.

WE have received from Messrs. W. Sutherland and Sons, of Manchester, one of their new patent door-handles, which we have fixed with some satisfaction to a door in our own office, the handle of which had long plagued us, as similar handles torment other people, by repeatedly becoming loose. We cannot see how the new handle can by any possibility get out of order; the only screws used in fitting it on are hidden inside the handle itself when the job is complete; and, in fact, to any one not in the secret, the appearance of the door-handle presents somewhat that of a magical puzzle—the difficulty being to guess how it can possibly be secured. One of the handles is really in two pieces, the hindmost part or cap screwing into the other. When this is removed a cylinder nut will be seen, which is exactly adjusted on the spindle to the width of the door, and then

fastened to the neck of the knob with two small screws. Replace the cap, and screw it tightly in, and the job is finished. The whole affair can be completed in less time than it takes to tell the way in which it is done, and the simplicity and safety of the handle are admirable.

The "Mayer Collection considered as an Educational Possession" is the title of a paper sent us, read before the Liverpool Art Club last Monday, by Mr. Charles T. Gatty, assistant curator of the collection. From our glance at the paper we should say the Mayer Museum—which contains a variety of precious relics from Egyptian tombs, and of our British, Roman, and Saxon ancestors, besides a valuable collection of ceramics, ivories of late Roman period or the 3rd century after Christ, personal ornaments, coins, bronzes, mediæval armour, and plate—must indeed be an inestimable boon to Liverpool. Mr. Gatty enters into the value of this and similar collections in the right spirit, and shows how they help to realise history by means of objects, how they encourage moral truths, and tend to elevate the tastes of the age. He advocates the classification of the archaeological specimens as much as possible, and explanatory catalogues with introduction.

The opening meeting of the ensuing session of the Institution of Civil Engineers is fixed for Tuesday, November 13th, when a paper will be read on "The Progress of Steam Shipping during the last Quarter of a Century," by Mr. Alfred Holt, M.I.C.E., of Liverpool. With a view to direct the attention of members to the obligation voluntarily incurred of doing all in their power to further the interests of the society by presenting good papers, the council have issued, under the title of "List of Subjects for Papers," a tractate which gives some interesting information respecting the funds under their control for the award of premiums. From this it appears that between £400 and £500 is available annually for rewarding the authors of "approved original communications." The awards take the shape of Telford and Watt medals (which are the most highly prized), instruments, and richly-bound books. There will also be adjudged this year the quinquennial Howard prize, of the value of about £80, "to the author of a treatise on any of the uses or properties of iron, or to the inventor of some new and valuable process relating thereto," such author or inventor being a member or an associate of the Institution.

We have more than once noticed the wall-papers manufactured by Messrs. W. Woollams and Co., of Marylebone, and have now pleasure in drawing attention to their new patterns of embossed flock papers, some of which have been sent to us for inspection. As a rule the patterns of flock paper are in very low relief, or if raised, as they sometimes are for painting, present but one plane to the eye. In those made by the new process the design is raised much higher above the groundwork, and is afterwards embossed or modelled by pressure, so that any effects can be reproduced with truthfulness of expression. The raised surfaces differ entirely from those of the imitation leather papers already in the market in that they are perfectly solid, and cannot be rolled out or destroyed by a careless paper-hanger. They are prepared in coloured flock, with or without gold, ready for use in every variety of tint, and also in white or undyed flock, for painting over if required. One pattern sent to us, ready for use in its present state without painting, especially deserves commendation. The groundwork is of a quiet green tint, with a surface like distemper, upon which are raised square panels bearing alternately conventionalised representations of birds and foliage. The others are buff or fawn colour—one with a lighted ground of the same tint, and the other with a gold setting—the former bearing leaves and foliage and the latter a geometrical pattern. These may be used as supplied, or may be painted over.

STONEFERRY, BY HULL.—Mr. Wellsted, surveyor to the Sculcoates rural sanitary authority, has prepared a scheme for the drainage of this district. Pits are proposed to be constructed for the purification of the sewage, either by precipitation or intermittent filtration, prior to its discharge into the river. The board have asked for amended plans, not including the Maxwell estate.

CHIPS.

The foundation stone of Silverdale Mission Church, St. Mary's-in-the-Wall, Hastings, was laid on Wednesday week by Mr. T. Brassey, M.P., who mentioned that during the past twelve months 500 additional houses have been built in the borough. The church, when completed, will contain two rooms, seated respectively for 300 and 150 persons, and in the basement, boys' and girls' school-rooms, &c. Mr. G. Stubberfield, of Hollington, is the builder.

The Town Council of Aberdeen, on Friday, accepted the tender of Mr. Fyfe for the erection of Ferry Bridge, subject to approval of the plans by the Board of Trade, and to any alteration that may be made in the southern accesses by Mr. Blyth, C.E., to whom the question has been referred.

New Board Schools were opened at Gaywood, near Lynn, on Monday week. They are Domestic Gothic in style, of red brick, with stone facings. The architects are Messrs. Adams and Sons, of Lynn; and the contractor is Mr. H. Farron, of Wisbech. The total cost has been between £1,000 and £1,100.

A ward for infectious cases is about to be added to the West Norfolk and Lynn Hospital, from the designs of Mr. Adams, architect.

It appears that the Chief Commissioner of Works has not abandoned the idea of the suitability of Parliament-square as a site for Cleopatra's Needle, and that, in order to judge what would be the effect of a greater elevation, the wooden structure in the centre of the square is to be raised several feet higher.

The Town Council of Bolton have raised the salary of Mr. Jonas Proctor, borough surveyor, from £300 to £400.

New Board Schools are in course of completion in the Cabrach-road, Rhymie, Aberdeenshire, from the designs of Mr. Anderson, architect, of Hartley.

A paper on "Roman Remains at Ramsgate" was read last week before the Ramsgate Scientific Association by Mr. Robert Hicks. He showed that while many isolated examples of pottery and vases of Roman workmanship have been found, together with bones in digging upon the West and Granville cliffs, there is no trace of a regular burial place, and all the finds are accidents. He suggested that Roman camps existed on each cliff in connection with the authenticated stations at Richborough and Reculvers, and urged the members to watch for relics of the occupation, wherever ground is broken for new buildings, as it is only by the preservation and comparison of patterns and vases that we can hope for further light on the subject.

It is proposed to construct a railway from Clarboston-road to the city of St. David's, by which a new and shorter route will be afforded to the Irish coast, and the city will no longer be the only one unconnected with the railway systems of the United Kingdom. Surveys are being carried out prior to depositing a bill.

The ancient parish church of St. Cuttbert, Elsdon, in Northumberland, has been reopened this week after restoration. It is a large cruciform structure, with north and south transepts, and is situated at the foot of the Cheviot Hills.

The new town clock and chimies in the parish church of Ware were finally set going on Saturday last, at 12 o'clock, the entire work having been carried out by Messrs. Gillett and Bland, Steam Clock Factory, Croydon.

The Exeter Town Council, on Tuesday, took their first action under the Artisans' Dwellings Act by determining on the removal of a number of houses in the lower part of their city, which now afford accommodation to about 300 persons. The cost of the purchase will be £8,000. The council will themselves become the purchasers, and the buildings will be erected by an artisans' dwellings company, who will undertake the work in consideration of the ground being leased to them in perpetuity at a nominal rent.

After a careful investigation of the various known systems of ventilation, Mr. G. Eastlake Thomas, the borough engineer and surveyor, has recommended the system introduced by the Sanitary Engineering and Ventilation Company for the ventilation of the Wolverhampton Town Hall.

The Foresters of Reading have decided to erect a hall in Urst-street for their meetings, &c., the frontage to be occupied by shops on each side of entrance to hall. Messrs. Brown and Albury are the architects engaged. The cost will be about £4,000.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,
Have REMOVED their SAFE and LOCK BUSINESS to new and extensive Premises,
128, QUEEN VICTORIA STREET, ST. PAUL'S, E.C.
Illustrated Price Lists gratis and post-free.
Makers to the QUEEN, H.R.H. the PRINCE OF WALES,
and the Bank of England.

Throat Irritation.—Soreness and dryness tickling and irritation, inducing cough and affecting the voice. For these symptoms use Epps's Glycerine Jujubes. Glycerine, in these agreeable confections, being in proximity to the glands at the moment they are excited by the act of sucking, becomes actively healing. Sold only in 6d. and 1s. boxes, labelled "JAMES EPPS & Co., Homoeopathic Chemist, 48, Threadneedle-street, and 179, Piccadilly, London."

Trade News.

WAGES MOVEMENT.

LONDON.—The wearisome struggle between the London masons and their employers have now reached its fifteenth week, and no signs of compromise or reconciliation are visible. The amount disbursed last week in strike pay was about £600. In addition to this there were payments of arrears and travelling expenses, bringing the total expenditure up to about £800. The receipts for the week exceeded £1,100, and the balance in hand leaves the committee worth a good sum to go on with. The masons of London in the society number 2,500, of whom only 1,700 are out on strike, the masters having conceded in the case of the others at once. Of these 1,700, 400 are known to have left London, 700 are employed in the metropolis, and the remaining 600 are supposed to be in receipt of strike pay, and are unemployed. This does not, however, represent all the men whom the strike committee has now to provide for. Besides Americans, there have been about 74 Germans, Italians, and Dutchmen sent home by the strike committee, or kept in London on strike pay, while special delegates and interpreters have been sent to different parts of the Continent to try to stop the importation of foreign labour. When the question was first talked of by the masters a guarantee fund was formed, to which £2,000 was readily subscribed. It is quite clear that, although it may have cost the masters a good round sum to bring these men over to England, it has also cost the strike committee a large sum to keep the imported men, or send them back. Up to the beginning of the week the masters have imported 239 men, of whom 87 only are at work in this country, and the remainder have been dealt with by the strike committee. The principal incident of the week has been the detaining of the tools of some of the American workmen, who having been brought to this country under a contract with Mr. Bird, declined to work for Mr. Booth. A summons was issued on behalf of the men. Mr. Flowers, the presiding magistrate, dismissed the summons, on the preliminary objection that the tools, being at the Temple, were not within his jurisdiction. An action at law is now threatened. More men from America have arrived during the week, but the strike committee seem to have gained over many of them.

MANCHESTER.—At a meeting, on Wednesday, of the Manchester and Salford joiners' strike committee it was announced that the executive council of the Amalgamated Society of Carpenters and Joiners had decided to levy a contribution of 10s. per man in aid of the strike fund. The number of members being 16,428, the amount of this levy would exceed £8,000; so that, including the contributions from their own society, and from other sources, the committee would be put in possession of about £16,000.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered) apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—ADVT.]

Holloway's Ointment is not only useful and certain of effecting a cure in outward diseases—it may be employed with like benefit in diphtheria, sore throat, hoarseness, bronchitis, pleurisy, influenza, asthmatical complications, and chronic coughs. The Ointment must be well rubbed into the skin adjacent to the disordered or diseased parts.

CHURCH METAL WORK

Altar Rails, Alms' Dishes,
Coronas, Candlesticks, Communion Plate,
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Screens, Trowels, Vanes, Gates.

SOLE AGENTS for Powell Brothers' Stained Glass, &c.,
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Estimates Furnished for Special Designs.

CHUBB and SON.

57, ST. PAUL'S CHURCHYARD, E.C.

LOCK and SAFE WAREHOUSE, 128, Queen Victoria-st., E.C.

TENDERS.

CAVERSHAM.—For three cottages adjacent to Caversham Mills for J. Lawes, Esq. Messrs. Brown and Albury architects:—

Cordery (accepted) £590

HASTINGS.—For the erection of a cottage in Gensing gardens, for the town council of Hastings:—

Parks, D. (accepted) £468

NORFOLK.—For building new auxiliary county lunatic asylum at Thorpe, near Norwich. Mr. R. M. Phipson architect; quantities by Messrs. Whitmore and Kenward:—

Martin Wells and Co. £45,450

Lacy 37,989

Youngs 37,900

Downing 37,686

Hawes 37,400

Martin, J. W. 35,897

Everett and Son 35,750

Cornish and Gaymer (accepted) 33,920

READING.—The Foresters of Reading have decided to erect a hall in the West-street for their meetings, &c. The frontage to be occupied by shops on each side of entrance to hall. Messrs. Brown and Albury are the architect engaged. The cost will be about £4,000.

THE BUILDING NEWS.

LONDON, FRIDAY, NOV. 16, 1877.

ARCHITECTURAL TRANSITIONS.*

THERE is a sense in which the whole history of architecture is a history of transition. Every style, from its origin to its decay, was in a perpetual state of change: something in it was always ceasing to be—something else was always beginning. This was the case even amongst those Eastern nations whose tastes and habits are the most permanent, and amongst whom a style of architecture had a life, not of centuries, but rather of millenniums. It is in virtue of this continual transition that it is possible, on internal evidence, to class even Egyptian works with some approximation to their actual date—Greek and Roman works with a closer approximation, and post-Roman works with a closer approximation still. In art, as in nature, there is no rest: to cease to move is to cease to be. But there are times when this movement is exceptionally rapid, when architecture changes as much in fifty years as it usually does in five hundred, and it is these times that are specially known as the great periods of Transition. The forces which produce architectural movement are then at the strongest, and there seems then to be the greatest chance of finding what they are and how they operate. Such periods have a natural fascination for those who, like the late Mr. Sharpe, concern themselves with the scientific analysis of art, and who hope, as he hoped, by learning something of the secrets of its growth, to do something towards making it grow again.

As we write the words we feel with a jarring recollection how far away all this is from the thoughts and feelings of a multitude of so-called architects. How many, or how few, of them care anything about making art grow again? How many, or how few, care anything about art at all, or seek to do anything beyond getting hold of as many buildings as they can, and despatching them as rapidly as possible, with a single eye to the profits of the transaction? One of the greatest marvels in old work is that we find so few traces of men of this sort; and it is this fact that makes perhaps the most vital difference between ancient and modern architecture. In walking through London streets one sees at a glance that a majority of the buildings have been turned, out as a matter of business, by designers who vividly realised that time is money, and who would think themselves fools if they spent a week on an elevation when they could satisfy their clients in a day. They build in haste, and those who employ them repent at leisure; and the result of their repentance is that newspapers, reviews, and public speakers abuse the whole profession because so many of its members debase it to the level of a trade. Somehow or other these tradesman-like architects did not flourish in ancient times. Probably they were sent back to their proper sphere, amongst the butchers and bakers and candlestick-makers. At present no one who likes to call himself an architect can be prevented from practising as such; and, no matter how ignorant or how indifferent he may be to art, the architectural societies will not exclude him on that ground. Possibly they have good reasons for their policy, and they may serve a variety of useful ends, but they will never as societies do much for true architectural progress, nor effect such an architectural

triumph as the Transition of the twelfth century. A dozen men, whom every one could name, if they would act together and unite their art-power for progress in one agreed direction, might change the face of the art-world as by a new creation. They, and the school of younger men who would group around them, might soon be known as the genuine architects of the day, and the world would learn to distinguish between the real and the sham. It is not that art-power has died out of this generation, though artists may be to pseudo-artists as less than one to ten: it is that they are scattered and separated, and that when they have sought to unite they have let themselves be swamped and outnumbered by the mere tradesmen of the profession. That is one reason why architectural progress, and especially that most rapid form of progress which we call "Transition," manifests itself so very feebly under present circumstances.

We turn, however, to Mr. Sharpe's collection of examples illustrating the Transitional epoch in Germany, which may suggest some other lessons as we examine it in detail. The drawings now published were made more than forty years ago, in the pre-restoration era, and therefore may in all likelihood show many interesting details that have since been improved away. The whole of them belong to the later stage of the epoch—to the end of the twelfth, and even to the early part of the thirteenth century. Thus, we find that the German masons were still building in a semi-Romanesque style, while the English and French ones had perfected the purest and noblest type of Pointed architecture. The Lanct period, Mr. Sharpe tells us, has left hardly any traces in Germany. There was a sudden leap in that country from the interesting but unripened art of the Transitional time, to the beautiful but already declining forms of the Geometrical German Gothic, in short, was to a great extent an importation—a sudden breaking off with the past, an abandonment of the native style, and a fresh start in imitation of what was being done abroad. Roughly speaking, the German Transitional style lasted through a great part of our Early English era, and then, instead of going on naturally through an Early German Gothic into a Middle Gothic one, it took an artificial bond, and passed over the former period altogether. Of course, this is only a general description of what happened, and the rule was not without exceptions. But, on the whole, it appears that the Germans did not like to part with that Romanesque style in which they distinguished themselves more, perhaps, than any other European race, and certainly more than they have done in any later style; and now that we can look back on all the results, we may find some reason to regret that they ever definitely abandoned it at all. Their Romanesque and Transitional buildings are, at any rate, picturesque and interesting; their Gothic ones are apt to be lifeless, wearisome, and mechanical.

The first building Mr. Sharpe illustrates is the church of the Cistercian Monastery of Ebrach, between Bamberg and Wurzburg. The date is pretty satisfactorily fixed at A.D. 1200. We notice first the general rule of the Transitional period everywhere, that most of the arches of construction are pointed, while most of the arches of decoration are round. Amongst the former are, of course, the arches of the nave arcades and the transverse ribs of the vaulting; amongst the latter are some of the blank wall arcades, and most of the arches to windows and other narrow openings. The diagonal ribs of the vaulting are semi-circular, as they are in many of the best Early Gothic examples everywhere. On the other hand, some of the decorative arches are trefoiled, all the mouldings fol-

lowing the curve of the foils, with no round or pointed arch above them. The shafts have a heavily moulded abacus, or sometimes a carved one, square on plan. The longer shafts are banded at intervals, with triple roll mouldings. Here and there is a moulded cap, with circular necking and bell, overhung by a square abacus. Externally the details are very plain. The doors and windows have square reveals, or mere splays, continued round the arches without impost or dripstones. The buttress is well developed, and there is no sign of the Romanesque pier from which it springs. There are several round windows—one evidently of later date; one with a sort of plate tracery, having a 12-foiled circle in the middle, and a border of quatrefoils around it; and one—perhaps the only original one—forming a sexfoil, in which each foil is itself trefoiled. The Early German love for cusping also shows itself in the west door of a side chapel, the outer arch of which resembles, on a very small scale, those to the west doorway at Amiens. Mr. Sharpe gives many details of carving from the interior. Some of them are very graceful; others, with their strap-shaped foliage and their ogee profile, remind us of certain Eastern types, and suggest that more than one kind of ornament may have been borrowed by mediæval church-builders from the unbelieving Saracen. There is a certain clumsiness about most of the details which is characteristic of all but the most refined class of Romanesque, and specially characteristic of it in Germany.

Mr. Sharpe next takes us to Kloster Hailsbronn, a Cistercian convent in Bavaria, on the high road from Anspach to Nuremberg. Of the period we are dealing with nothing here remains but the refectory. It stands, as usual, at right angles to the north walk of the cloisters; but, as is less usual, it is vaulted in one span from wall to wall, instead of having the customary row of columns down the middle. The most interesting feature is the entrance door from the cloisters. This has a trefoiled opening, surmounted by a circular arch of five orders. The three inner orders are well moulded, chiefly with round rolls, many of them scooped. One order has a pointed roll, and the jamb has several scooped rolls, with a side fillet. The Romanesque ogee is freely used. None of the arch mouldings run down to the impost. They terminate about a foot above it, with very gracefully carved stops. The fourth order is a boldly twisted cable moulding; and the fifth, or outer one, an ogee and chamfer. There are four jamb-shafts only; the inner one circular, the two next octagonal with very beautiful surface ornament, and the last eabled almost like the arch-mould above it. Each shaft has a rather clumsy moulded band midway between cap and base. The capitals have somewhat of the "cushion" profile, with a deep and elaborately moulded abacus, square on plan, and a kind of sunk dentil ornament on its lower member. There is a quantity of surface ornament, singularly resembling some of that in the half-Romanesque, half-Saracenic work of Southern Italy, round the trefoiled head of the actual door; and the carving of the capitals has a good deal of the same character about it. The type is not common in this country, but there is some approach to it at Sherborne and St. Cross. In Germany it seems to be the characteristic foliage of late Romanesque and Transitional times. Some of the moulded capitals have the peculiarity of a double necking, the additional one being placed about halfway up the smooth surface of the bell. The interior of the Kloster Hailsbronn refectory has some curious carved work in the shape of bosses and corbels. The former have an interlacing pattern of snake-like animals, which reminds us both of Japanese orna-

* Illustrated Papers on Church Architecture. By EDmund SHARPE, M.A., F.R.I.B.A. No. III. The Ornamentation of the Transitional Period in Germany. London: E. and F. N. Spon, 48, Charing-cross. November, 1876.

ment and of ancient Norwegian wood-carving. The corbels have the Saracenic-looking foliage we noted in the door—suggested by Byzantine work, no doubt, but derived, to all appearance, through an Oriental medium. One of the corbels has two tapering shafts, and we also find diminished columns in the chapel of St. Eucharius, at Nuremberg, and in the west doorway of St. Burchardt's church at Wurzburg. Other examples of German Transitional foliage are given—from St. Sebald's, Nuremberg; from Aschaffenburg Cathedral, from Naumburg, Arnstadt, and Maulbronn. At the first of these churches it is very Oriental-looking; in the next it begins to have a little more life and growth about it; while in the third we find one pier cap which looks almost Early English in its scroll-work, and which might almost pass muster amongst the carving of that period at Oakham Castle and elsewhere. We must not omit to notice, before leaving this book, the very odd and yet interesting chapel of St. Walderig at Murrhardt. It is square on plan, has a cross vault with no columns, and on the outside a great deal of curious and even elegant detail; but its external shape generally is so odd that hardly anybody but a mediæval German would ever have ventured to build it. An English or a French architect would have laughed the idea out of existence had it ever occurred to him: the German one carried it out in all seriousness, and never dreamed that he was perpetrating a practical joke six centuries long.

It was Mr. Sharpe's intention, as we learn from the introduction to this volume, to supplement it by some examples of the Transitional period in the north and west of France. We earnestly hope that any materials left for this purpose may by some means or other be made available for publication. They would probably be the most interesting of the whole series, and would throw the most light on the origin and early growth of the Gothic style. The most inexplicable thing about this origin and growth is the regularity with which they took place all over Western Europe. The change was not like any human revolution: it reminds us rather of some mighty movement in nature—such as the retreat towards the Pole of the European ice-sheet at the close of the last glacial epoch. It happened to every country, but not to every country at once. France was the first to break out from the winter of post-Roman decrepitude into the magnificent spring of Pointed art. England followed next, and last of all came Germany. Each went through a parallel phase, yet not the same. The Transitional style of England is different from that of France, and that of Germany is different from both. It was not a fashion that one land copied from another; it was a principle, by which each transformed its own fashions. We can understand perfectly well what it is for Mr. A. to travel and sketch in Italy, and to bring home an Italian-Gothic fashion; and for Mr. B. to travel and sketch in France, and bring home a French-Gothic fashion; but what happened towards the end of the twelfth century was nothing like this. The characteristic of the foreign style-importer is that he brings home bits of foreign detail and sticks them—often rather crudely and inappropriately—on to English buildings; but foreign detail is just what the twelfth century builders never did import. When that great transition, first felt in France, passed on to England, it did not bring a mass of French details with it. Across the Channel it had developed special types of moulding, special types of carving, special forms of door and window and buttress: but we do not find them copied here. We find, not these things repeated or imitated, but something parallel and analogous to

them; something with the same spirit, but with quite a different form. So it was, again, in Germany, when the Transitional earthquake wave reached that country, last of the three we have been comparing. German work is recognisable as German, French as French, and English as English, quite as much during the Transitional era as before it. No one even moderately acquainted with the architecture of these three countries can ever mistake the First Pointed style of one for that of another. Put side by side a capital from Laon, a capital from Lincoln, and a capital from Nuremberg, and the merest tyro can tell which is which—much more if you put doors or windows. Put side by side a piece of foreign detail, and the modern imitation of that detail, and they are not distinguishable save by the inevitable feebleness of a copy when compared with an original. An architectural transition and a copying of foreign fashions are two utterly different things, even when it happens, as it did in the twelfth century, that the transition spreads from one land to another.

This is another wonderful thing—that the transition should have spread in this way. There is a thousand times more traffic between country and country now than then, and yet there is far less real unity in style. Contemporary work in France influences us in England far less now than it influenced our ancestors in the time of King John. Somebody copies a bit of it now and then, with no great success and no brilliant result; but as a whole it does not affect us much more than if it had never been. The truth is, it is only new principles that really and permanently modify the architecture of a nation; not the importation of foreign forms and details. We may go to Italy and bring home oleanders and myrtles, we may plant them carefully in sheltered places, and by coddling them in summer, and matting them up in winter, we may keep them alive for a time; but myrtles and oleanders will never get a permanent place in the British flora. Suppose, however, that a discoverer, in Italy or anywhere else, should light on a new principle in gardening: suppose he shows us, for instance, how by intercrossing to get stronger plants or new varieties—we have now got something that will bear carriage. It is not a plant, but a principle which we can apply to all plants, and we naturally apply it to our own. We shall get new types by means of it, and healthy ones, and they will live and grow and flourish. Our gardens will be transformed and filled with novel beauties: so will foreign gardens if the same process is applied to them; and yet the English flora will remain English, and the foreign ones foreign. It was something like this that happened during the great Transitional period; it is something like this that we want to happen now. We have had Greek plants bedded out in Bloomsbury, and Roman plants in the City; Italian-Gothic plants in Westminster, and Parisian plants in Piccadilly; but the climate does not suit them—we cannot make them grow. It is enough to make one sick of importing plants at all: suppose we leave it off, and try if we cannot improve our native ones? The misfortune is, that to improve them we must think, and study, and discover principles, and this is what few people have the talent to do, while anybody can bring home a myrtle or an oleander.

PORTLAND CEMENT.*

MR. HENRY REID, C.E., well known as an authority on the subject of cement, a patentee of a process, and the

* The Science and Art of the Manufacture of Portland Cement, and some of its Constructive Applications. By HENRY REID, C.E. London: E. and F. N. Spon, Charing-cross.

author of a "Practical Treatise on its Manufacture," has just published another very exhaustive treatise upon the question. In a preliminary chapter the author traces the progress of the improvements that have been made since the time of Smeaton, whose Eddystone Lighthouse was the foundation of all subsequent knowledge of hydraulic mortars. Smeaton, as our readers may know, first showed the hydraulic value of combining carbonate of lime with clay—a fact which a simple analysis discovered to exist in all natural limestones. Before his time it was believed that the hardening property of lime consisted in the limestone. The investigation of the subject was followed by Higgins, in 1780; Parker, who converted the nodules found in the London clay; Dobbs, Aspdin, Vicat, Treussart, Pasley, and others, all of whom succeeded in producing an artificial hydraulic lime of various mixtures. Wren understood the value of shell lime, but it was generally thought before Smeaton's time that the hardness of the limestone was the cause of the mortar hardening. Mr. Reid in his work exposes the fallacy that Portland cement can only be produced by a combination of the chalks and clays found on the banks of rivers, such as the Thames and Medway, and shows that cement may be made from various other materials by proper machinery and processes. Cement manufacture has for years been a monopoly with a few who have not cared to extend their acquaintance with the properties of other ingredients and new machinery. Mr. Reid defines Portland cement as "a chemical product obtained by a preliminary mechanical combination of carbonate of lime with silica and alumina, which, after passing through the succeeding chemical stage of manufacture, may be described as a double silicate of lime and alumina." Generally its name has been associated with the Island of Portland. Many have supposed it to have been the product of the oolitic limestone of that place. Vicat was the first who conceived the plan of making rich common limes hydraulic by an admixture, both in their carbonate and hydrate states, with clays in various proportions. After a long chemical discussion of the nature of the change thus effected, it was conceded that silica chiefly imparts the hydraulic quality to rich limes. This discovery, no doubt, was the first great step attained in the manufacture, and we think that to Higgins's and Vicat's researches we owe more than even Mr. Reid contemplates. Before Vicat's time the hardening and hydraulic qualities were thought to depend on the oxide of manganese, and even Smeaton himself had not sufficient chemical knowledge to account for the change. The author says that considerable difference exists in the natural limes and cements, owing to the variable character of the mineral deposits, and it is seldom that they can withstand the ordinary tests applied to artificial Portland cement. Unless they are exceptionally good, he says "they may be regarded of less constructive value than the hydraulic limes of the blue lias and analogous formations." They require also to be freshly burnt and finely ground. Vast quantities of Portland cement are exported from this country. This is not from the want of facilities of production abroad, so much as from the reputation our Portland cement has gained, for both in France and Germany large manufactories exist. Mr. Reid says the home consumption, though large, is exceeded largely by the quantities exported to all parts of the world, including Australia and New Zealand. In a following chapter we have a valuable *résumé* of the natural sources from which the ingredients required in the manufacture of this cement can be obtained. These are carbonate of lime, silica, and alumina. But

we may leave this field of the subject to speak of the manufacture and other practical points. If London afforded every facility for manufacture it was favourably situated for the supply of the raw materials in the river Thames. Fuel could easily be had from the eoke which the gasworks supplied, while as a commercial centre and shipping port it was unrivalled. Hence, London is at this moment the head of the seat of manufacture, and foreign countries consider that Portland cement must come from London to be good. It is, however, a great mistake to imagine that only the Thames and Medway supply the necessary ingredients of this cement. Many rivers and creeks afford raw material of equal excellence. The clays generally combined with the chalk are called "alluvial," though, as the author says, a more accurate term would be marine clays. These are locally associated with the chalks, and contain, in the Thames and Medway deposits, from 64 to 70 per cent. of silica, 11 to 25 of alumina, oxide of iron, and other elements. Deposits of pit clays are to be found in different conditions of purity, ranging from the best porcelain clay to the most common kinds of earth, and the author gives valuable tables of analysis from different authorities. The gault deposit affords a good source. Describing other sources from whence silica and alumina can be obtained, Mr. Reid mentions flints as a valuable auxiliary to the cement-maker as containing nearly all pure silica. Flints are found in abundance in the upper beds of chalk formation, and when of the right kind, says Frühlhing, they are a good substitute for dear cements. He prefers fresh-dug flints from their original bed, reduced to a fine powder. One part of slaked lime, a quarter-part of powdered flints, and three parts of sand is said to produce a good hydraulic mortar. This flint cement is called "chalcedony cement." Mixtures of burnt flint or chalcedony cement, with lime in proper proportions, make a valuable cement for wall decorations in exposed situations. For this purpose the proportions are 1 part of lime paste, 1 volume of flint cement, and 2 parts of white sand. A whitening plaster of extreme hardness is the result. Ingredients may be found in the mixed deposits of silica, alumina, and lime in the lias districts. In Warwickshire, Northamptonshire, Derbyshire, Somersetshire, &c., there are clays or shales of a valuable kind suitable for cement-making. A large part of the lias shales consists of iron pyrites, which might be extracted for sulphur, leaving the finer shales for cement. The author refers to an excellent cement he has made from the toadstone and mountain limestone of Derbyshire. We may here mention that by Mr. Reid's patent a large quantity of cement is manufactured by the dry process. He observes, "the conjunction of the basaltic, or silica, and alumina-bearing rocks, with the crystalline chalk, render the manufacture of Portland cement in the locality of the Giants' Causeway a matter of easy attainment," and the analyses given show a large percentage of the requisite ingredients. The difficulty of fusing basalt is well known, but has now been overcome, and two processes are noticed by the author. A slate deposit of the carboniferous limestone formation, near Kendal, is mentioned as a cement-making material; so, too, in North Wales, the intersection of the limestone formation in the Vale of Llangollen, by the river Dee, affords facilities for manufacture. Lavas and puzzolanas are next mentioned as sources of supply, granites are discussed, and careful analyses given, and a favourable opinion is passed on Dr. Julius Aron's baryta cement, which exceeds the best Portland in its highest qualities. Baryta

was used instead of limestone, mixed with clay from the Oder, at Stettin. One sample broke with a tensile strain of 50,220 kilos. per square centimetre—a resistance never reached from lime cements. The proportions were 369 parts of baryta to 100 of clay; this strength was after four days' hardening. Gneiss is favourably considered as a cement-making source. Of artificial sources, we have slags of iron-making, waste lime heaps, gas and soap alkali, and alum wastes, which, as our author judiciously observes, can be profitably utilised for cement and concrete making. In the mining and coal districts the accumulated wastes are immense. Various analyses of the South Wales and other slags are given which show a large proportion of lime, silica, and alumina. Into the details of this question we will not follow the author, but we strongly recommend his remarks to manufacturers, architects, and engineers and others connected with building operations in those districts. Passing on to another part of the work before us, some useful hints are given to manufacturers on the selection of the ingredients. The impurities in chalk are harmless, and the best test is to examine its physical characteristics "by reducing a small quantity in water and decanting it until a residuum can be estimated;" but the insoluble part is not objectionable. In fact, chalk is not to be regarded with suspicion, though the smoothest and most soluble is best. More care is needed as to the mud or clay, and any used under the wet system should not have more sand than 5 per cent. when dug. As regards the limestones and shales of the lias deposits, it is stated their chemical value is so fluctuating that accurate analysis of each layer is necessary. Iron pyrites are dangerous properties when found to a large extent. In determining the proportion of raw materials accuracy is necessary, the ingredients are required to be fined down to meet the kiln agency, and an impalpable pulverisation is very important. In estimating the physical qualities of clays, Schöne's apparatus is recommended for testing the presence of coarse sand. The less sand a clay contains the better it is for cement, but very fine sand is comparatively harmless. The carbonate of lime value can be readily determined by Dr. Scheibler's apparatus, which is also illustrated and described minutely. As our readers know, three methods, known as the "wet method," the "semi-wet method," and the "dry method," are used for thoroughly combining the ingredients. It is shown that the first method, though perfect theoretically, and the least costly, is not always practically so, on account of the different specific gravities of the chalk and clay. The dry method consists of a mechanical reduction of the materials by machinery; but when slovenly done, or when the ingredients are too coarse, the process is defective. The powder can never be too fine. Another chapter describes the method adopted in the manufacture of cement, which is too well known to require mention. The different systems are mentioned in the manufacture, from the chalk and clay, the lias materials, and from the carboniferous limestones, after which the machinery required for reduction is considered—this, of course, depending on the system or method used. The New York, the Blake, Hall's, Broadbent's, Gray and Co.'s, "Excelsior," Archer's, Goodman's, and other stone-breaking and pulverising machines, are noticed and illustrated. The wash mill, millstones, kilns, and mode of burning are treated of in separate chapters. Brick-forming machinery is also discussed, and the modes of testing will be found thoroughly explained and interesting. Among

the appliances spoken of we find notice made of Professor Thurston's machine, and a machine made by the author in 1870, and used at the Rugby cement works, for testing briquettes under tensile strain, the most desirable test, in our opinion, for cement. The construction which is illustrated p. 288 consists of lever arms, which can be weighted. In speaking of cement testing, the author thinks that the duty of proving cement should belong to the producer, and not to the consumer, and we think this would be the fairer plan, seeing the difficulties and preliminary training required in testing accurately the very fluctuating qualities of cement, owing to chemical combination, &c. Mr. Reid proposes first a "thorough chemical examination by analysis of the cement, after exposure for a reasonable time to the atmosphere." Such a duty would necessarily require to be performed by one versed in chemical science. A standard analysis would be demanded by these means, and the limits of conformity to it should be prescribed. Fineness of powder can be tested by the sieve. "Secure," says the author, "the chemical accuracy of the cement, and your future path in its use will be an easy and comfortable one for the succeeding treatment after it has left the kiln is one entirely mechanical in its character. Should such an ideal paradise for the engineer and those under his authority ever be realised, the use of Portland cement would reach a point which, under existing circumstances, is impossible, for all distrust would then be removed." The author's method of testing, adopted by the Metropolitan Board of Works, may here be alluded to. He was consulted by Mr. Grant, in 1858, on behalf of himself and Mr. Bazalgette, to advise them; and he improved on the wasteful French system by devising a kind of moulding press which moulds the briquettes to any shape, and prevents fracture, as was the case by cutting the briquette for the clips. Mr. Reid replies to the objections urged to the form of the existing compound test adopted by the board at his suggestion. The bushel measure became the test because it was the best known one of capacity in the earlier contracts. Mr. Reid says:—"A considerable amount of adulteration was practised by the addition of various slags of high specific gravity to the cement, such addition enabling the mixture to pass the weight test, which in many cases is the only one capable of application. Under such circumstances a measure of capacity test would have been of little value if it had not been succeeded by a tensile one; and, again, even the adoption of that twofold test was dangerous unless completed by the hydraulic one." Light or under-burnt cement, containing a large percentage of free lime, is practised by some manufacturers, which the water test would easily detect. The mode of filling the bushel was never meant to be a faithful one—it was to be filled by a shovel from the heap, "stroked," not "heaped." The measure was not to be beaten or shaken while filling. Mr. Mann's test of specific gravity is described at length, Mr. Grant's experiments, &c., but we have no space to examine the author's conclusions further here. We have every confidence in recommending Mr. Reid's work to the attentive study of all manufacturers and consumers of this important building material. There is a practical ring and thoroughness about the work, showing that the author is perfectly *au fait* in his subject.

We cannot conclude without remarking the unfortunate disagreement evinced between the author of this work and another authority on cement testing—Mr. Grant—which has rather disfigured Mr. Reid's labours. The author refers disparagingly to the result of Mr. Grant's recent

experiments; points to their discrepancies, and the impossibility of establishing any fixed or reliable rules or formulae through their aid, and alludes to that gentleman's tests as evincing on his and his assistants' part a want of technical and chemical knowledge. Allusion is also made to the experiments made by Mr. Grant at the public expense, as "settling nothing, except that the Council of the Institute of Engineers considered their recorder worthy of reward and honour," &c. Mr. Reid, too, with doubtful taste, reminds his readers of a passage, and quotes it, wherein Mr. Grant admitted his indebtedness to him "whose early education and experience as an engineer led him to appreciate the value of Portland cement for engineering works, and whose aid was most valuable in the first stages of his inquiry." It would have looked rather more dignified if Mr. Reid had omitted this allusion, which is more acrimonious than called for, and which will in no way add to the value of his work.

ARCHITECTURAL ASSOCIATION.

THE Session 1877-8 of the Association was opened on Friday evening; the President, Mr. Bowes A. Paice, in the chair. The under-named 28 gentlemen were elected as members:—Messrs. Cecil H. Stock, A. H. Gansden, A. Robb Scott, H. G. Nixon, F. H. Gandin, E. C. Pinks, W. E. Clifton, J. S. Scott, A. G. Ellison, Philip Childs, jun., C. A. Ewing, J. C. Woods, A. B. Plummer, R. Bulkeley Whitaker, W. H. Duffield, E. H. Lloyd, A. G. Laxton, R. J. Beale, J. L. Houston, T. C. Cunningham, E. D. Hoyland, R. A. Briggs, P. E. Ridge, S. Bury, Clarence T. Coggin, A. H. Molesworth, and R. H. Kerr; nearly 30 other names were nominated for election at the next meeting, amid applause. Mr. PAGE, jun. hon. secretary, read a communication from Mr. C. L. Eastlake, secretary to the Royal Institute of British Architects, stating that the council had decided to place the library at the members' disposal on payment of a 5s. fee; and, on the motion of the PRESIDENT, seconded by Mr. J. DOUGLASS MATHEWS, a vote of thanks was passed to the Council of the Institute for the facilities for study thus afforded.

Mr. HAYES, hon. sec., proposed votes of thanks to the Institute for the use of their rooms on the occasion of the *conversazione* a fortnight previously; to those who lent objects of interest; and to the sub-committee, especially to their secretary, Mr. Stannus.

These were carried by acclamation, as was another proposed by the PRESIDENT, and seconded by Mr. POWNALL, to Miss Catharine Jones, for the series of drawings by her brother, the late Owen Jones. Votes of thanks were also proposed to donors of books to the library, on the motion of Mr. POWNALL. The PRESIDENT moved the adoption of the annual report, which was taken as read, and called upon Mr. DOUGLASS MATHEWS, as treasurer, to read the annual balance-sheet. This was of a highly satisfactory nature, showing a balance to the credit of the Association of about £88; and Mr. MATHEWS suggested that it would be well to depart from the usual plan of spending their funds as quickly as received, and to invest, say, £50 of the balance against any occasion of extraordinary expenditure. Mr. BIDDELL seconded the adoption of the report, and commended the suggested investment of funds. The report was adopted, and it was referred to the committee to report as to the advisability of investing a portion of the surplus. Mr. POWNALL read the annual report of the library, which was generally satisfactory; 1,239 volumes were issued or renewed, besides many parcels sent to the Birmingham branch. A balance of 14 guineas was carried forward, after purchase of new works. The reports of the various classes were then read and adopted. On the whole they were not quite so satisfactory as those of the last few years, a falling off in attendance being noted in several of the classes; especially was this the case in the classes of design. On the motion of Mr. PAGE the report of the Birmingham branch of the Association was taken as read, and adopted.

The preliminary business concluded, the PRESIDENT delivered his Inaugural Address. Having suitably acknowledged the compliment that had been paid him by election to the chair, the President proceeded to consider

THE WORK OF LAST SESSION

Within the Association; and congratulated the members that by the revision of their rules they had now a clear, complete, and concise code, and that so satisfactory a balance-sheet had been presented by the treasurer. By a curious coincidence both the senior and junior societies had been setting their house in order at the same time. The revision of the by-laws of the Institute had special interest for the members of the Association in (1) the new relations of the Institute to kindred societies; (2) facilities for study; and (3) conditions of membership. 1. Both the Institute and the Association were agreed that amalgamation was neither practicable nor desirable, and that each society had and should keep to its own special sphere of usefulness. The Institute had therefore abandoned any attempt at being an educating body by abolishing the "students' class." 2. The Institute had granted the members special facilities for study by allowing access on easy conditions to one of the finest art libraries in the kingdom, and by extending the hours during which it was open. 3. For membership as an associate of the Institute, the nomination paper might now be signed by one fellow of the Institute and the President and at least three members of the committee of the Association, instead of by three fellows as hitherto.

OPPORTUNITIES FOR STUDY.

As to their own classes, the reports had shown that, while well attended during the session, there had been a tendency in members to neglect to interest themselves in their management. He urged every young member not to delay entering one or more classes; the knowledge thus gained would be of inestimable advantage later on in life; but the longer joining was put off the more difficult would it become, and lost opportunities could not be regained. While on this subject he would strongly recommend attendance at a course of lectures on the anatomy of the human form: a knowledge of this subject, especially of the proportions of the body, was of great assistance to the architect. A most valuable course of lectures was given at South Kensington by Dr. Bellamy every Thursday evening during the winter months, admission being gained at a merely nominal fee. But it would indeed be an omission on his part did he not also mention amongst opportunities for study the Architectural Museum at Westminster, where the student, in Sir Gilbert Scott's words, "would find himself surrounded by innumerable models from the most famous buildings, forming a complete illustration of the carving and other arts of the middle ages, and, in a less degree, of those of classic antiquity. The more the student examined the contents of this simple building, the more would he appreciate, and the more surprise would he feel at their number, variety, and beauty." It would be difficult to over-estimate the benefit arising from a systematic study of architectural details arranged in chronological order; and with a view of increasing the interest of students in the valuable and extensive collection of casts and examples a sketching club had recently been formed in connection with the museum. A prize of five guineas had been offered by the council for the best series of sketches shown at the annual exhibition; to be executed from objects in the museum in pen and ink, so that if successful the young student might have the additional pleasure of seeing his sketches reproduced by photolithography. And now, borrowing terms from the President of the Institute, he would say a few words on the "outer life" of the profession, rather than the "inner life" of the Association; and here he could hardly doubt that his remarks would not meet with unanimous approval; nor could he hardly wish it otherwise, for were all agreed discussion would cease, and reform might be hastened on which would eventually prove a mistake. First, then, in respect to

ARTICLES AND PREMIUMS.

He thought the present system of binding a young man for four or five years, and paying a large premium at the outset, was the bane of the architectural profession. It was entered by many with too much of the mercantile spirit; it was regarded as a sort of "paying concern;" whereas the majority of those who have been in the profession for some time know that it requires years of unceasing but loving toil to become the fortunate possessor of even a moderate income. He would ask, then, should there not be some means whereby a young man's capabilities and fitness for study could be tested previously, not only to his being bound for a series of years, but also to the payment of a premium? A boy might be made to learn carpentry without either real feeling or devotion; but he doubted if a boy or a man without such qualities could be taught the practice and study of architecture. Granted that a young man was desirous of entering the profession, and had the preliminary qualifications of an ordinary education; was thoroughly acquainted with those books of Euclid usually read, had attended courses of lectures in natural philosophy, had an acquaintance with the modern languages, and, above all, had a taste for drawing and a knowledge of the use of mathematical drawing instruments—it would yet, he imagined, be desirable that such a one should enter an architect's office as a probationer for one year, rather than at once be bound for a much longer period. If at the close of the year—having seen the ordinary routine of business, attended lectures at University or King's College, and the Association's elementary class of design—the student were satisfied that he could follow the profession with earnestness of heart, then and not till then should he be articleed. He would make entering the profession as an articleed pupil conditional on passing a preliminary examination at the Institute. He did not, however, in these remarks intend to cast any insinuation upon those whom he addressed, nor upon architectural students in general. He believed they were now more earnest and active, and more anxious for opportunities of study than at any previous time; but he wished to improve their position, firstly in relation to senior members of the profession, and eventually in the eyes of the public. As to the mode in which reform could be carried out, he then would suggest that the premium should be paid annually as a college fee rather than in a lump sum, and that the student should not be articleed to the architect with whom he served his probationship, as by a change he would have opportunity for seeing another class of work, thereby assisting his education, and guarding against loss of individuality. Another subject of great interest to the younger members of the profession was that of

COMPETITIONS.

And he referred to it, because it was from the young men just starting in life that the ranks of the army of competitors was largely recruited; for by this means those acting as assistants, or just commencing for themselves, hoped to get "a connection." He would not anticipate the report of the sub-committee recently appointed to consider whether it was desirable that the Association should, as a body, take any action as to competitions, except to express *en passant* his own view, that it should be left in the hands of individual members to uphold the honour and dignity of their own profession. On the broad question of the system of open competitions as mismanaged at the present time, he would boldly assert it to be not only—like the modern mode of articleing—a bane to the architectural profession, but to the art of architecture. Competitions were, it was argued, a means whereby a talented young man might attain a position which want of influential friends would otherwise prevent his reaching. Was such the case? Were not the promoters of these open competitions in a majority of cases unable to estimate the advantages of a well-considered plan over the disadvantages of another which a professional eye would alone detect? Was it not the experience of most that vulgarity rather than refinement in design won the day? The best designs were not as a rule selected, and the

talented young man was doomed to disappointment after disappointment, with bad effect to his mind. Let the young architect but have patience, and he would be sought after without having to go through the throes of a competition. Let him be thoroughly earnest in his work, let him make the most of his time during his term of pupilage, let him act for a few years as an assistant, and then let him take an engagement for three days a week, admitting of his making and keeping appointments, and he believed work would come to the architect sooner or later, and he would feel a pride in having attained a position simply through his own earnestness, patience, and love and devotion for his art. Another argument in favour of the competition system was, that for public works it was calculated to insure an erection more perfect for its purpose than an ordinary course of appointments would be likely to do. He was not prepared to accept this, for an architect would take a much greater interest in his work if he felt that he was entrusted with a public building without competition, not only in consequence of the confidence placed in him, but also because he would remember that his reputation and future success were at stake. Let his plans be submitted to a consulting architect, or to the Council of the Institute, and the architect would doubtless gladly modify his design in accordance with the suggestions of the referees, so as to thoroughly satisfy his clients before the works were commenced. Again, it was better to work out a scheme calmly and quietly, and without hurry, than under the "high pressure" system and bustle of a competition. Farther than this, the competitor embarked in ignorance, not knowing fully the requirements of the promoter, his preference, if any, for style, or the building materials of the neighbourhood at his disposal, and their prices. He might spend many hours over the conception of some wonderful dream of the Queen Anne period, to find, when the designs were submitted, that this was the only style distasteful to the promoter. Once more, the system itself, unless based upon a somewhat Utopian ideal, necessitated a vast expenditure of time and trouble, not to say skill, by a number of persons, all of whom could not possibly receive any adequate return. In support of this he would take a by no means exaggerated example of the ordinary competition advertisements:—To architects and others.—Designs are invited for such-and-such a building, in such-and-such a town. And these are the conditions: The site being at the corner of a street, two elevations are required. Plans of six floors, two sections, a block plan of site, showing the drainage, &c., and a perspective view (which if the competitor choose, he may take an extra day or two over by finishing it in pen-and-ink instead of colour). Premiums of £30, £20, and £10 respectively, will be given for the three selected designs, which will become the property of the promoters, who do not bind themselves to employ the architect whose design may be considered best; but in the event of their doing so, the premium will merge in the commission. Now, this bait of premiums really meant that at least thirty competitors would be beguiled, and that, therefore, twenty-seven of them would receive no remuneration whatever. The other three competitors would receive £60—an average of £20. It might be assumed that each set of drawings, including working out the preliminary sketches, would take one man at least thirty days; consequently his remuneration would be at the rate of 13s. 4d. per day. Thus even, the successful competitors would be out of pocket. Yet this was by no means an uncommon example of the indignity so frequently offered to architects. Let them look at the same example in another light. Eleven drawings were required, and there were thirty competitors; consequently 330 drawings were submitted. He would assume that this number of drawings would take one man at least two years to complete. What would be his remuneration? £30 a year, without board and lodging. Were his hearers going to be so dishonest as to assist in supporting such a system—were they going on wasting time, thought, and energy on drawings which, however well-thought and artistic, would eventually be consigned to the

lumber-room? Were they going to cast their pearls before—those who could not appreciate them? No; he was sure that all present would rather do all in their power to check such a scandal to the profession. The system had been tried and had failed notably, in the professions most allied to architecture—those of sculpture and painting, notwithstanding the fact that the sketches or models of a painter or sculptor had an intrinsic value of their own, whereas those of an architect had practically none. If, however, it were found that competition must in some cases be resorted to, it should be on the principle of submitting preliminary pencil sketches, and a selection of competitors, made on the merits of such sketches, should be instructed to prepare a second set, to be finished drawings, each of whom should receive an honorarium towards defraying his expenses. It should be considered below professional dignity to enter upon a competition without such a recognition of services rendered; and no competition should be entered upon except under proper precautions, and a guarantee for a fair adjudication.

SUGGESTED PUBLICATION OF TRANSACTIONS.

By a glance through the syllabus for the ensuing session he thought they might fairly anticipate some most interesting and profitable evenings, and he thought, notwithstanding the careful manner in which their proceedings would no doubt be reported in the professional journals, it would be a great gain to the members of the Association were they published in a more convenient form. The form which suggested itself would be in the shape of an "Architectural Association Magazine," to be edited by a sub-committee appointed for the purpose. He believed such a magazine, if successful, would be self-supporting. In conclusion, the President addressed himself to the younger members by way of encouraging them not only to stick to their work, and to take every opportunity of advancing themselves in the knowledge of their profession, but by no means to neglect recreation, healthy exercise, and amusement.

Mr. J. D. MATHEWS proposed a vote of thanks to the President for his address, which had dealt with questions in which all were practically interested. A return to the old system of apprenticeship had been advocated, in preference to articling; but the whole system of apprenticeship and articling seemed to be falling to the ground, not only in the profession, but throughout the building trade, as architects knew to their cost; for to this decay of apprenticeship was due one-half the difficulties and nine-tenths of the anxieties of architects at the present time. He could not follow the President's ideas as to a probationary system, and removing the young man at the end of his year of probation to another office; very few architects would care to take youths into their offices on such conditions. At the expiration of his term of articling it was doubtless the best thing for the young man to engage himself as assistant at another office. The plan of a partial engagement in an office for some days a week after setting up in practice was one that worked well in practice, both for the young beginner and his employer. The plan carried out a theory he had suggested some years since, that young men should associate themselves, when practicable, with older ones—a partnership of designing and supervising architects. He did not think a magazine was needed, or would be very successful.

Mr. STATHAM, in seconding the vote of thanks, remarked that the very general tone of melancholy in the class reports was perhaps one of the most hopeful signs of progress.

Mr. CLARKSON did not think it desirable that their transactions should be published; it would be a very good thing indeed if the amount of architectural pabulum could be condensed; they were rather overburdened with transactions and reports. As to the President's architectural pupilage scheme, it might be practicable if architects and pupils would take the necessary trouble involved. A great difficulty was that parents, guardians, and youths to be articulated knew so little of what was expected in an architect's office; a text-book, giving concisely a complete explanation of what

an architect wanted from the pupil, was greatly needed.

The vote of thanks having been put to the meeting, and carried by acclamation, the President briefly replied, and the proceedings terminated.

BUILDERS' BENEVOLENT INSTITUTION.

THE 30th annual dinner in aid of the funds of this charity was held on the 8th inst., at Willis's Rooms, King-street, St. James's; the President, Mr. William Higgs, in the chair.

The CHAIRMAN, in proposing the toast of the evening—"Prosperity to the Builders' Benevolent Institution"—said he must congratulate all concerned on the continued progress of the institution, which had now been in existence thirty years. During that time they had spent upwards of £20,000 in payment of annuities to pensioners, and the funded capital of the charity had now reached the like noble sum of £20,000. Now that this point had been attained, many important alterations had been made in the rules of the institution during the past year. It had been decided to spend all future donations, as well as subscriptions, in furtherance of the objects of the institution, instead of funding them as heretofore. Legacies would continue to be funded as hitherto, and perhaps some of those present might remember the institution when making their wills; but he should recommend them to aid the institution while alive, to see the good that could be done by their help. It had been agreed to increase the amount of the pensions to £30 instead of £24, for the men, and to £24 instead of £20 for the women. It had also been decided that, on the death of a male pensioner, his widow should have a man's pension. Under the former arrangement it must have been a very great hardship for the widow of a pensioner to find herself, not only bereft of her husband, but penniless in the world. This was a change, then, that would commend itself to the approval of the supporters of the institution. A pleasing incident in the report was that one who was until recently a pensioner on the fund of the institution, had been able, through altered circumstances, to withdraw from receiving the pension, and to present the institution with a donation of five guineas as a token of gratitude. During the time the institution had been in existence great good had been done to members of the trade, who, in the decline of life, were unable to help themselves, owing to misfortune. One hundred and two pensioners had received the charity of the institution to the amount already named, and had died at a good old age, averaging 77 years. Three candidates were proposed for the next ensuing election—one man and two women—of whom the committee had at first only proposed to elect one man and one woman. But which of the two females to reject it was difficult to choose. Both were widows of gentlemen at one time in good circumstances, and subscribers to the institution. One was a widow of an old friend of his, Mr. Ebbs, of Aberdeen-place, Maida-hill, who was a subscriber to the institution from its commencement, and continued to be a subscriber for something like 24 years. He (the chairman) had persuaded the committee to elect all three candidates, and they had consented, provided the donations and subscriptions obtained that evening amounted to £500. He would, therefore, strongly urge all present to do their utmost, so that the two widows should not be placed in competition, and one of them rejected. He was willing to do his part in the matter, and in commending the toast to their notice, he would only say that "there is that scattereth and yet increaseth, and there is that withholdeth more than is meet, but it tendeth to poverty." The toast was drunk with all the honours.

A little later in the evening the lists of subscriptions and donations were read by the secretary, Major Brutton. The total amount obtained was rather more than £600. The President's list amounted to £290 17s., including his own handsome donation of £105.

The Dover Town Council have accepted the tender of Mr. Jabez Hall, of Queenborough, for the erection of sea defences at East Cliff.

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ILLUSTRATIONS.

ALL SOULS CHURCH, HARLESDEN—PROPOSED STAINED GLASS WINDOW FOR ST. PAUL'S CATHEDRAL—"BUILDING NEWS" CLUB DESIGNS FOR Lych GATE—VILLAS AT BEDFORD-PARK, TURNHAM-GREEN—NEW BOAT AND CLUB HOUSE, PUTNEY.

OUR LITHOGRAPHIC ILLUSTRATIONS.

DESIGN FOR MEMORIAL WINDOW IN ST. PAUL'S.

AMONG our illustrations will be found a design for a stained glass window, which appeared in this year's Royal Academy Exhibition, and the history of this is not without interest. It appears that the Society of Arts, wishing to commemorate the recovery of the Prince of Wales, and thinking that a stained glass window in the church which was the scene of the public thanksgiving would be the most appropriate memorial, applied to the Dean of St. Paul's, who cordially accepted their proposal, and granted the window of the north transept as the site. Mr. Moody, of the South Kensington Museum, was asked to make a design. In due course this was submitted to the Queen, and also to the Prince of Wales, and, with certain modifications, had the honour of their approval, as well as that of the Dean, and there seemed every prospect of its being carried out; but at that time the whole control of the proposed decoration of the Cathedral had just been made over to a committee, who employed Mr. Burges to produce a design, and he objected to one subject as not being of a character suitable for filling so important a window as that in the north transept. Thus the very laudable scheme of the Society of Arts was put on one side, and though their proposal has from time to time been renewed, nothing has been definitely settled as to its execution. As will be seen from the drawing the subject chosen is the very appropriate one of the raising of the widow's son. Round the figure of our Lord, who is represented as touching the bier, are grouped the Apostles, who show by their varied attitudes their astonishment and awe; the widow, in a transport of joy, stretches out her arms to embrace her son, who throwing off his shroud gazes at his Saviour with an expression of wonder and devotion; the bearers and followers round the bier exhibit every gradation of gratitude and joy, while one near our Lord seems to direct his attention to the group below. The Queen and the Prince of Wales are represented as kneeling at a fald-stool; behind the Prince is the Princess of Wales with her children, while the Queen is supported by a group which is intended to represent every rank and class of her subjects. The background is a rich architectural composition after the manner of Holheim—by a considerable effort of imagination we may take it for the "gate of the city." Part of this is somewhat too florid—but with this modification—the design is not unworthy of the occasion and the site. We are glad to see the use of plenty of white glass, the want of which in the windows at the east end of St. Paul's is so fatal to the beauty of the architecture. The Germans may, perhaps, excel us in drawing, but they are too apt to cover the glass with stippling, which destroys its transparency. Owing to this, as well as the want of white, especially in the margins, not only is the whole east end wrapt in gloom, but the deep jaubs of the windows, which used to give

such character to the architecture, are so scantily illuminated that they can scarcely be seen.

CHURCH OF ALL SOULS, HARLESDEN.

THIS interesting new church is about to be erected at Harlesden, from the designs of Mr. Edward J. Tarver, architect, who has endeavoured to produce a cheap church, well suited for the requirements of a large and poor parish. The chief feature in the plan, as will be seen by the illustrations we give to-day, is the octagonal nave, by which arrangement nearly all, if not all, the congregation obtain a clear view of the altar and pulpit. The construction of the roof which covers the octagon is clearly shown by the sections we give, while the interior effect is shown by the view published in the BUILDING NEWS of July 6th last. The exterior given to-day is from that which was exhibited at the Royal Academy this year. For detailed particulars of the building we refer our readers to those which accompany the interior view, mentioned above.

"BUILDING NEWS" DESIGNING CLUB.

THE designs for a lych gate, illustrated to-day, were reviewed in these columns a fortnight since (page 445).

VILLAS, BEDFORD-PARK, TURNHAM-GREEN.

THE illustration which will be found among our plates to-day forms the second of the series, commenced last week, of designs by Mr. R. Norman Shaw, A.R.A., for the artistic houses now being built on the Bedford-park Estate, Turnham-green. The materials are red brick and tiles, the woodwork being painted white. For further details see the article published on Friday last (p. 451).

NEW BOAT AND CLUB HOUSE, PUTNEY.

A few weeks since* we gave a critical review of all the designs submitted in competition for the New Club and Boat-house, about to be erected at Putney by the Thames Boat-house Company. To-day we publish the selected design, which was submitted by Mr. H. Townley Sugden, architect, of Buckingham-street, Strand, under the motto of "Stroke." We also give a second perspective, showing the author's alternative design. The architect, in his report, is of opinion that the building can be erected for £2,000. The boat-house, covering the main area, is 72ft. long by 62ft. wide. The club-room is 45ft. long and 22ft. wide, and commands a view of the river, as also does the committee-room, which is 22ft. long by 14ft. wide. The materials proposed are stock brick for the upper part of the walls, and concrete for the work below the ground-line. The floor of the boat-house is to be finished in asphalt. The windows of the club and committee-rooms are to be fitted with patent casements. The several arrangements are clearly shown by the two plans which we publish. We propose to give another of the designs submitted at an early date.

NATURE GRAINING.

FROM a number of notes on "The World's Work" we take the annexed account of nature-printing in graining:—

"Copies from the natural grain of woods are now used in place of the generally inartistic patterns employed where graining is done by hand. Graining, as commonly done, is, in an artistic sense, vicious, because false, and by copying directly from nature the work will at least have the merit of truthful design. A slab of wood of fine grain is selected, planned, sand-papered, and then rubbed with a stiff brush to clean the pores of the wood. A single coat of raw oil is then applied, and at once cleaned off with benzine. The graining colour, mixed with boiled oil to the consistency of cream, is then brushed over the wood, and at once scraped off with a piece of stiff leather. This leaves the pores of the wood filled with the colour and the surface clean, after the manner of some kinds of engraving. A clean printer's roller is then passed over the wood for a distance equal to its circumference, or one revolution. The elastic roller thus takes up the colour from the pores of the wood, and, on moving the wet

roller over wood or paper, an exact copy or transfer of the natural grain is reproduced. This copy, if heavy, will give another to paper laid over it while it is still wet. The roller, when carefully cleaned, may be used again, and perhaps a number of times, till the colour lodged in the pores of the wood is exhausted. For graining panels, skirtings for walls and wainscots, transfer rollers of various forms may be used, as the character of the surface to be grained suggests."

SCHOOLS OF ART.

LEEDS.—The annual meeting of the Leeds School of Art was held on Friday last. From the report it appeared that during the year there had entered a total of 660 students. The number of works sent for examination at South Kensington was 2,596, produced by 443 students, or an increase of 435 drawings and 41 students. Out of the 443 students, 221 were of an advanced class; of these 13 were selected to compete in the national competition, in which they had been more than usually successful; one student having had the honour of carrying off a silver medal, whilst two others took Queen's prizes. This is the first year the Leeds School has achieved so high a reward.

WATERFORD.—The annual meeting in connection with the School of Art and Design was held on Wednesday week. The report showed that the school has continued in good working order throughout the year, and that the attendance of pupils has been good. Six prizes were awarded by the Science and Art Department in the April competition—three for shading from flat, and three for drawing from cast. Several prizes and certificates were also awarded for freehand, model, perspective, and geometry in the May examinations. Addresses on the progress of art in England were delivered by Alderman Freeman, who distributed the prizes, and Dr. Scott.

WINCHESTER.—The annual meeting of the Winchester School of Art was held on Tuesday week. The committee report that the school has been attended by 118 students, of whom 61 belonged to the morning, and 57 to the evening classes. The usual examination took place on April 30th and May 1st. 26 students sat for freehand drawing, 15 for model drawing, 7 for geometry, 2 for perspective, 1 for advanced perspective, and 1 for anatomy. The treasurer's account showed a balance in hand of £327 10s. 2d.

ARCHÆOLOGICAL.

ST. ALBAN'S.—Last week, while a labourer was ploughing in a field at St. Alban's belonging to Mr. C. Woollam, immediately to the east of the fosse outside the eastern wall of Verulam, he came upon a grave composed of Roman brick. The structure, which stood on a slope, was rectangular, with its long axis north and south, the lowest course of bricks being hollow, of the hypocaust kind, the remainder, for the most part, ordinary tile-shaped ones. The sides were built up to the height of about 1ft. with bricks and mortar, and the tomb was covered in by an arrangement of bricks, having the upper courses overlapping the lower, so as to form a sloping roof; outside these, the roof was coped by similar bricks laid slanting, and in place of a ridge-piece was a course of flanged or channeled bricks, surmounted by the upper edge of the slanting ones. The interior measurement was 6ft. 10in. in length by 1ft. 9in. in width, and the same in depth. Within was found the skeleton of an adult male, in fairly good preservation; on the right side of the skull were the bones of a bird, and near the right hip the broken fragments of a small vessel of baked clay, to which bits of burnt matter were found adhering. Numerous iron nails and one or two small pieces of wood were also discovered. The floor was formed of a bed of mortar, having under it one of chalk. The interment seems likely to have been that of a Roman not earlier than the year 400 A.D.

Drainage works are about to be carried out by the Folkestone Town Council in the district of Foord, under the supervision of the borough surveyor, Mr. W. G. Springall.

* See BUILDING NEWS, Oct. 26th, 1877.

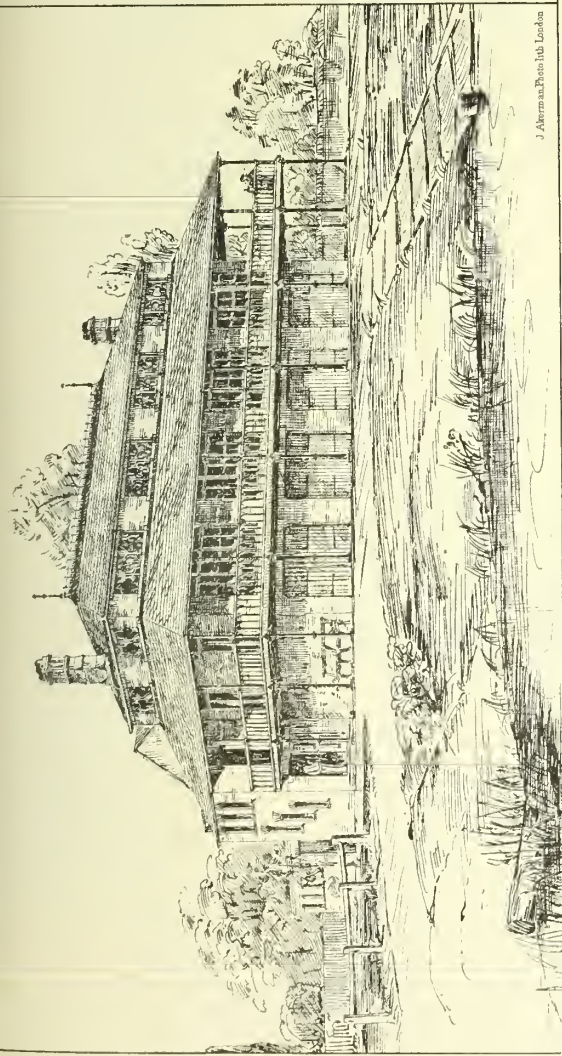


STAINED-GLASS WINDOW PROPOSED TO BE PUT UP IN S·PAUL'S CATHEDRAL BY THE SOCIETY OF ARTS TO COMMEMORATE THE RECOVERY OF H·R·H· THE PRINCE OF WALES

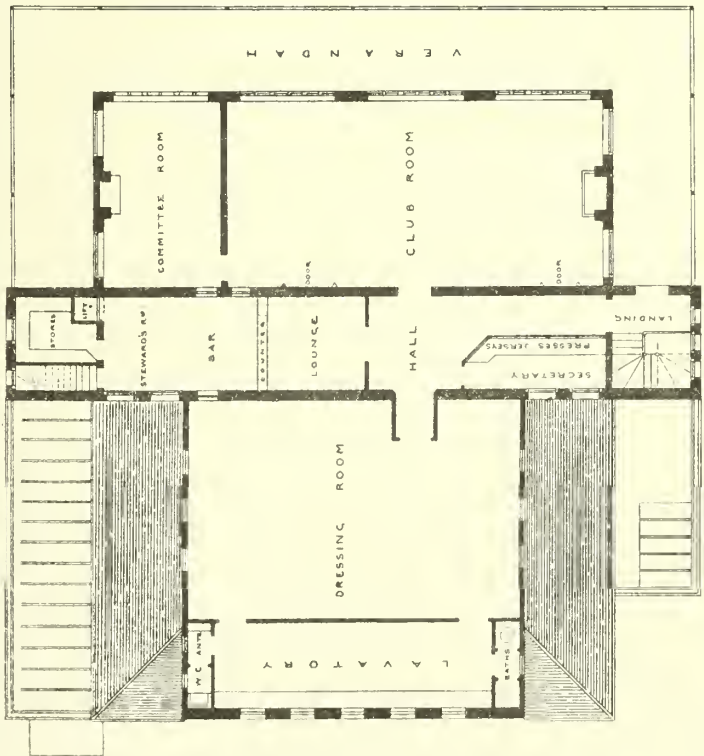
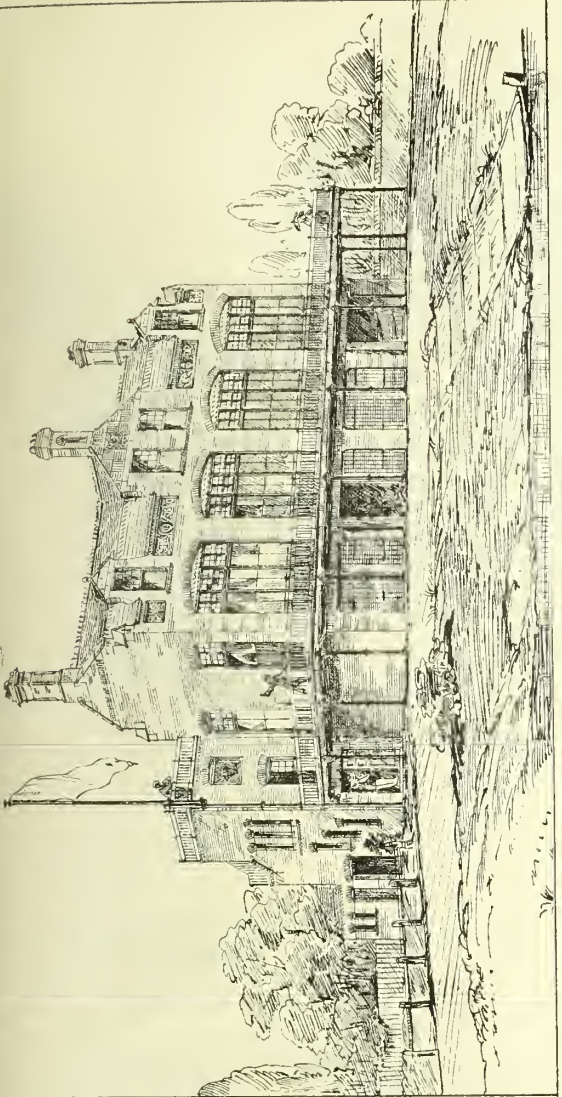
MAURICE D'ADAMS:

DESIGNED BY F. W. MOODY

Photo Lithographed & Printed by James Ackermann, 6, Queen Square, W.C.

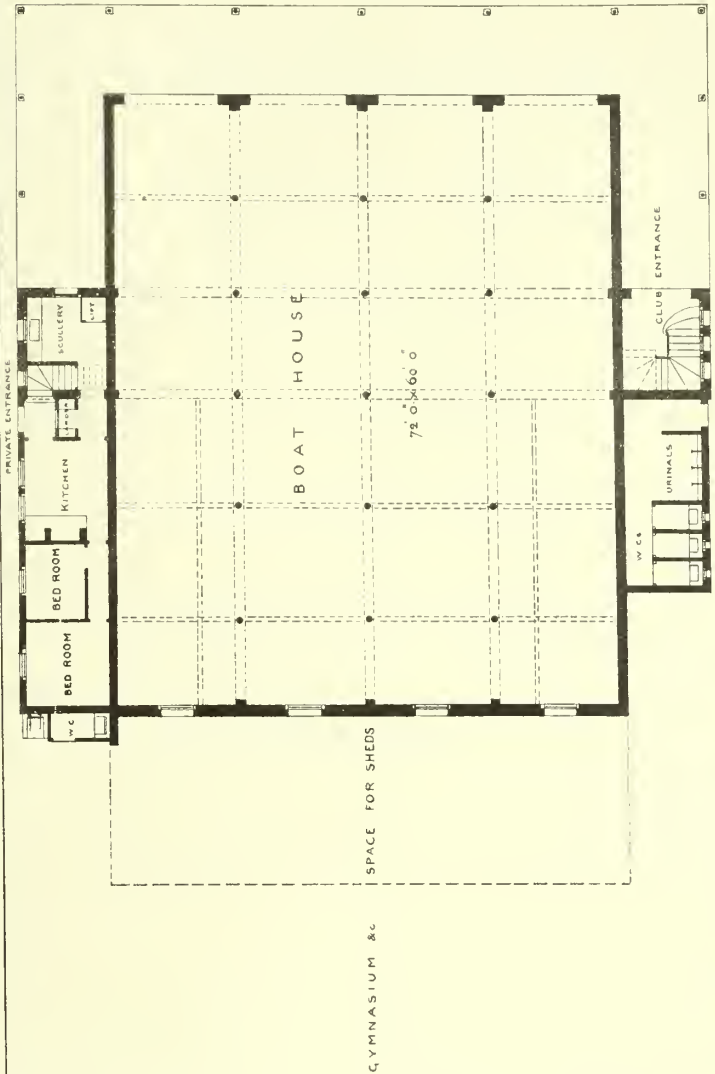


J. Ahern & Partners, London



FIRST FLOOR PLAN

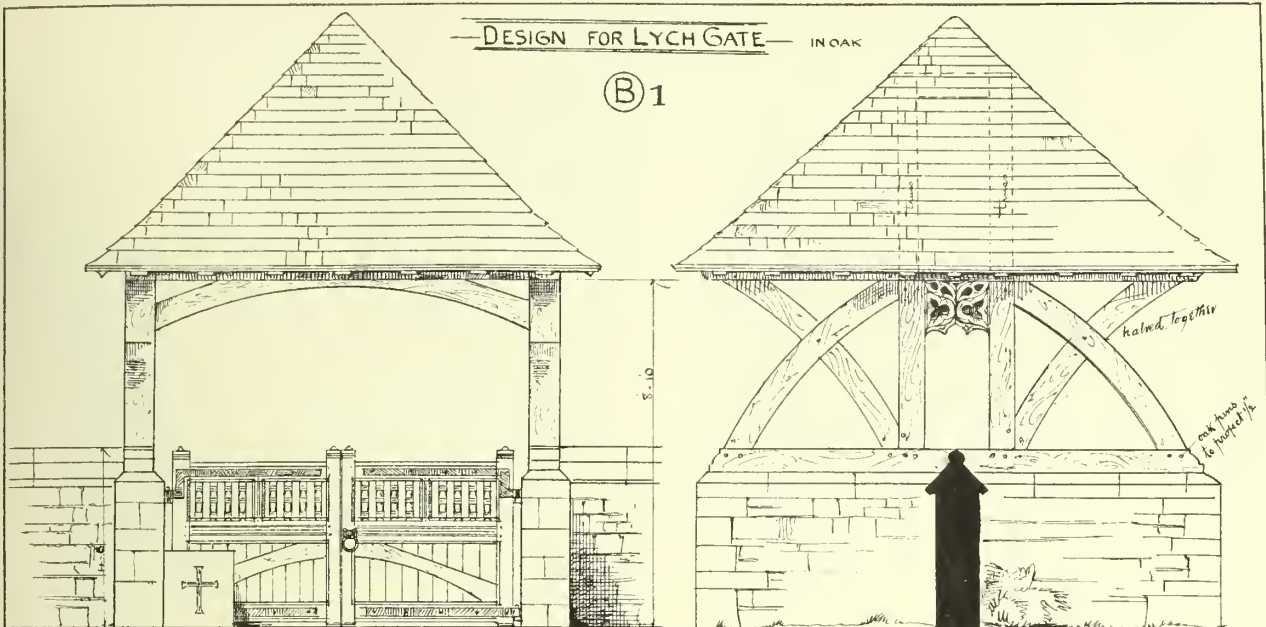
SCALE OF FEET



GROUND PLAN

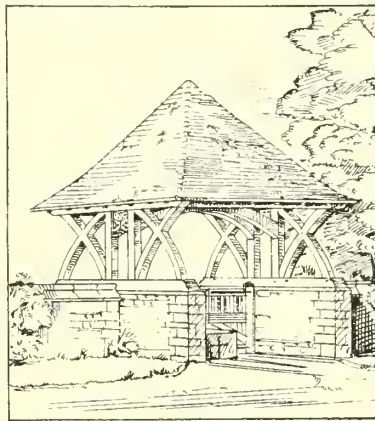
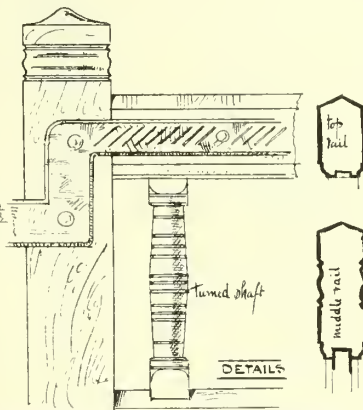
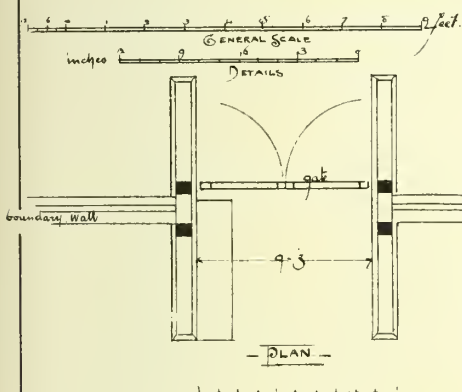
DESIGN FOR LYCH GATE IN OAK

(B) 1



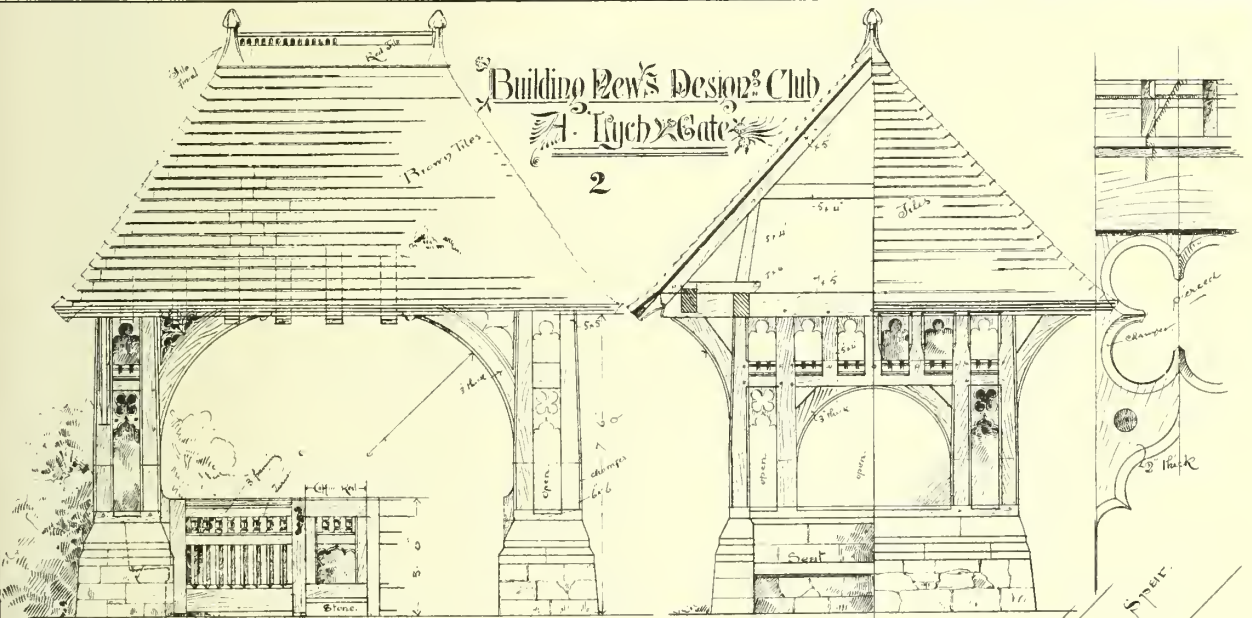
FRONT ELEVATION

SIDE ELEVATION



Building News's Designing Club
1. Lych Gate

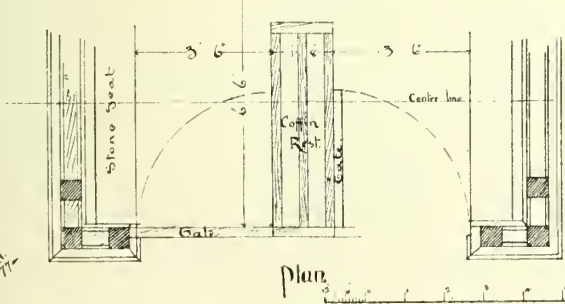
2



front Elevation.

Section

End



Plan

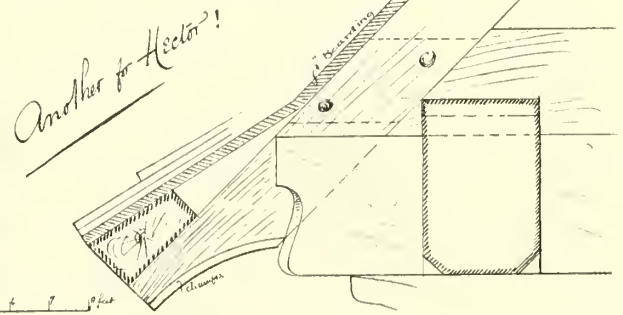
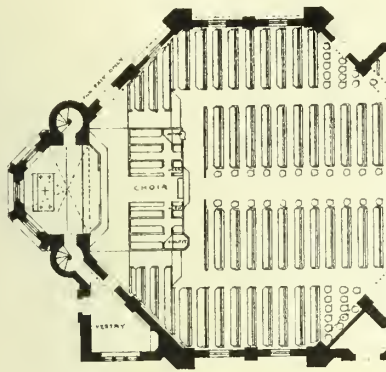
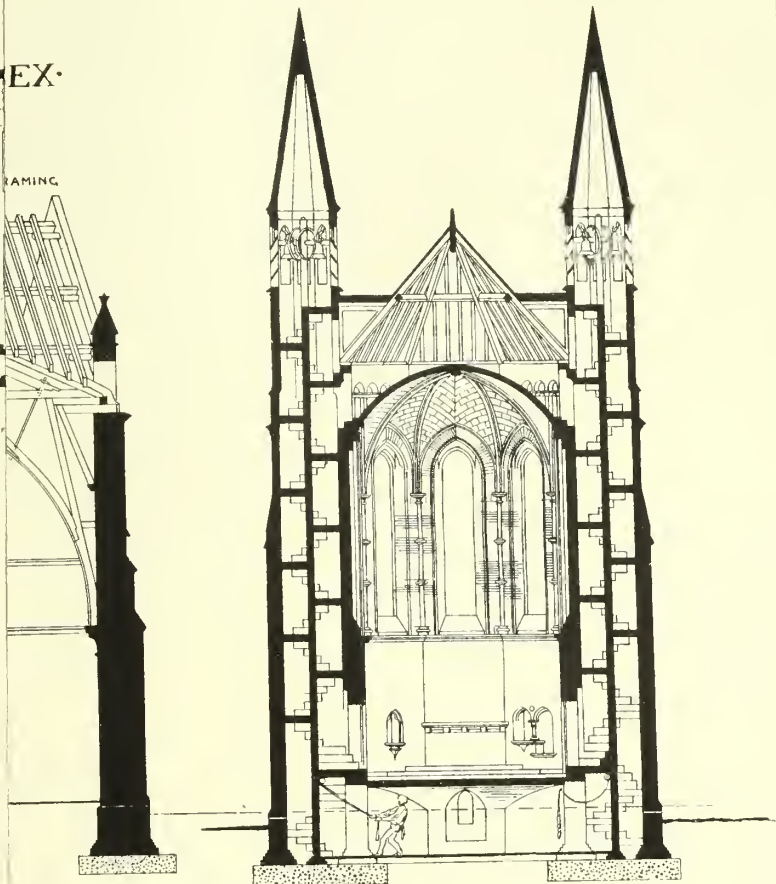


Photo-Lithographed & Printed by James Akerman.



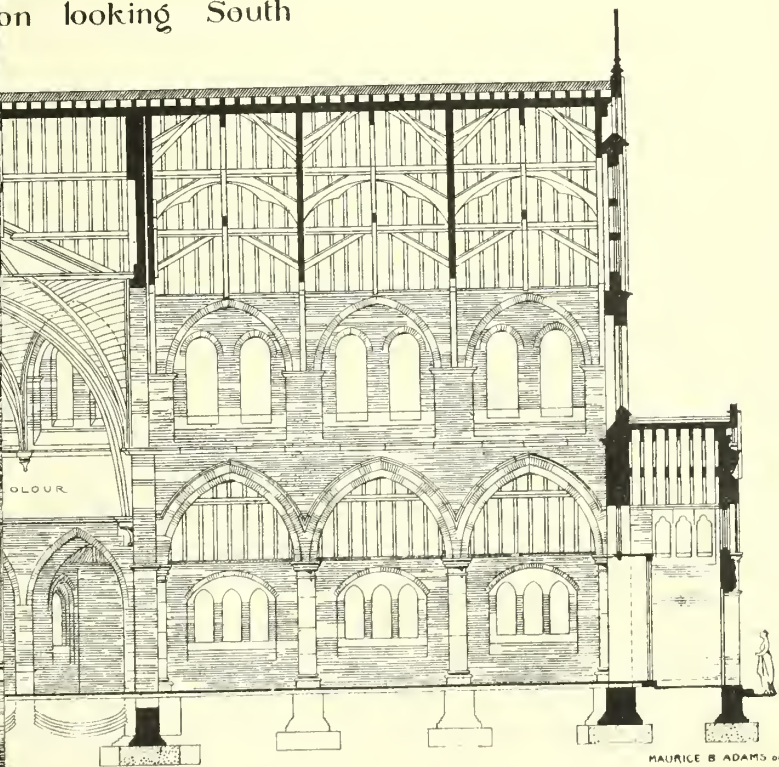
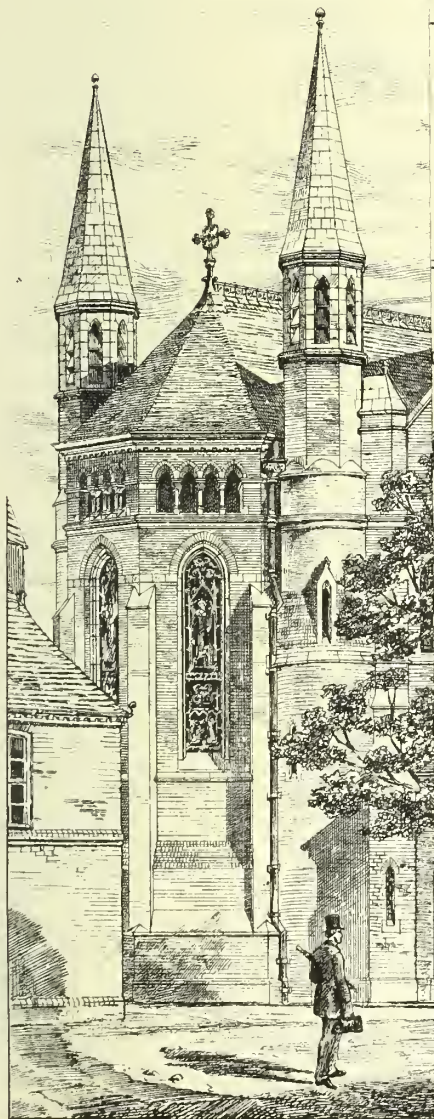
GROUND PLAN



Section through Apse ^{LOOKING} E

Scale of Feet

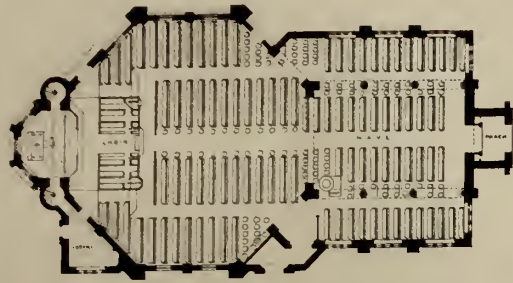
on looking South



MAURICE B ADAMS DEL.

New Church of All Souls HARLESDEN MIDDLESEX.

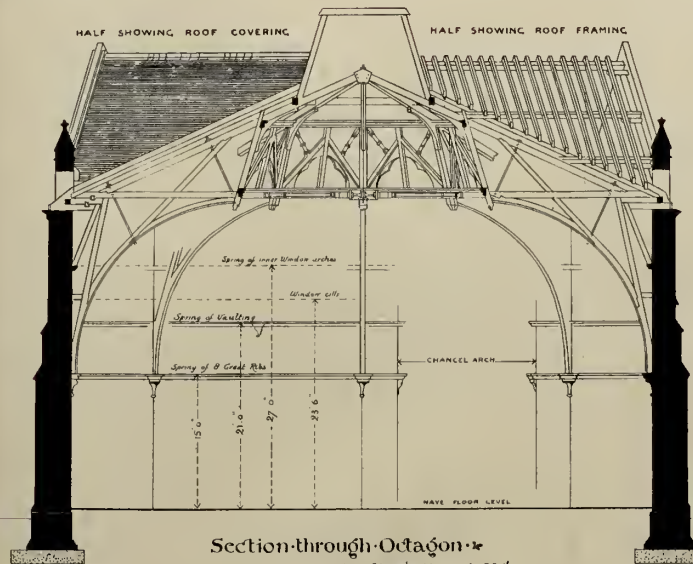
Edward J. Torver Architect



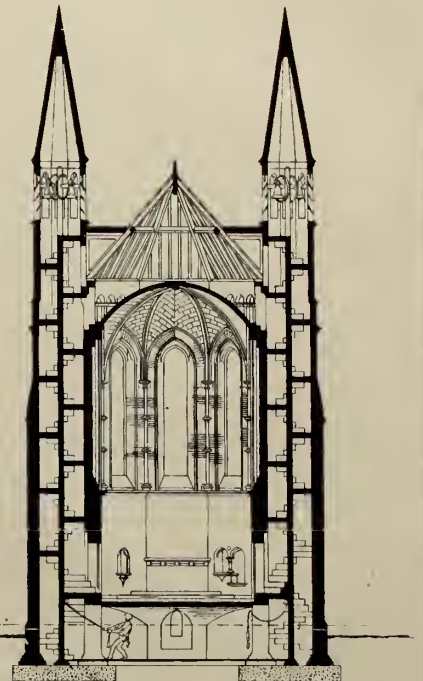
GROUND PLAN



West Front



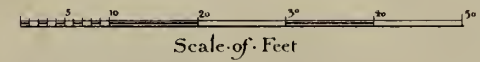
Section through Octagon
taken from Angle to Angle through Valley



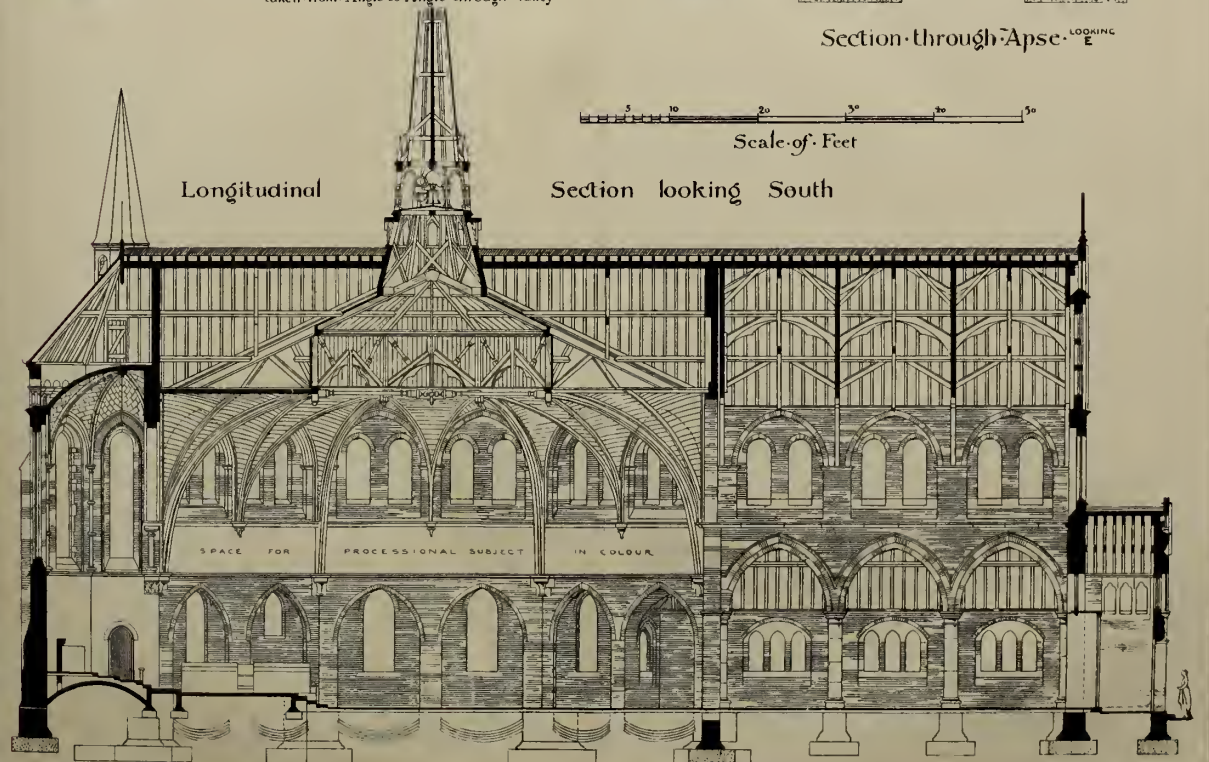
Section through Apse
LOOKING E



Pen and Ink
Edwd. J. Torver
Architect
March 1877



Scale of Feet



Longitudinal

Section looking South

HAURICE B ADAMS

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XVII.

Cottage Hospital.

A COTTAGE HOSPITAL for twelve patients has been variously interpreted by competitors. The plans we have received are more or less defective in the requisites of hospital arrangement, and we cannot accept one as being quite satisfactory. "B," in two circles, sends a design that, taken as a whole, recommends itself to us as the nearest approach to the requirements. The wards are placed with their axes at right angles at the extreme ends of the building, the male having a south-west aspect, and the female a south-east one, the north and south points of compass ranging in an angular direction to the main structure. The male ward is 23ft. 6in. by 18ft. 6in., and contains six beds, lighted at the end and one side, and warmed by a stove. A lavatory and linen closet is at the entrance end, and a w.c. at the other. The female ward at the east extremity is 21ft. 6in. × 20ft., is lighted on three sides, and contains five beds; it has a bath-room, a requirement not shown, for the male patients, though for what reason is not clear. Each bed has a fair allowance of superficial area—about 8ft. wall space; the kitchen is placed centrally between the wards in the inner angle of the plan, but the offices are not economically disposed. The convalescent room is not made the feature it might have been, and is only on the female side. The operating room in front is certainly not the best, and has an awkward approach; it ought to have been more retired. A part of the plan is carried up two stories, one of the female beds being provided for special treatment; the nurse and matron have also a room, but there is no attendants' room to either of the wards. We see no advantage in the verandah in front of bath-room—it is too small. Exterially the author has displayed considerable taste in the half-timber treatment of elevation; the external design of ward is appropriate, and the section of ward with iron-tie roof ceiled to collar, and the proposed mode of ventilation by air-flues opening into ward above heads of beds, with central air-trunk, are satisfactory. The drawings are creditable. "Omega" displays a similar general arrangement: the wards are placed at right angles to each other at the ends, and the angle is filled up by the administrative department. No compass is shown, but the plan presents a reversal of the former idea. The wards are each 28ft. × 27ft., with bay window ends and verandahs—very useful adjuncts for convalescent patients. Each ward has six beds in rows on each side, with windows on both sides and ends, and with a lavatory, w.c., and bath-room arrangement at the corner, partly breaking into the ward. The beds are not placed close to the wall, a space of about 2ft. 6in. intervening from heads of beds to the wall. Stoves and open fireplace are shown in each ward—the former for hot air; ventilation being obtained "by openings in ceilings in communication with louvres and gables," but this is not shown clearly. The author gets a convenient nurse's room in the inner angle between the two wards, with angular oriel and a door into each ward. The matron's room forms the outer angle, with an operating-room adjoining, close to entrance—not desirable. But the good points of the plan are spoilt by the ridiculously narrow entrance, pinched up between the projection of the male ward and the operating-room—the doorway of which is scarcely more than 3ft. In fact, looking at the elevation, we should certainly mistake the gabled entrance to the dead-house on the left side for the entrance porch. The latter is infinitely more important, while the real entrance looks like a back door. Why, too, thrust the dead-house in front, and make it adjoin the matron's room? Why could not its door have been placed behind out of sight? As it is, every dead body will have to be carried out of the front doorway, and round in front of the matron's sitting-room window—a very cheerful reminiscence of "poor mortality." There is a very jumbled look about the side elevation, though the verandah ends of wards and the timbered gables are pleasingly designed. We do not think the gabled window to ward a correct or truthful expression for flank win-

dows. "B," in circle, goes in for a symmetrical plan, L-shape—the wards forming end cross wings to the front range, and the administrative offices being in centre and in the rear wing. The centre entrance, leading to a longitudinal corridor connecting the wards, is rather wasteful for a cottage hospital. We note also that the w.c.'s, bath-rooms, and lavatories are separated from their wards by the said corridor, and the patients would have to cross it to use them. This is unsatisfactory. Each ward is 27ft. × 16ft., and four beds are ranged against the outer wall, and one on the inner, the fireplace and entrance taking up the other space. The windows are scantily provided, though there are front bay windows at the front end. A special ward for one bed is placed at the rear of each main ward, but the attendants' room on the male side is not close enough, and on the female side there is no communication or window between it and the ward. The operating-room in front is an objection, and the verandah is rather useless in front. Ventilation is effected by square extracting shafts, running along ward ceilings, connected with upcast shaft round kitchen flue. The building is shown of one story, and is treated simply with end gables to wards. "Hampton" shows a right-angled arrangement, the wards being at the ends, one placed transversely, and the other in line with front building. Each is 27ft. × 18ft., and has five beds, with bay window ends, the lavatory, w.c., and bath-room being planned as an adjunct at ends. The entrance behind is objectionable, and the administrative offices in the rear of west wing too far away from the male ward. If these had been placed centrally behind, and the entrance made in the front, a far better plan would have resulted. There are no attendants' rooms. Externally the elevation is pleasingly managed, though the verandah out of convalescent room is too small. The author shows the sanitary arrangements, but the ventilation of wards is not indicated. "Pret" has a wasteful plan, L-shaped, the administrative offices and one ward being located in the rear wing, while the convalescent and the remaining ward are placed in the front. The kitchen is too far away from the latter ward; the w.c.'s and lavatories are placed on the other side of corridor, so that patients have to cross it; there are no attendants' rooms close to wards; the wards are ill-lighted, and without a cross-current, and the corridor is long and wasteful. Ventilation is shown by cold air flues and vertical pipes at the four corners of ward, where the beds are placed. It would have been better to have put the beds endways to wall, not close in the corners, as the patient can then be attended to on either side, and a better circulation of air is insured. The elevation shows a neat one-story building, with gabled windows to wards and a small verandah in front of convalescent room, but we cannot understand the lanky chimney shafts of wards. Why not have carried the main roof up to them? "Raven" sends a careful study of requirements. The wards forming wings at each end, with their bath-room and lavatory adjuncts outside, are cleverly managed. The kitchen and administrative block forms the centre, but there are no attendants' rooms, and the centre arrangement is scarcely up to the mark. In the rear the author gets a separate block for contagious cases, detached by yards, and only communicating with the front by a covered way. Wards for male and female patients are here provided, with a disinfecting chamber on one side and the dead-house on the other. The arrangement is meritorious, and deserves a better elevation. The ventilation is by a series of inlets for cold air communicating with a vertical-valved flue or pipe, by which the air is discharged over the beds. Under the beds are other inlets for clearing lower part of wards. The foul air is taken off by outlet tubes over each bed, extracting power being maintained by a screw cowl carried above roof. Warming is effected by open fireplaces with warm air chambers and hot-water pipes from boiler, which surround each ward, and are covered with gratings. Walls are shown hollow, and the author has carefully attended to the sanitary details. "Noah" has not a bad notion; the wards are on each side, and form projecting

wings—they would have been better kept farther back; and the matron and nurse in the centre on each side of a centre entrance, the offices being behind in a separate block, reached by a covered lobby. This is an excellent feature, as the cooking is away from the sick. The convalescent wards, for two beds each, with their verandahs, and the lavatory and bath-room accessories, are well conceived, but the plan wants working out. The ventilation and lighting of wards are defective, and the elevation is not up to the mark. "Truth," who sends three sheets, has also a plan in some respects commendable, the wards and their appurtenances are complete—but it is spoilt by the projections behind, and mainly by the absurd notion of making the mortuary the climax of the central vista or main entrance corridor. The elevations are poor; the centre, with the small gable in centre, is extremely disagreeable, and no sanitary details are shown or described, "Trefoil," in circle, sends an ill-conceived idea; the male and female wards are superposed, and the administration is on one side, and rather confusedly planned. The fresh air is admitted by tubes from hot-water pipe chambers on ground floor, and the foul air is extracted by tubes on each side, and by dormers. The wards are of good size, 24ft. × 18ft., with adjoining pavilion for adjuncts, but the elevations have a remarkably jumbled effect.

An Oriel Window.

The designs we have received for this subject display some variety, though there is nothing particularly original in any of them. "Debut" leads off with a very pleasing sketch. The window has a front and two cant side lights, the carts starting abruptly without a square return from the wall. Pilasters, fluted to half their height, carry square-headed stilted mouldings, which enclose panels with relieve or carved ornaments. The windows have flat heads level with the caps of pilasters. Above the mouldings a plain cornice, flat-topped, finishes the oriel. The base is piquantly managed. It rests on two curvilinear trusses, fluted on the face with Ionic caps; these corbels being placed below the front side of oriel, and in a line with its angles. Details shown are in good taste, and Classical in spirit. The windows are sash. The key sketch is rather out of perspective. "Josephus Orange Blossom" sends a similar kind of oriel, the cant sides springing out of wall abruptly. The angle piers or pilasters are supported on a moulded corbelled base, and carry an entablature surmounted by a stone roof of ogee form, which dies away in the manner usual with Gothic oriels. The windows are made as casements, with a transom and upper light filled with plate glass. The design, though not original, is pleasing and simple. "J'espère" sends a more original design in a late German kind of Gothic. It is square in plan, about 9ft. on the face, and about 2ft. projection from wall. There is only a front window, flat pointed, of two lights, divided by a mullion and transom, and the sides or piers are solid, and treated with panelling in the front and return sides. The window is set back about 6in. from the sides, and a corbel table, with carved leaf ornament in hollow, is formed between at the top. The side piers are supported on carved corbels of hybrid character, and the roof is a plain steep lean-to, with the triangular ends filled in with late tracery. The corbels and panels are proposed to be executed in Greenmoor stone, and the upper parts in Darley Dale. A section is shown. The addition of the inside cornice to a bay, of such slight projection from wall, is almost superfluous. The drawings are admirably executed and shaded, but the details are poor. "Fleur-de-lis" sends a design of a too-ordinary type of Late Gothic to need description. It has the usual moulded corbelling below, a canted oriel of four equal lights, with transom and leadwork lights above, surmounted by a curvilinear hood or capping. The details, as usual with this competitor, show a practised hand, and are in good taste, but we think the oriel has a rather lumpy effect. Dowelled joints are shown. "A. L. B." has greatly improved in his work. This design shows careful drawing of a Late Gothic character, with corbel base and transomed win-

dows, with canted sides. Above the transom the lights are subdivided by cinquefoiled arches. The faults, we may mention, are chiefly of an elementary kind. Thus the mitring of the square angle pinnacles on the cornice weathering is shown wrong in elevation—the lions would have been better omitted, and so would the angle masks in cornice. The details show the want of a little more study, and we may inform "A. L. B." that the projection of the mouldings at the angles of corbelling should be less than where they die away against the wall. The same remark applies to the string. A knowledge of projection would have obviated this error. Of other designs we may mention "Marmion," a Gothic three-light oriel, with detail lacking study; "Torpedo," a Late Gothic oriel, but lacking knowledge of detail; "A Shield," with cross and L, a neat Late Gothic attempt, but with bad mouldings; "Nil Desperandum," a Florid Gothic oriel, displaying several faults of construction, a misdirected aim, and an inordinate love of ornament—that rock upon which most young architectural aspirants get wrecked; "Medicus," an effort to which the same remarks apply. To these few last we would say, be less ambitious, avoid that signal snare ornament till you have made yourselves master of common-sense principles of design, and, above all, have honesty of purpose. We do not like to discourage, but it is evident that a little more elementary knowledge would be advantageous to these competitors.

Architect's Drawing Desk.

We have only received one design for this subject. "Fleur-de-lis" sends a sketch—the result apparently of an off-hand idea, but not considered with due attention. It is a sloped desk, with a nest of drawers on one side, and sitting space on the other. The hinged let-down flap as shown, is of little use for large drawings or perspectives, and forms merely a side table. At the back of slope is a shelf for books railed off. We cannot discover the object of the framing below the desk in the side elevation, and the hinged brackets are certainly too small to support the flap shown. Material is pine, stained with logwood and coppers.

LIST OF SUBJECTS.—NO. XIX.

A. A hall fireplace, with a hood over it, in stone; plan, elevation, and details; scale, $\frac{1}{2}$ in. to the foot.

B. A coal-scuttle, fender, and fire-irons; sketch and details.

C. A lectern in wood, suitable for a town parish church; elevations and details; scale, $\frac{1}{2}$ in. to a foot, and a $\frac{1}{4}$ full size.

ART AT HOME—THE DRAWING ROOM.*

THIS treatise forms another volume of the "Art at Home" series issued by Messrs. Macmillan and Co. Mrs. Orrinsmith has endeavoured to give more particular directions as to the furnishing and adornment of the drawing-room than was possible in the Misses Garrett's volume treating of the whole subject of house decoration. In some important respects she has gone farther than the Misses Garrett. She has not confined herself to "Queen Anne" furniture, but has arrived at reciting and applying the universal rules of taste which govern all styles. She has, moreover, paid some attention to the cost of the decoration she recommends—a matter of no small importance to humble amateurs—and has furnished directions which in many cases will smooth their path towards the attainment of a comfortably appointed room, in which taste and art education shall be visibly predominant. After a severe denunciation of the average Victorian drawing-room furniture as summarised in an advertisement of the usual "magnificent suite," Mrs. Orrinsmith commences her encouragement to attempt something better by some directions as to the choice of wall-papers and other surface decorations, draperies, and the treatment of ceilings. A capital chapter on fireplaces and chimney-pieces is followed by another on floors and carpets, after which the windows, doors, and carpets are considered. We

*The Drawing Room; its Decorations and Furniture. By Mrs. ORRINSMITH. London: Macmillan and Co.

then come to the furniture, properly so-called, in the selection of which the rule is laid down that first fitness should be aimed at and then beauty—a very proper distinction being drawn between beauty and mere elegance.

The fact is recognised that all cannot hope to secure the comparatively few remaining good specimens of old furniture, and some plain and sensible hints are thrown out to guide those who have to make the best of modern work. For the benefit of those who are able to work themselves, directions are given as to staining and painting, and it is pointed out how many things such as brackets, hanging shelves, and cabinets may be managed with the aid of the illustrations and a local cabinet-maker. On the matter of lighting the room—one of the most necessary, but as things stand at present, one of the most unsatisfactory points of domestic economy—Mrs. Orrinsmith has something to say. She, of course, would exclude gas, and she laments the unsatisfactory character of lamps, remarking that it is difficult to understand why candles have been so universally superseded. We agree with her that no light is so charming as that of many candles, but are not so sure that the advantages attaching to the use of lamps are not underrated. If half the attention had been devoted to the external appearances of lamps that has been directed lately to their mechanical construction and the improvement of the oils burned in them, some more satisfactory result would by this time have been arrived at. In the concluding chapters the best means of disposing of books and the arrangement of pictures, mirrors, and odds and ends, are dealt with. Here, as well as throughout the book, there is a plainness of purpose and an absence of fussiness that is very satisfactory. The woodcuts are numerous and well executed—except the figures. Whether the drawings are original generally we know not; but one—a fireplace with open grate—is taken bodily from the BUILDING NEWS of July 3, 1874, and inserted with the addition of a left-handed young woman putting coals on a fire as if she were applying a match to a cannon, which is not an improvement.

MANCHESTER NEW BATHS AND WASH-HOUSES.

THE *Manchester Guardian* gives a brief description of the three designs for which premiums have been awarded in the above competition. The first prize of £200 was secured by Mr. John Johnson, of 9, Queen Victoria-street, London, who had adopted the motto "Economy Well Considered." The ground plan shows the public hall at the corner of New Islington and Baker-street, the reason for that position being that it is better lighted and more accessible for public purposes. So that the floor area may be unencumbered, Mr. Johnson proposes using for carrying the floor, strong wrought-iron girders with cast-iron brackets at the end. The entrances to swimming-baths are in Baker-street, with recessed porch, one side being for the first-class and the other for second-class. The first-class entrance hall leads direct to the waiting-room, and then the bath, which has a water surface of 89ft. by 25ft. There are 60 dressing-boxes, diving board, and other appurtenances. The second-class entrance hall is similar to the first-class, with an additional waiting-room, useful for Saturday nights and other crowded occasions. This bath has a water surface of 106ft. by 29ft. There are 68 dressing-boxes and other accommodation. On the first floor is a public hall, 72ft. by 36ft. over the one on ground floor, approached by two flights of spacious stone stairs. As this upper hall would perhaps be used for concerts, &c., the architect suggests that a gallery should be erected around three sides. Retiring rooms, with lavatories, are provided for each hall. The 32 first-class private baths, approached by well-lighted stone stairs from the entrance-hall, are placed on a gallery around the swimming bath, and supported by rolled iron joists, built in the wall. Ladies' private baths, 18 in number, are placed on the first floor, so as to give as much space as possible to laundry purposes on the ground-floor. The exterior design, principally of brick, is of a very plain and simple Italian character, Mr. Johnson "trusting only to the architectural

proportions and grouping of the structure for effect." The interior is equally plain and simple. The warming of the building would be by means of steam pipes. The estimated cost of the building generally is £15,300, and for the engineering work and fittings £4,300.

The design marked "Experience," to which has been awarded the second premium of £100, is prepared by Messrs. Mangnall and Littlewood, architects, of Brown-street, Manchester. In the arrangement of this plan the baths, as the most important, are placed to front New Islington; the public room is situated at the corner of Baker-street and Horne-street; and the wash-house and laundry will front Horne-street. The entrance to the baths has three semi-circular arched doorways, one being appropriated to women, and two to men. The men's first-class swimming bath is approached from the vestibule by a glazed corridor to the left side of the entrance. The net size of the bath is 60ft. by 22ft. 6in., with a depth of 6ft. at the deepest, and 3ft. at the shallowest end, the sides to be lined with white glazed bricks, and the bottom formed of polished light-coloured concrete. Forty dressing-closets are provided, each 3ft. 9in. by 3ft. 6in., formed with polished slate slabs secured to cast-iron frames. Shower baths and the necessary offices are placed at each angle of the bath-room. The water will be warmed by means of a copper steam pipe, brought from the steam boilers under the laundry, communicating at four different positions, into the bottom of the bath, covered with perforated grids. The roof is to be supported by wooden principals secured with wrought-iron tie-rods, with ample provision for light and ventilation. The men's second-class swimming bath is approached from the vestibule by a corridor separate and distinct from the first-class. The net size of the bath is 80ft. in length by 20ft. in width, the depth and finishing being similar to those of the first-class. Ninety dressing-rooms are provided, each 3ft. 6in. by 2ft. 3in. Provision is made in the plans for two public-rooms, for meetings, balls or concerts, and election purposes. Each room is 72ft. in length, by 36ft. in width, well-lighted, warmed, and ventilated, and having commodious ingress and egress. Upon the approximate estimate of one of the principal city builders, the cost of the whole of the buildings and fittings can be carried out for £20,000, with an additional £2,800 for boilers, engine, washing and wringing machines, troughs, and other fittings, and all other machinery and plant connected with the engineering department.

The designs which secured the third premium were furnished by Mr. John Lowe, 22, Mansfield Chambers, St. Ann's-square, Manchester. "Concilio et Labore" was the motto adopted. The principal entrance in the plans is placed in Baker-street, and is intended to afford access to the first and second-class swimming baths. Adjacent to this vestibule is an office, which is arranged to afford supervision over the entrances to and exits from all parts of the building. Another entrance in the same street, also with an office, serves the dual purpose of public wash-house and women's private baths. The New Islington entrance is for the especial use of the public rooms. The lower public room has two separate entrances, and the upper one is similarly treated. The private wash-house and laundry is laid in the basement, and entirely separate from the public wash-house. The size of the first-class swimming bath is 55ft. by 27ft.; that of the second-class bath being 81ft. by 28ft. 6in. In designing this portion of the building special attention has been devoted to the construction of the roof, in order that top light may be introduced at an angle to afford the most pleasing effect upon the surface of the water. Each public room is 72ft. by 36ft. The estimated cost of the building is £20,887, and of the engineering work and fittings £4,100, making a total of £24,987. There will be, according to Mr. Lowe's arrangement, 44 first-class baths, 50 second-class, 4 vapour and shower, 9 women's, and 1 Turkish bath; making a total of 108.

A memorial tablet—the work of Messrs. Gilliam and Sons, sculptors, of Dorking—has just been put up in Graffham parish church, stating that the edifice was rebuilt in memory of Samuel Wilberforce, Bishop of Winchester.

Building Intelligence.

ALL SAINTS, CASTLE-FIELDS, SHREWSBURY.—The chancel and north chancel aisle of this church were opened on Wednesday, 7th inst., by the Bishop of Lichfield. The chancel, which is 40ft. long internally by 25ft. wide, and 52ft. high to the ridge, is raised three steps above the nave, and furnished with oak stalls. There is a further ascent of six steps to the altar. The north chancel aisle, or choir vestry, opens on the chancel by two arches, and is screened off from the north nave aisle. The pulpit is of stone. Maw's tiles are used for the floor. Red-hill stone has been used for the walling, Grinshill and Shelvoke for dressings, and blue Pennant for shafts. Mr. R. L. Boulton executed the stone carvings. The organ-chamber and first stage of the tower, or second vestry, are contracted for. Mr. E. Haycock, of Shrewsbury, is the architect; the builder is Mr. W. Bowdler. The total cost of the chancel will be about £2,400.

BLEWBURY.—The chancel of the parish church of Blewbury was reopened on the 31st ult., after restoration under the care of Mr. E. Dolby, of Abingdon. The church is one of the most interesting in the county. Some portions are apparently of Saxon origin. The present chancel and central tower were probably built in the 11th century, the nave, side aisles, and western tower have been added and enlarged at various periods down to the 14th century. About two years and a-half ago the restoration of the nave was commenced. The roof was renewed, the floor lowered to the ancient level, the pews and galleries removed, and the floor paved with encaustic tiles. The restoration of the chancel was commenced in March last, the contract being taken by Mr. Martin, of Hereford. The original floor lines have been regained, and the chancel is paved with encaustic tiles of a rich pattern, supplied by Mr. Godwin, of Lugwardine. The north and south aisles remain in a very dilapidated condition. The sum already spent is about £1,600.

CARLISLE.—A new Roman Catholic church is about to be erected at Carlisle, from designs by Messrs. Dunn and Hansom, of Newcastle-on-Tyne, at a cost of nearly £12,000. The plan will be cruciform. The style adopted is Early Decorated. In plan the arrangement is to provide a very large nave, in which the whole of the sittings are placed, the aisles being narrow. The nave and chancel are the same width, 35ft., and of the total length of 141ft. (inside measurements), and on the exterior form an unbroken line of roof. North and south transepts open from the sides of the chancel, and will be used as chapels. The Lady chapel will be placed at the east end of the church, and project externally. The transepts and aisles are separated from the chancel and nave by an arcade, and above this rises a large clerestory. At the south-west corner is the tower, 200ft. high, at the corners of which are four turrets, with single lights and angle shafts, culminating in four octagonal pinnacles, each surmounted by a cross. From the centre of the tower, and flanked by these pinnacles, rises a spire of similar shape, also having at its apex a cross and weather-vane. The baptistery is at the west end of the north aisle, and joins the north porch. There are two sacristies, and above them is a large room for guild or other meetings, with separate entrance from the street. The presbytery is situated to the south of the church, next to the sacristies and chancel.

CWM SCHOOLS.—The erection of these schools for the Swansea School Board have been commenced by Mr. Thos. Rees, builder, of George-street, Swansea. One acre of ground is taken for the site, and to be enclosed by walls 7ft. high for playgrounds. The total amount of estimate, including the desks and benches, and interior finishings, is £2,084. It is to be a mixed school, and accommodation is provided for about 400 children. The whole of the buildings will be of local stone and blue brick dressings, from the designs of Mr. Geo. Harman, architect, Swansea.

KING'S LANGLEY.—An interesting ceremony took place on Wednesday last, at King's

Langley, Herts, in the parish church, where a new chapel has been erected at the east end of the north aisle to receive the beautiful tomb of Edmund de Langley. The ceremony consisted of removing this tomb from its old position to the new chapel. The church is an interesting example, having Late Decorated features chiefly, and the new work, which also includes a sculptured reredos, is quite in accord with the building. An elaborate screen of carved oak divides the new chapel from the church. The work has been designed and superintended by the diocesan architect, Mr. Joseph Clarke, F.S.A.

LANGTHORNE.—On Tuesday a new church for this hamlet was consecrated by the Bishop of Ripon. The church was built almost at the sole cost of the Rev. T. Milville Raven, vicar of Crakeball and Langthorne, from designs by Mr. C. Noel Armfield, of the firm of Messrs. Armfield and Bottomley, architects, of Whitby and Middlesbro'. The whole church is decorated with colour, and furnished with embroideries, all from special designs by the architect. The altar frontal is the gift of Mrs. J. Raven, widow of the late well-known landscape artist, John Raven (brother of the munificent builder of the church), whose sudden death upon the shore at Harlech was reported in our columns some short time ago.

LEICESTER.—The new church of St. Leonard, Leicester, was consecrated on Tuesday week. The church is built in the 14th century style, and is calculated to afford accommodation for 500 worshippers. The nave is 86ft. long by 31ft. 6in. wide, by 52ft. to the internal ridge. The south aisle is 62ft. by 12ft. 9in. The temporary north aisle is 6ft. wide, but it is intended that there should be in that part of the church future enlargement. The tower is at present built only to the height of the south aisle, but the walls and foundations are of sufficient strength to admit of the addition of a spire. The chancel is 50ft. long by 27ft. wide, with blank arches on the north side, with the view to contemplated enlargement in connection with the north aisle. The ambulatory is 7ft. wide on the south side of the chancel, with outer entrance. The roof is covered with Broseley tiles. The walls of the exterior are composed of stones coming from various districts, but those from Mountsorrel largely predominate. The exterior dressings are of red Alton stone, and the interior dressings of Bath and Derbyshire stone; the pillars in the interior being of the same kind. The architects are Messrs. Ordish and Traylen, of Leicester; and the builders Messrs. Edmund Roberts and Son, of Weedon. The edifice, as far as it has been completed, has cost £7,000.

LEYTONSTONE.—On Thursday week the foundation stone of a new Baptist chapel was laid at Leytonstone. The scheme includes a chapel to hold 400, and a temporary school-room for 120 children. The estimated cost of the chapel and temporary school is over £3,500. The builders are Messrs. Hill, Higgs and Hill, of South Lambeth, and the architect is Mr. James Cubitt, of Loughton and Finsbury. The size of the building will be 80ft. by 53ft., and the height 52ft. The material is to be of red-brick facings, with stone dressings, and the style Gothic. It will be surmounted by a turret in the centre, and will have two transepts and a nave, with three entrances.

LONDON SCHOOL BOARD.—On Wednesday this Board accepted several tenders, including the amended one sent in by Mr. E. Lawrance, of Wharf-road, City-road, for a school for 756 children; that of Messrs. Hill, Higgs, and Hill, of Crown Works, South Lambeth, for a school-keeper's house at the school site in Portman-place, Globe-road, E.; that of Mr. S. J. Jerrard, of Loampit-vale, Lewisham, for similar work at Chequer-alley, St. Luke's, and that of Mr. G. Vavasser, of Beckenham, S.E., for the erection of a school-house for 350 children, on land near Berger-road, Homerton. In the case of the Gillespie-road tenders these first sent in, nine in number, ranged from £10,413 to £11,169, equal to an average cost per head of from £13 15s. 5½d. to £14 15s. 5½d. The works committee thought these estimates too high, and accordingly cut down the plans so as to enable £840 to be struck off the lowest tender, the ultimate cost

being £12 13s. 3d. for the complete structure. For furniture and fittings to three new schools the following expenditures were authorised:—Marlborough-road, Chelsea (828 school-places), £610 6s. 8d.; D.-street, Queen's-park estate (1,104 school-places), £769 19s. 3d., and Vere-street, Clare-market (559 school-places), £450 11s. 6d. Application was directed to be made to the Education Department with reference to the proposed erection of two more schools in Finsbury, and one near the Waterloo-road, S.E., and the enlargement of schools in Winchester-street, Finsbury, and Bellender-road, Lambeth.

METROPOLITAN BOARD OF WORKS.—On Friday, at the meeting of this board, the works committee reported on a letter from Mr. H. W. Reach, inquiring whether claimants in respect of properties required for street improvements cannot deal with the board direct, without the intervention of agents, and recommended that Mr. Reach be informed that there is no necessity for the employment of agents by claimants. Mr. Roche, the chairman of the committee, said it had come to the knowledge of the members that certain agents pressed their services on those whose properties were required for public improvements, and in one instance, at least, the agent represented that he had great facilities for insuring a favourable consideration of claims by the board. They were therefore pleased to have the opportunity of making it public that claimants were quite as likely to be dealt with in a fair and liberal spirit if they applied personally, and that no claimants, whether of the same name as officials in the board's service or otherwise, have greater facilities than claimants themselves. Statements had been made by these people which were absolutely devoid of truth. The board decided to enter the letter and the reply upon the minutes. With reference to the memorial recently presented by the Bermondsey, St. Olave's, and Rotherhithe local authorities, asking for the improvement from London Bridge to Deptford-road, the works committee has decided to undertake the following street-widenings sanctioned by the Act of last session first, and in this order: That near the Angel at Islington, then Mare-street, Hackney, Deptford Bridge approaches, Camberwell and Peckham High-streets, and then the thoroughfare between London Bridge and Deptford. A reply was ordered to be sent to the several memorialists to this effect. £150, being a moiety of the estimated cost, was voted towards the expense of widening a further portion of Brockley-lane, about to be undertaken by the Lewisham District Board. Applications for permission to borrow money—from Bethnal-green Vestry, for £20,000 for paving works, and from Lewisham District Board for £900, a proportion of cost of certain sewerage works in Penge and Beckenham—were referred to the finance committee to report on. Under the provisions of the Artisans' Dwellings Improvement Act, 1875, it was decided to take action in three instances—that of the area in Essex-road, Islington, concerning which an official representation of unhealthiness had been made by Dr. Tidy, medical officer of health; that of Bowman's-buildings, Marylebone, reported upon in like manner by Dr. Whitmore; and that of Great Wild-street, Drury-lane, reported on by Dr. Lovett. In each case a formal resolution was passed approving a scheme to which the board's seal was affixed. A letter was received from the vestry of Camberwell, calling attention to the erection by a builder of certain new model lodging-houses in Choumert-road, Peckham, which in the judgment of the vestry are defective in construction, especially regarding their want of sanitary appliances, and requesting that an officer from the board may be instructed to examine the buildings and report thereon, the vestry being of opinion that it is not desirable that the buildings should be allowed to proceed towards completion if any step can be taken to stop their further progress. Mr. Vulliamy, architect to the board, read a report to the board, in which he expressed an opinion that several features of the houses—especially the absence of party walls, and the erection of a lath-and-plaster-fronted attic, which the builder called a roof, but which he regarded as part of the wall—were infringements of the Metropolitan Building Act. Mr. Dresse,

Rogers, in moving that the letter and report be referred to the works committee, and that the solicitor to the board be requested to report on the legal bearings of the case, said this was a very important matter. The 48 houses in question were being built in a back garden, had no proper party walls, and the upper parts were only lath-and-plaster. The builder was particularly clever in evading the Building Act, and the district surveyor was unable to stop him. The board was pulling down old rookeries at vast expense to the ratepayers, and it would be most objectionable if equally bad ones should be allowed to be created. Mr. Selway, in seconding the motion, added a rider that the district surveyor be instructed to attend the committee meeting, to afford opportunity for making an explanation, and the amended motion was agreed to.

STANSTEAD.—On Tuesday week the parish church of Stanstead, near Long Melford, was reopened after restoration. The building is mainly in the Perpendicular style, and consists of a nave with a south porch, chancel with vestry on the north side, and a western tower. The work now completed consists of the strengthening of the tower, the restoration of the belfry window, buttresses, &c., the insertion of a new west window, the opening of the tower to the church by the removal of the eastern wall, and the erection of a massive arch in lieu thereof. In the chancel new flooring and altar rails have been fixed, and suitable stone steps now occupy the place formerly filled with wood. The south porch has been almost entirely rebuilt. The work has been executed by Mr. Hawkins, builder, of Monks Eleigh, from the designs of Mr. J. Fowler, architect, of Louth, Lincolnshire. The total cost has been about £900.

STOW-ON-THE-WOLD.—The foundation stone of a new town hall has been laid in the Market-square, Stow-on-the-Wold. The building will cost over £4,000, given by three residents in the neighbourhood, all clerks in holy orders. It will consist, on the ground floor, of a library, 25ft. by 18ft., and reading-room, 31ft. by 17ft., gentlemen's cloak-room, porch, hall, staircase, and custodian's apartments. On the first floor will be a lofty assembly-room, 50ft. by 26ft., having musicians' gallery and bay windows to Market-square, and committee and ante-rooms, and ladies' cloak-room. The town hall will be Late Gothic in style, harmonising with the Tudor buildings of the district. It will be built of Harrington stone, and roofed with Kington Hall stone tiles. Mr. Saunders is the architect.

THORPE MALSOR.—On Tuesday week, Thorpe Malsor church was reopened after restoration, from the designs of Mr. Clapton Rolfe, of Reading, at a cost of £5,000. Mr. John Gee, of Daventry, was the contractor. The body of the church is mainly built of sandstone, and is in good preservation. The chancel has been entirely re-built, and many of the old features re-introduced. The roof is groined very elaborately with oak, the beams springing from corbels representing winged angels, carved in stone. Three sedilia have been set in the south wall of the sanctuary. The floor is laid with encaustic tiles, supplied by Mr. Godwin, of Hereford. The altar is new, the front being of carved oak, gilt, having in the centre panel a representation of the *Agnus Dei*, in basso relievo. The carving is by Mr. Hems, of Exeter. On the north side of the sacred building a private chapel has been formed out of the Maunsell vault, and an Early English arch, which was closed, has been opened on the west. A piscina is cut into the wall of this chapel. The pulpit is formed of Caen stone, resting upon a pedestal of Ketton stone. A new Gothic porch has been constructed on the south side of the nave.

Banff parish church was reopened on Sunday after restoration, including the removal of galleries and the addition of a memorial stained glass window. The latter was supplied by Messrs. Ballantine and Son, of Edinburgh.

The memorial stone of a new Sunday school and lecture-room, about to be added to the Baptist chapel at Tunbridge, was laid on Tuesday week. The buildings will cost about £720, and will be built by Mr. T. Wickham, of Tunbridge, from designs by Mr. W. J. Brooker, of London.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published November 16 contains articles on Unsound Meat Prosecutions, Bristol and the Artisans' Dwellings Act, The Drainage of Oxford, The Mechanics of Ventilation, Sewage, Sewerage and Town Refuse, The American Public Health Association, Treatment of Typhoid with Nitrate of Silver, Discolouration of Water, Herbs and Simples, Notices of Books, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c. Price 2s. Annual Subscription, Post-free, Eleven Shillings per annum.—31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

To OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—C. and G.—C. A. M.—J. T. C.—H. and Co.—G. A. W.—E. J. P.—H. J. M.—W. M. and Co.—E. F. G.—J. D. H.—H. S. and Son.—G. L. W.—W. P.—W. T.—B. B.—J. S. and Co.—A. S.—J. H.—R. F. and Co.—J. F.—Inst. C. E.—G. Drawings:—W. Watson.—W. Thompson.—A. Freeman Smith.—John Simmons.—Alfred Williams.—G. R. Webster.

E. PARKER. (The "Architectural Society's Dictionary" gives some particulars of malt-houses.)—THOMAS PORTEN. (We thank you for your idea, which shall receive consideration.)—W. G. (Next week.)—J. F. MACKENZIE. (We have not received the book.)

"BUILDING NEWS" DESIGNING CLUB.—Received:—Fred. W. Leverstra. (Have sent you particulars.)—A. L. B. (We will make inquiries.)—Pupil (Points out there is no window shown to the kitchen of design for mixed school by "B." in circle. This is an omission, apparently, though there is ample space for one. As to the chimney shaft of kitchen, perhaps "B." in circle, will explain his intention.) Drawings received:—Naiocotee.—Fleur-de-lis.—Magnat.

Correspondence.

ENGLISH WORKMEN AND FOREIGN WORKMEN.

To the Editor of the BUILDING NEWS.

SIR,—The intelligent paper on this subject which appeared in your last week's journal gives me hope that there are yet a few men amongst artists who are thoughtful enough to look ahead, and read the signs of the times.

The opening meetings of the senior and junior architectural societies have come and gone, and not a single word has been said by either of the presidents to indicate the feeling and help in the formation of public opinion on the all-absorbing topic of the building world—"the labour question," and that its outcome, "the masons' strike." If the public should be led by any class of men before another, surely it is the architect who stands between capital and labour, and is the authorised arbiter between them.

Is the subject of political and social economy so foreign to the tastes and acquirements of architects that they shall allow themselves to be drifted by the course of events without making a single effort to lead or guide them? Trusting, therefore, that the subject may be further discussed by men of experience in the profession, I proceed to notice some of the more remarkable statements in the admirable paper already referred to.

Speaking of the Law Courts "C. B. A." says, "We may suppose, without going out of the way, the architect of this group of structures to have strong English proclivities, and to aim, in the details of these buildings, at a special and emphatic English expression. We can hardly ask for a foreign Gothic expression here close to Temple-bar, and most surely there is no need of it, for the English Gothic of the 13th, 14th, or 15th centuries—and we care not which is taken—is or was as good (some will think better) than any Continental phase of it. We may assume, therefore, that English Gothic is intended—a revival or copy of that of the past of Gothic art as once in vogue in this country when no other style of art existed here to disturb the universal feeling for and constant use of it for all and every building purpose." This is an acknowledgment of the existence of true artistic workmanship prior to the Reformation and Renaissance period.

Speaking of the French workman of to-day, he says: "No one will deny the fact of the wonderful artistic skill and lightness of hand and refinement of eye, not only of the French designers and artists, but of the French workmen. It may be somewhat hard to duly account for this, and a good deal of philosophic talk might be expended in the effort to come at a satisfactory conclusion about it. It is not of the hand only, but of mental organisation, and comes of the two jointly, and is always in perpetual and unconscious action and operation. It takes us, indeed, commonplace as the subject of it may seem, to the foundations of art-action, and to the *rationale* of that power which has produced the finest and most finished art all the world over." Without attempting to darken counsel by "philosophic talk," I venture to assert that it is not so hard to account for the permanence of artistic power and excellence of workmanship in French handicraft, nor is it difficult to account for the absence of it in England. Both countries give the natural effects of their respective provocative causes. Since learning revived technical education has never ceased in France: it has still to begin in England, and the inevitable consequences have followed; but we have had its likeness in our ancient trade guilds. It was for the protection of trade, and the arts generally, that the City Companies of London and similar associations were first established in mediæval times. They were entrusted with arbitrary powers, and were authorised to inflict penalties upon evildoers. Upon them depended the maintenance of a high standard of excellence, and the use of good materials and workmanship, by whose providence the public were preserved from fraudulent imitations. However, in course of time, these good ends were frustrated by the monopolies that resulted, and the fetters that were thus created for independent action and progress, and so their usefulness ceased. Free trade led to the rivalry which now exists, and soon extinguished the trade mysteries and privileges of the once famous City Companies. But their former usefulness may be regained if we accept the new conditions under which we live, and endeavour to re-create an army of efficient workers in all trades, who may by their skill hope to resist the aggressive influence of foreign competitors, who, by their technical educational advantages, are yearly becoming more independent of British aid, and gradually but surely undermining our export trade.

The necessity for some such organised effort as that proposed by the Clothworkers' Company, under the title of the "City Guilds Industrial University," is daily becoming more apparent. Look at the building trade: there is a double tyranny sapping the well-being of the artisan. First, there is the great contractor whose capital absorbs all lesser masterpieces and for many masters of specific trades there is substituted one, who works through inferior agencies under the control of overlookers, none of whom may act independently of his will, and all of whom are more or less dependent on his desire to do work well or ill, to none of whom glory comes for well-doing or shame for ill-doing, but only a change of masters—no interest or fellowship existing between masters and men.

Secondly, there is the tyranny of the trades

ons, by which the labour market is controlled, hat all men shall be regarded as equal in ie, and no man shall be allowed to better his dition by his greater aptitude or more severing and continued exertion. The price mited to a uniform rate, the time is also ited to a set number of hours, more than hich is regarded as an injury to trade by its valence to the introduction of more hands to the work to be done. Piecework is not roved, and the artisan is taught to trust to society, which, by strikes and other dis- anising influences, strives to keep up the es and diminish the hours of work at one e the same time.

ow, since Mr. Potter has declared that out six million artisans only one million are iety men, it is evident that a vast number eady and waiting to improve their position soon as any organisation shall appear erful enough to give them an independent tus. This status can only be obtained by ved excellence, which can only be acquired he intelligent exercise of every faculty and xperimental acquaintance with every ch of trade.

The establishment of technical colleges for s after leaving school, and for young men eady at work or learning their business as y can pick it up in the workshops from ow-workmen jealous of their improvement, he only plan by which excellence can be ained that shall at all compete with that hich is the result of the complete system of hical instruction obtainable everywhere on tinent.

Certificates and diplomas from the colleges e established would give a young man a racter that would make him independent of fellows, and enable him to give his services he highest bidder in spite of trade union- s. As M. Havrez told the students of the rriers Professional School:—"The advan- es," said he, "which the overlookers and rkmn can obtain from these diplomas are so dent that I need scarcely dwell on them. en the dull season for industry comes it is e worst workmen—that is to say, the most orant—who are first discharged; besides hich, the instruction which you must receive e enable you to obtain the diplomas will ease your wages, because your labour will mand higher prices than the ignorant rkmn's. Already, in Charleroi," continued Havrez, "the situations of foremen in leries, furnaces, and mechanics' shops are y given to those overlookers who have ained a diploma of the Professional School Charleroi."

Now, one of the results of the better culture he foreign workman is, that strikes are of e occurrence on the Continent. Our duty, efore, as it seems to me, is to aid in the blishment of centres of practical workshops, ere the mode of doing everything in the best y and on the soundest principles may be ight and honourably mentioned, so that the establishment of masters of each trade may e accomplished by the skill guaranteed by the oloma, and independence of either of the eat tyrannies may result from the incom- icable power of self-culture.

In the future separate contracts might be en for each branch of trade, as in outlying tricts is still the case, instead of by a repre- atative of all trades, but a master of none. hting but excellence can overcome the rldom into which skilled labour is now rown. Nothing will cut at the root of what injurious in trade-unionism so much as the uscitation of the just independence of rsonal capability. It is the want of it that ds men to lean upon societies to secure for em what their own intelligence fails to umand.

In conclusion, let me state what the objects he City Guilds Industrial University are, d I trust I may anticipate the moral counte- nance and aid of the artists, architects, engi- ners, and others, in favour of so good a scheme, t grudgingly given, but enthusiastically stowed for the good of our common country y the encouragement and development of tional individuality in art workmanship. he two-fold object intended by the promoters e the establishment of a National Industrial niversity of Scientific and Technical Educa-

tion, under the auspices of the livery com- panies of the City of London, are:—

1st. To form a central university, with affi- liated schools of technical instruction, in con- nection with the various industries carried on in the suburbs of London, and the manufac- turing districts of the country generally.

2nd. To establish a system of technological examinations and degree certificates of various grades and denominations, to be granted in connection with the science and technology of the several arts and manufactures of the country. Such examinations to be conducted on behalf of the Central University by examiners capable of testing the practical knowledge and skill required in the application of the scientific principles involved in each art or manufacture, as well as the theoretic principles of those branches of science which are requisite as a foundation for technical instruction in any particular industry, the Society of Arts being asked to merge their tentative organisation in that behalf.

Prizes, exhibitions, and other rewards, as well as incentives and aids to further educational progress, would be given by the Central Technical University.

"It is further proposed to erect a building as the Central Hall of the City Guilds' Industrial University (on a plot of ground between the Temple and Keyser's Hotel, if available) on the Thames Embankment, consisting of a large amphitheatre; a smaller amphitheatre, or lecture-room; a council-room (with library); a museum of trade examples; a room for the models, &c., of the professors and lecturers; a room for the treasurer; office for the secretary, &c.

"It is held that to begin the movement on a scale commensurate with the necessities of the times, and the wealth and intelligence of the Associated Livery Companies, not less than £10,000 per annum should be guaranteed over and above the provision for a building fund; and although Government might be expected to subsidise the local organisations indirectly through the medium of the Science and Art Department, no Government subsidy should be accepted for the central institution, the progressive needs whereof would not increase, it is hoped, more rapidly than the capabilities and desires of the companies to meet them."

This extract from the first prospectus issued by the City companies evinces the right spirit, and I heartily wish them "God speed!"—I am, &c., E. C. R.

ARCHITECTS AND COMMISSIONS.

SIR,—The stained-glass dealer's offer of com- mission to architects seems to have aroused the indignation of one or two London folks. Why, bless my soul! up here it's quite the correct thing—10 per cent. is "the usual." Those architects who do much in the stained-glass line have special rates. The glass is only one item; hot-air apparatus, hot-water ditto, cold ditto, chapel decorations, gas-fittings, and any- thing else that the architect can cook through lump sums, is looked upon as a source of profit. What's the use of making a stir about things that are so beneficial? You can't mend them, and, if you try, somebody will throw mud at you. Let architects grow fat and rich quietly; they'll make fine manure for the land some day. Don't disturb them, for many give their services as chapel stewards, church- wardens, and other gratuitous offices, and surely you can't speak bad of them. What a fine cargo of provisions we could send out to the famine if architects would give all the geese, turkeys, &c., that will be found flying about their offices next month!—I am, &c.,

50 PER CENT.

Liverpool, November 10th, 1877.

FREE CHURCH ARCHITECTURE.

SIR.—In your last issue I notice a letter by Mr. Maurice B. Adams under the above head- ing, in which he criticises one particular feature of my design for a Congregational church at Beckenham—viz., the *flèche* on the main roof—and asks the reason of the particu- lar position it therein occupies. In reply I would say that in designing the building it did not occur to me the *flèche* occupied a somewhat similar position to the sanctus bell-turret in

Anglican or Roman Catholic churches, and I was certainly not influenced by any desire, in so doing, to give the building a churchy air. My reason for placing it there is the desirability of keeping it as far away as practicable from the crushing influence of the tower and spire. Practically it does not matter much where it is fixed, as an internal longitudinal trough is the connecting medium with the interior of the church, and, therefore, I place it in each build- ing just where it will look best—at the rear, in the centre, or towards the front.

Then, also, it appears to me quite as admis- sible to fix a ventilator in a *flèche* as a bell—the structure in both cases being purely ornamental—for if one is to be condemned to reveal itself in naked simplicity, why not the other? Mr. Adams's objection, if carried to its logical consequences, would certainly preclude us from erecting towers or spires, or even adopting the Gothic style itself. It must not, however, be thought that I cling to the style as the *ne plus ultra* of design, because at present but little progres has been made, but rather regard it as a basis for future development, its great advantage being that the association of ideas distinctly marks out a building of that character as a place for the "worship of God" as well as the "preaching of the Word."

Just a word in explanation of the short sentence of mine quoted by Mr. Adams, re- probating "useless attempts to adapt the Ritualistic *type* of church to Congregational worship." This refers, as will be seen by the context, to the ordinary form of nave and aisles, with obstructing columns, and not to an individual detail.—I am, &c., JOHN SULMAN.

CHURCH OF ST. PETER, REGENT-SQUARE.

SIR,—I do not think this subject need be carried further. Mr. Woodward and myself appear to agree that much requires to be done to the interior, and that, if I have given my predecessor, who built the church, credit for a "vast amount of good design," I have simply followed out the maxim of "De mortuis nihil nisi bonum," when, perhaps, he might not have deserved so much; that I quite agree with Mr. Woodward, a western gallery and a chancel choir is a mistake, but lack of funds at present prevent any alterations being carried out; that I am much obliged to Mr. Woodward for his subscription to the funds of the church, and that I regret he should have taken my answer to his first letter as a "serpent," when I really considered it a "big fish."—I am, &c., WM. SCOTT CHAMPION.

P.S.—With regard to the music on the Sunday in the Octave of All Saints it was not so good as usual, owing to new tunes and the loss of one of the best boys; besides Mr. Woodward may perhaps remem- ber that if you want dogs and children to do any- thing particularly well on certain occasions they invariably leave a sense of failure.

The tower of the new Free Church at Greenock has just been completed in accordance with the design of the architects, Messrs. Bruce and Sturrock, of Glasgow. A chime of bells, cast in the foundry of Messrs. J. and C. Wilson, of Glasgow, have been placed in the tower, and were rung for the first time on Sunday. The large bell weighs 15cwt., and gives the note G.

The Blairstown School Board met on the 7th inst., and adopted the plans of their architect, Mr. W. W. Blessley, for new schools at the Cwm. The Education Department signified their sanction to the erection of new schools for Nantyglo on a site in the Ffosmain-road.

The parish church of Penegoi, Montgomeryshire, was re-opened on the 25th ult., after restoration from the designs of Mr. Pritchard, diocesan architect, Llandaff. The church has been rebuilt in 14th century Gothic style, and consists of nave, south porch, a chancel with vestry on north side, a central tower over choir, and transepts. Sittings are provided for 175 persons. Some very good woodwork of the 14th century has been replaced in the roof of the chancel.

The Southend-on-Sea Local Board have requested Mr. Angell to prepare plans for the construction of a substantial concert-hall and offices to be built on the pier, at a cost of about £1,200 or £1,500, and also for a new loading pier or jetty with a T-head.

At the instance of the Marquis of Salisbury the Queen's Bench has directed a mandamus to be issued to the Metropolitan Board of Works, under the following circumstances:—The Board had under- taken to construct a street, 25ft. wide, through the Marquis's estate, from opposite Exeter Hall to the Embankment; and they contend that they are entitled to take footpaths out of the prescribed width. The Marquis of Salisbury contends that the footpaths must be additional to the 25ft.

Intercommunication.

QUESTIONS.

[5192].—**Hoop-iron Bond.**—Is it essential for the soundness of the walls of a church, built of rubble masonry on a good foundation, to have layers of hoop-iron bond inserted at intervals? In a couple of the specifications for churches in Donaldson's work on Specifications there is no mention of hoop-iron bond for the walls.—ENGINEER.

[5193].—**Concrete.**—Answers to the following from my fellow-readers will oblige:—1. What should be the thickness for the walls of an ordinary two-storied villa? 2. How is the framework formed that the walls are carried up between? 3. Is shale or other slaty material, together with sand and cement, suitable for concrete, and would blue lias or any other lime answer instead of cement? 4. What quantity of each material would there be to a given quantity of walling? I want to find the cost as against brick walls. 5. Is one coat of plastering, externally and internally, sufficient, or must the walls be battened on the inside?—J. M. S.

[5194].—**Compensation for Deficient Quantities.**—In your paper of the 28th September a correspondent (in reply No. 5132) states that in the case of Croker v. Young, it was decided by the Court that compensation for deficient quantities cannot be granted. Will you or your correspondent kindly inform me where I can see a detailed account of the decision and its grounds?—WILLIAM GRAHAM.

[5195].—**Block and Start.**—Can any one tell me what block and start hammer-dressed quoins with drafted margins are?—SC. AND A.

[5196].—**Heating by Hot Water.**—Will one of our numerous and practical correspondents kindly answer the following questions relating to heating by hot water? 1. After ascertaining the cubical capacity of a building, what is next done? bearing in mind the use or nature of that building—i.e., whether church, greenhouse, or dwelling-house. 2. To what temperature is it requisite to raise the air in these buildings, including in the term "greenhouse,"inery, forcing-house, stove, &c.? 3. After the capacity and temperature required are ascertained, how do you proceed to calculate the quantity of pipe required to insure a given temperature? 4. What guides you in deciding upon the size of pipe to be used, whether 2in., 3in., or 4in.? 5. In practice, what rise is given to the flow, and what fall per foot or yard to the return? 6. What distance below the level of flow-pipe should the crown of boiler be to insure certain action? 7. How is the size or capacity of boiler and area of fire-grate determined when the quantity of pipe to be heated is known? 8. Is a circulating cistern always necessary, or only in special cases, and what height should it be placed above boiler? 9. What number of air-pipes are necessary, say, in a church with three aisles, with pipes in each, and to what height outside the edifice should they be carried? 10. What quantity of cement and hemp (if any) is necessary for each joint in 2in., 3in., and 4in. pipe? 11. Are dips in the pipe, such, for instance, as in passing a doorway, objectionable—if so, how are they to be avoided? Answers to the foregoing will be, I doubt not, of great use to many besides.—IGNORAMUS.

[5197].—**Trap.**—Is it advisable to have a 12in. trap for a 9in. drain? An answer will oblige.—C. F. M.

[5198].—**Drying Plaster Work.**—What means are employed to hasten the drying of plaster work? Are coke fires injurious to it? If so, please say in what respect? What is the best substitute for plaster?—A YOUNG PLASTERER.

[5199].—**Safe Load for Girder.**—Will some reader kindly inform me what would be the maximum safe load for each of the following girders, the stronger one being 72ft., hollow, and the other, 42ft.? One, the longest, is 4ft. deep, including flanges, which are 1ft. 6in. wide; and the other is shown 3ft. 9½in. deep, and 1ft. flanges. The following are the particulars:—Flanges, 1ft. 6in. × 2½in.; web, 3ft. 7in. × ¾in.; angle iron, 5in. × 5in. × ¾in.; T-iron stiffeners, 5in. × 3in. × ½in.; angle iron outside top flange, 3in. × 3in. × ½in.; and the second—Flanges, 1ft. × 1 3-16in.; web, 3ft. 7in. × 5-16in.; angle iron, 4in. × 4in. × ¾in.; T-iron stiffeners, 5in. × 3in. × ½in.; angle iron outside top flange, 3in. × 2in. × ½in. The girders to be of wrought iron.—ANXIOUS.

REPLIES.

[5164].—**Surveyor's Charges.**—In reply to "H. L.'s" further question, there are no reported cases in which the facts are exactly on "all fours" with his case. But the matter is perfectly plain. The debt for quantities is a debt due by the builder (and not by the owner) to the quantity surveyor. This is well settled by the cases; the owner has no more right to discharge this debt and deduct the amount from the sum due to the receiver than he has to pay and deduct the accounts of the builder's timber-merchant, or brick-dealer, for goods supplied to the building. The quantity surveyor is the builder's servant. "H. L." says, "It is absurd that an insolvent builder can obtain a contract for a large amount, and obtain perhaps £100, or more, for the benefit of his creditors." But it is no more

absurd than obtaining £100 worth of bricks on credit, the value of which ensures to the benefit of the creditors precisely the same as does the value of the services of the insolvent builder's surveyor.—L.

[5172].—**Perspective.**—"Anxious" will find J. R. Dicksee's "School Perspective: A Progressive Course of Instruction in Linear Perspective," 8vo., cloth, 5s., published by Virtue and Co., or "The Practical Guide to Perspective," by J. P. Knight, head master of the Cheltenham School of Art, price 1s., equally suitable, and easy to understand the subject thoroughly, and not half so difficult as Burchett's "Linear Perspective," and will be found equally well adapted for self-instruction. To make a perspective of a building, &c., the student must study J. R. Dicksee's work. Shall he glad to hear of the result.—WILLIAM BELL.

[5175].—**Powers of Local Boards.**—"Dilemma" would not be justified or safe in defying the board, which is the authority vested by law, with the discretion to grant or refuse applications for the use of public footways for such private purposes as mentioned in the question.—L.

[5175].—**Powers of Local Boards.**—Under the recent bye-laws public footpaths have to be kept clear, and the Local Board can prohibit stepways or trap in the pavement of any projection. I am not aware they can refuse pavement lights in similar positions. In London and other towns it is of frequent occurrence. I should think "Dilemma" may safely insert such a light if it is securely fixed.—G. H. G.

[5176].—**Quantities—Surveyor's Charges.**—The sanitary authority is merely liable for the fee of the surveyor in the case related, as the bills of quantities were prepared with their sanction. Of course the contractors cannot be called upon under the circumstances, as the work has not been proceeded with.—G. H. G.

[5176].—**Quantities—Surveyor's Charges.**—If the acceptance of the tender by the sanitary authority amounts to a contract, then the builder is liable to the surveyor, and can recover from the authority.—L.

[5179].—**Binding "Building News" Plates.**—I was thinking of having them bound separately from the letterpress in folio, so that the plates would not have to be doubled. I should think in that way three or four volumes could be bound together.—C. F. M.

[5179].—**Binding "Building News" Plates.**—In reply to "A. C." I have had the plates of the BUILDING NEWS for 1873-4 and 5 bound up in three volumes. First vol., "Domestic," including all designs for dwelling houses; second vol., "Ecclesiastical," including churches, chapels, schools, &c.; third volume, "Public Buildings and Miscellaneous Sketches." The second and third volumes are rather bulky, and could easily be divided into two volumes each. I find it much easier to find the design of any particular building, or to obtain any information, than by going through the indices of some two or three volumes, if bound up as issued. I may add that I have had a few leaves of ruled paper inserted in each volume for special index and remarks.—T. E. O.

[5180].—**Ink Papers.**—These can be obtained of almost any stationer in the city of London. They are sold wholesale by Perry, Cheapside; Ward, and Co., Chandos-street.—L.

[5185].—**Payment for Quantities.**—I infer from the question of "Young Architect" that he being the architect of the work has also supplied the builder with quantities. The non-payment by the builder is not a proper ground for refusal of certificate. Quantities are usually paid for on receipt of first payment on account from the owner, but the money for them is due from the builder as soon as the building contract is made. "Young Architect" should sue the builder.—L.

[5185].—**Payment for Quantities.**—"Young Architect's" best course would be to withhold the contractor's final certificate, or, rather, retain the amount of fee for the quantities supplied. They should have been paid for as the certificates were given, and as the work proceeded. The best plan is to make the builder pay the commission on receipt of the first instalment, which the architect can always do by deducting it from the certificate amount. Some builders give a great deal of trouble in this way if they are fully paid.—G. H. G.

[5187].—**Board of Health and Building Line.**—The Local Board can compel the setting back of all buildings to a building line, no matter whether it be in a main or side street. The Public Health Act enables them to enforce this rule. Section 155 enables the urban authority to prescribe the line, if only the front of a house is taken down. Plans also, by section 158, have to be approved by the authority in writing.—G. H. G.

[5188].—**Crown of Large Oven.**—My experience is that fire-clay is the only material for grouting, bedding, and jointing the bricks in large ovens. W. Hurst will make a mistake if he uses fire-bricks for the crown—they scorch the top of the loaf before it is properly baked. The best bricks for the sides and crown are grey Staffordshire bricks, hard burnt, and no wet allowed to touch them until they are used. The bricks in the crown should be buttered—i.e., set with a thin bed on end, and grouted, the height at side 9in., and centre of crown 17in.—JAMES THORNELOE.

WATER SUPPLY AND SANITARY MATTERS.

MERE.—An inquiry was held last week before Hector Tulloch, R.E., Inspector to the Local Government Board, with reference to the proposal to drain the town proper of Mere, Wilts, at a cost of £2,500. The need for a system of drainage brought forward, and confirmed by the inspector who, however, said the Local Government Board would never sanction such a scheme as that proposed, for the cost of draining the suggested sub-district—on which alone all the expenses would be incurred—would exceed the total rateable value of all property in it; whereas if the whole parish were rendered liable the burden would not be very heavy.

NEW ELGIN.—Dr. Macadam having reported on the water supply of this village is quite unfit for domestic use, a meeting of the parochial board was recently held, at which it was determined to form New Elgin into a special drainage and water supply district, and to apply to the Elgin Police Commissioners for the terms on which, if able, they would be willing to furnish a supply from their water main.

WATER SUPPLY OF THE METROPOLIS.—A special meeting of the Metropolitan Board of Works was held on Wednesday, to consider a report from the works committee on the suggested transfer of control of the water supply of the metropolis to the board. The committee stated that they had before them a report from their engineer, in conjunction with Messrs. Bramwell and Easton, on the present supply of water for extinguishing fires, and had received a proposition to provide by wells in water-bearing strata of the country around London a supply of 16,000,000 gallons a day. This suggestion they recommended for adoption, as it would effect a saving of £70,000 a year, and provide a more pure supply. It would, however, be impossible to provide adequately for fire extinction, as the pressure fittings were not strong enough to bear the necessary pressure. The committee further recommended that a bill be introduced, simply providing for the purchase of the companies' interest by agreement or arbitration, and that the board be authorised to stand in the position of the companies both within and without the Metropolitan area, the undertakings are acquired, and that it be left to a subsequent measure to remedy the existing anomalies in the supply. The report was adopted by a majority of the board, and was referred back to the committee with instructions to prepare a bill to transfer under their control the Metropolitan water supply to purchase existing interests, and to extend over the metropolis. The committee were authorised to confer with the Government on the subject.

LEGAL INTELLIGENCE.

"YARD" OR "LOAD."—Action for Cartage and Excavator's Work.—Weaver v. Johnston.—Whitchapel County Court.—The plaintiff is a cartman and the defendant is a builder of Limehouse. The claim was for £37 5s. 9d. From the evidence appeared that plaintiff had for some time been employed to cart away rubbish from houses in course of demolition. He was paid in some instances 1s. 6d. per load, sometimes 2s., but never more than half a crown. The defendant had a contract to build a house in Wapping, and plaintiff, in addition to the mere cartage of the rubbish from the old building made arrangements for excavating, it being understood between him and the defendant that he should receive 4s. per load of earth or rubbish that was dug from a cubic yard. He performed the work and set it in his accounts, which were paid, but the defendant refused to pay the balance now sued for.—For the defendant it was contended that these payments were made in error, and that the arrangement between the parties was that plaintiff should undertake the excavation and cartage of a cubic yard of earth at 4s. Several witnesses were called on either side, the question in dispute being whether plaintiff was to be paid by the load or cubic yard.—Defendant stated also that the earth dug from a cubic yard would make about a load and a half; therefore the rate the plaintiff was suing for 6s. per cubic yard.—His Honour held that the sum of £2 3s. 1d. paid by the defendant into court in satisfaction of plaintiff's claim was sufficient.

NOT ACCORDING TO THE SPECIFICATIONS.—Greenock Sheriff's Court the other day an interdict asked by the Greenock Parochial Board against Messrs. Coghill and Son, to prohibit them from using red sandstone shivers, or red shiver sand to mix with the lime used in the construction of the new parochial buildings at Smithstone, was debated by Mr. McDonald, on behalf of Messrs. Coghill and Son, said his clients had ceased using sandstone shivers pending the decision of Mr. Starforth, the architect for the buildings, but that they held the building by using the red shivers they were not breaking the stipulations of the contract, and further that Mr. Starforth had given his consent to the use of the material, and knew that they were erecting walls for mixing red sand with the lime. Mr. King, for the parochial board, contended that the original contract had been infringed by the use of this sand which was dangerous to the building. It would be an undesirable precedent to permit contractors to construe specifications to suit their own interest. The sheriff granted the interdict asked for.

PARTY WALL, CLAIM FOR.—*Nagle v. Lucas and Jean.*—Shoreditch County Court, before Mr. Jasent.—This was a claim for £15 for the use of a wall standing on plaintiff's land, which was incorporated by the defendants, who are builders in the lawley-road, Hackney, as a boundary wall to some houses erected by them on adjoining ground.—Mr. Boulter, barrister, appeared for plaintiff; Mr. Ward, barrister, for defendants.—The plaintiff, as well as the defendants, is the lessee of her Majesty's Lands and Forests Commissioners, his property being bounded by the wall in question. Some three years ago the defendants purchased the land on the other side, extending as far as this wall, and subsequently built houses upon it, making the plaintiff's wall serve the purpose of a party-wall. The defendants, however, went further: they knocked down a portion of the wall to the extent of 26ft., and used materials in a new wall, which was built exactly on the site of the old one. In this process the plaintiff contends that he has suffered injury, inasmuch as the defendants have converted the wall into a part and parcel of the dwellings which they have constructed. The defendants reply that they first of the permission of the plaintiff to use the wall in the manner they had done; that nothing had been said about compensation; that the wall was a party-wall, and, further, that the amount claimed as compensation was unreasonable and excessive.—The plaintiff's counsel retorted that the claim was not large enough, the property being held for 90 years, and that there was a distinct promise of compensation.—His Honour objected to try the case, and considered that the parties had better refer the matter to the Commissioners of Land and Forests, they being their common landlord.—Several times the counsel on both sides endeavoured to come to an arrangement, but in vain. Finally, on witnesses being heard, an understanding was arrived at that £10 should be paid into court in settlement of the claim.—This his honour agreed to, and an order was made accordingly.

REDEDOS, ST. ETHELBURGA, BISHOPSGATE.—Consistory Court, Oct. 30.—Dr. Tristram, the Chancellor of the diocese of London, held a court at the Dean and Chapter House, St. Paul's.—This application was by the Rev. J. M. Rodwell, the rector of St. Ethelburga, for a confirmatory faculty as to reredos placed in the church, and for an order on the churchwardens to replace the Communion-table, which had been removed.—Dr. Middleton, on the part of the rector, informed the court that the churchwardens had been personally served with the citation, and had not entered an appearance. He, therefore, prayed that the faculty might be granted.—The learned Chancellor wished to know the grounds of the present prayer.—Dr. Middleton said there was a faculty granted in 1862, and since then beautiful carved reredos had been erected, and the new holy table which had been placed in the church had been removed. He believed there was no objection made by Bishop Cloughton, who, as Archbishop, had written to the Bishop of London on the subject. An old table had been placed in the church.—Mr. G. W. Brooks, proctor, for the applicant, read a letter from Bishop Cloughton, in which he spoke of the reredos as a work of art, and thought there might be some objection as to the doors by which the same could be closed. Mr. Brooks added that the doors could be kept open if covering were allowed to preserve a most beautiful carving of the agony of our Saviour from being injured by the smoke of the City of London. He had had an interview with the proctor for the churchwardens, and understood there was no objection to the application, provided the reredos had a covering.—Dr. Tristram directed the faculty to be granted, calling on the churchwardens to replace the table removed, and after hearing some evidence to the construction of the reredos and the representations carved thereon, he said he would visit the church before he made the order as to the reredos.—The learned Chancellor visited the church, and gave directions as to the faculty.

A BUILDER FINED FOR DESTROYING A HOARDING.—A singular case, arising out of an attempt to prevent the acquiring of an easement to a right of light, came on for hearing at the Hastings Police-court on Saturday. Henry Hughes, builder, and town councillor, was summoned for wilful damage to a hoarding, and from the evidence in the prosecution it appeared that the prosecutor, Mr. Birkett, owning the freehold of 12, Maze-hill, wished to prevent a right to light to certain windows overlooking his garden. Under the supervision of Mr. Archibald Smith, architect, a hoarding was set up—the neighbouring owners having refused to recognise prosecutor's right. A week later two policemen, passing the premises at 1 a.m., heard sawing going on, and found defendant directing two men, who were sawing through the posts; they declined to stop their work, and eventually the hoarding fell. In the defence it was contended that the case was before a county-court, but the magistrates decided they had jurisdiction, and, after hearing the case, ordered defendant to pay a fine of £1, £2 4s. damages, and the costs.

HARRIS' WINDOW SASHES.—A case of importance occupied the attention of the County-court Judge at Bristol for three days last week. The plaintiff was Thur Warner Ifter, an engineer, of London, and a defendant, Mr. Joseph Thomas Harris, engineer, founder, and patent wrought-iron sash manufacturer, of Bristol and London. The claim was for

£21, for a month's wages in lieu of notice, and damages which plaintiff alleged he had sustained by breach of contract. The defendant had filed a counter claim, in which he alleged that he had sustained loss to the amount of £40, with regard to some window-sashes, in consequence of plaintiff's negligence, and he also claimed damages on the ground that the plaintiff had not opened the doors of his works in time to admit the workmen. The terms upon which the plaintiff was engaged were that his wages were to be £2 12s. 6d. per week; that there should be a commission, the amount of which was to be afterwards agreed upon; that there was to be a month's notice; and that after the first month there was to be an increase of salary. On the 7th of August the plaintiff went down to Bristol, and entered upon his duties; shortly afterwards the defendant became ill, and was absent from his works. Things went on until the 8th of September, when plaintiff was summarily dismissed; and, from the correspondence which had passed, the learned counsel said he thought that defendant had acted as unjustifiably as any person could have done. In those letters three grounds were alleged for the dismissal of the plaintiff, the first being that certain window-sashes would not fit, owing, it was said, to Ifter's negligence. The second ground of justification was that the plaintiff kept the men waiting one morning, having the keys in his pocket. A third ground was that the plaintiff did not keep a diary of his daily engagements. Defendant, who was examined at some length, declared that no sane man would have performed his duties in such a way as the plaintiff. Witness produced one of the sashes as a fair sample of those produced under plaintiff's supervision, and showed that the centre-bar was 1½ in. out of the perpendicular. Mr. Gingell, architect of Messrs. E. S. and A. Robinson's new premises, proved that the first lot of sashes which he obtained from the defendant were very good. His Honour gave judgment for the defendant, on the ground that the plaintiff was not competent for the work which he undertook to do, as evidenced by the numerous sashes turned out under his supervision, the rejection of them entailing on the defendant a loss which was a sufficient ground for the dismissal.

Mr. George Fenn, borough surveyor of Beccles, died on the 9th inst.—an important day with the body with which he had been connected during the greater part of his life, as councillor, twice as mayor, and finally as borough surveyor, an office he had held for many years.

The new studio of the Dover School of Art, in Northampton-street, was opened by Earl Granville on Saturday, the 3rd inst. The building was till recently used as a racket court, and has been altered to suit its present purpose by Mr. W. J. Adecock, builder, acting under the direction of Major Scott. The seventh annual report of the school, read during the proceedings, showed that there had been a great increase in the number of students during the past year, and that they now numbered 196; 90 were examined in May last, of whom 24 passed, and 9 received prizes. A new master, Mr. East, from South Kensington, had been appointed. An exhibition of paintings, lent by local owners and the South Kensington authorities, has been on exhibition throughout the week.

The Town Council of Hythe, Kent, have accepted the tender of Mr. Mark Pexton—the lowest sent in—for work in connection with the new drain to the south of the Military Canal.

The new military brigade depôts at Caterham and Reading have just been completed for the War Department—the former by Messrs. Higgs and Hill, and the latter by Messrs. Cooke and Green. Messrs. Higgs and Hill have also supplied about 400 locks for Caterham depôt, with keys differing throughout, and a similar quantity for Reading, together with a large quantity of latches, door furniture, and general ironmongery.

At a meeting of the debenture-holders of the New Opera House last week, it was resolved that—in default of sufficient means—the project should lapse, and that the site should be made available for an hotel or some such purpose.

The church of St. Michael and All Angels, Leamington, was opened on Thursday week, after completion, by the addition of nave aisles and western porches. The present contract has been executed by Mr. John Fell, from the designs of Mr. John Cundall.

A new Baptist chapel at Grimsby was opened on Tuesday week. The style adopted is Romanesque, and the principal features of the exterior are steep slated roofs, angle turrets, and pinnacles. Internally the ceiling, which is ornamented by enriched panelled ribs, is supported on light iron columns, the centre portion being raised and covered. The side benches on the ground floor are placed so as to converge the sight of the congregation on the pulpit, and an organ gallery is recessed behind a large, well-moulded arch in the back wall of the chapel. The chapel is 66ft. by 50ft. 6in., by 36ft. high, and will accommodate 1,000 persons. Mr. Morton M. Glover, of London, was the architect, and Mr. John Brown, of Grimsby, the builder.

Our Office Table.

THE General Post-office has long outgrown its premises, and it was rumoured some time ago that, in the event of Christ's Hospital being removed to the country, it was not unlikely that a building large enough to accommodate the chief office and some of its branches would be erected on the site. This idea, however, seems to be abandoned, and it is now stated that the authorities contemplate purchasing from the City the vacant plot of ground, consisting of about eight acres, which stretches along the Embankment from Blackfriars to the Temple.

AMONG recent German inventions is a simple process, depending on the use of acetate of lead, by which every kind of colour is applicable to sheets of zinc. By mixing black lead, for instance, with the salt a very agreeable light brown hue is obtained. It is by this process the cupola of the synagogue at Nuremberg has been painted. A sufficient length of time has already elapsed, it is said, to show that the atmosphere has no influence on the zinc sheeting of the roof, thus showing the practical value of the process in such cases. By the addition of other colouring matters, light or dark shades of yellow or grey may be produced.

THIRTEENTH-CENTURY and nineteenth-century tunnelling can be advantageously compared in the rock beneath Morlais Castle. When the castle was reared, 600 years since, on the borders of the Brecon territory, the builder intended to excavate a trench out of solid rock on three sides, so that, with a precipice on the fourth side, the castle might be rendered impregnable; the project, however, was abandoned when half completed. Immediately to the north of the old castle a tunnel is being pierced through the rock, in order to link the town of Merthyr Tydfil with the London and North-Western Railway system. The tunnel is over 1,000 yards in length, and goes through solid limestone and millstone grit. The agencies are the Ingersoll drill, worked by compressed air, and dynamite, the latter under the direction of Mr. Cross, of Cardiff. Mr. Mackay is the contractor for the undertaking.

A CONCESSION has been made to those who have persistently urged that on the proposed site at Westminster Cleopatra's needle would there be dwarfed by its surroundings. The supports on which the model obelisk rests have been so modified in dimensions and form as considerably to raise the apex. The pedestal is now 10ft. 4½ in. in height. It has been made slightly tapering, being 10ft. 3in. at the base and but 9ft. 5in. at the summit. Dr. Birch, in his "Notes on Obelisks," distinctly states that the Egyptians always made the pedestals of these monuments taper slightly upwards, like the shafts. Between the Parliament-square pedestal and the steps, three in number as before, there is now seen a stylobate 11ft. 6in. square and 3½ ft. high. The height of each of the steps is 1ft. 10½ in., or 5ft. 7½ in. for the whole. The topmost step is 14ft. 4in., the next 17ft., and the lowest 20ft. square. At each of its corners would be a pediment 4ft. high, on which a sphinx might be placed, and the platform is ascended by three steps opposite each side of the obelisk. With the platform the total elevation of the supports would be 22½ ft., which, added to the height of the shaft from base to apex, which is 68ft. 5½ in., gives within half an inch of 91ft. in all—an addition of 10ft. to the former total elevation.

AT the annual dinner of the Operative Bricklayers' Union, at the Queen's Hotel, Cobridge, last week, Mr. William Woodall said it had been his privilege recently to visit a country where he had been greatly impressed with the capabilities of brickwork. The grandest and most enduring remains—the temples, aqueducts and theatres of ancient Rome—were largely of brick and imperishable mortar. In other parts of Italy, in the most beautiful monuments of early Christian times, and of the middle ages, brickwork held its own with marble, and in combination gave delightful beauty of form and colour. In the friezes and cornices, in the chimney tops of the humblest as well as the grandest buildings, there was abundant evi-

dence of the artistic ingenuity by which the workmen worthily supplemented the conception of the architect. He thought it would not be disputed that there had been a serious declension in their trade, so far as its artistic character was concerned, although mighty works would endure to testify to the railway and engineering enterprise of the age. But in the revival of what was called "Queen Anne" architecture in their own day, there was much to be hoped for, since its merit lay in the fact that it professed to be dependent wholly or mainly upon honest brickwork. He felt assured that what was wanted for the maintenance of their industrial supremacy was skilled rather than cheap labour, and he hoped that the practical question of technical education would commend itself to their attention.

The programme of the arrangements for the coming session of the Society of Arts has just been issued. The opening meeting will be held on the 21st inst. At the second meeting, on the 28th, a paper will be read on "The Telephone," by Prof. Bell, the inventor, and among the other papers to be read before Christmas is one on "Freedom in the Growth and Sale of the Crops of the Farm considered in its bearings upon the Interest of Landowners and Tenant Farmers," by J. B. Lawes, Esq., F.R.S. Three courses of "Cantor Lectures" are announced—First course, on "The Manufacture of Paper," by William Arnott, Esq., F.C.S.; second course, on "The Application of Photography to the Production of Printing Surfaces and Pictures in Pigment," by Thomas Bolas, Esq., F.C.S.; third course, on "Some Researches on Putrefactive Changes, and their Results in relation to the Preservation of Animal Substances," by B. W. Richardson, Esq., M.D., F.R.S. The second and third courses do not commence till after Christmas, as is also the case with the first meetings of the Chemical, African, and Indian Sections. An additional course of three lectures, on "Explosion in Coal Mines," is to be delivered by T. Wills, Esq., F.C.S., on three evenings in January and February. It is stated that the conference on "Health and Sewage of Towns" is to be repeated, and that a second "Congress on Domestic Economy" will be held this year at Manchester.

We have received the report of the Council of the Liverpool Architectural Society upon the model bye-laws issued by the Local Government Board. The council's report seems to be thoroughly condemnatory of the new regulations upon various grounds, some of which are valid and some appear rather frivolous. Thus the definition of buildings into three classes, is objected to inasmuch as it omits all reference to composite buildings, which combine the characteristics of all three, or of any two; the bye-law as to party-walls is criticised with some force, for as we have pointed out there are instances which would give rise to serious litigation, if the party-wall definition was stringently adhered to. Bye-laws 19 and 20 as to thickness are discussed. The restriction as to boarded floors is pronounced arbitrary. Between bye-laws No. 56 and 17, a "glaring inconsistency" is pointed out as to the relative levels of joists, and the bed of concrete or asphalt. The drainage bye-laws are pronounced unworkable; the requisition for a complete set of plans and sections is considered "inquisitorial without serving any good purpose," and it is thought, not without reason, that members of Local Boards and their surveyors who may be practising architects, will enjoy the advantage of studying all the designs and specifications submitted to the sanitary authority, and thereby be placed in an unfair position as regards their competitors. We do not endorse all the objections, especially the opinion that the health of a community depends as much on food and personal habits as upon the dwellings inhabited. It is true we may convert a palace into a fever den, but if we do not provide healthful dwellings, we make the largest part of them such.

At the meeting of the Court of Common Council yesterday it was stated that the City Lands Company had for some months been considering the vexed question of Temple Bar, and they had been trying to obtain concessions, which they thought the public might fairly demand. On the south side they had been met

in the most liberal manner by Messrs. Childs, the bankers, who had thrown into the public way a depth of 4ft. 6in. along the whole of their frontage. At present the pavement east and west of the Bar was 10ft. wide, and it was contemplated to make the pavement a uniform width. They also recommend a roadway of 17ft., so as to enable two carriages to pass abreast from east to west, a column or obelisk in the centre to mark the site of the Bar, a 5ft. rest and a roadway of 17ft. to enable two carriages to pass abreast from west to east. There would then be a pavement on the north side of 12ft. Mr. Street, to whom the committee had been referred by the Government, and who was the architect of the New Law Courts, insisted on a pavement of 14ft. outside the law courts. It is hoped, however, that public opinion will not enforce this. It is true that the New Law Courts were set back 11ft. 11in. from the original frontage, but in an improvement of such vast importance this further concession might well be made.

CHIPS.

A new Board school was opened in Summer-lane, Birmingham, on Monday. The building, which will accommodate 1,351 children, has been erected by Messrs. Horsley Bros., from designs by Messrs. Martin and Chamberslain, architects, of Birmingham.

On Tuesday a new Board school was opened on a site purchased from the Artisans, Labourers, and General Dwellings Company on the Queen's Park Estate, Harrow-road. This school, which is built after the Queen Anne style, is to accommodate 854 children, girls, boys, and infants. The site has cost £2,967, and the building £8,938.

A new church is about to be erected at Bear Park, on a site near Auton Stile, on Ushaw College-road, given by the Dean and Chapter of Durham. The tender of Mr. George Gradon, contractor, of Durham, amounting to £2,415, has been accepted, and the foundation stone is about to be laid and the building proceeded with.

The rebuilding of the parish church of St. Martin, Dorking, is approaching completion, and the committee have issued an appeal for £600 for gas-fittings, seating the side aisles, and placing screen in the tower arch. The new peal of bells will soon be hung by Messrs. Gillett and Bland, of Croydon, who will then put a clock in the tower.

The Ipswich Dock Commission have requested Mr. J. F. Bateman, C.E., consulting engineer, to prepare plans and specifications for a new entrance lock at the south end of the dock, the estimated cost of the execution of which is about £39,000.

New works of water supply for the borough of Kirriemuir, N.B., were opened on Thursday week. They have been constructed at a cost of £4,500, from the plans of Mr. Lamond, a local engineer, and provide a supply by gravitation, the water being procured from about 900 acres of ground on the estate of Pearisic.

Mr. Scott, of Scarborough, has been elected surveyor to the Whitby Local Board of Health in the stead of Mr. Walker, resigned. There were nearly fifty applicants for the appointment.

The plans for the new workhouse for Christchurch Union, Hants, were submitted to the guardians by Mr. Barton, architect, of Bourne-mouth, on Monday week, and were adopted after providing that the schools shall be detached from the main building. The buildings will be proceeded with at once. They are designed to house about 200 persons, including officials, and the cost is estimated at £15,000.

Canton Bridge, Cardiff, was opened on Friday by the mayor and corporation, after having been rebuilt on a wider basis. Mr. J. A. B. Williams was the engineer. The contract for the masonry was taken by Mr. Samuel Shepton, builder, of Cardiff.

The town commissioners of Newry decided on Friday to apply to Parliament for the necessary power to purchase the undertaking and property of the existing local gas works.

Mr. William Smith writes from Morley to protest against the contemplated spoliation of the ruins of Richmond Castle. He says that the Government are arranging to rent the same of the Duke of Richmond and Gordon, and to build a row of cottages on the east side of the Castle-green, in front of Robin Hood's Tower and the Priest's Chapel, in order to accommodate the staff sergeants of a militia battalion. He adds that representations have been made to the Duke on the subject, but without result, and suggests that the protest should be backed by county influence. The alleged intention of the Government to deface an historical ruin by blocking it in with soldiers' cottages looks like a characteristic piece of Conservative policy.

MEETINGS FOR THE ENSUING WEEK
 MONDAY.—Royal Institution of British Architects. Paper by H. White, Fellow, on "Middle-class House, Paris and Central London," 8 p.m.
 TUESDAY.—Institution of Civil Engineers. Discussion on "Progress of Steam Shipping," 8 p.m.
 WEDNESDAY.—British Archaeological Association. Paper by Birch, LL.D., Keeper of Oriental Antiquities, British Museum, on "The Obelisk known as Cleopatra's Needle," 8 p.m.
 FRIDAY.—Architectural Association. Paper by F. P. St. Aubin, on "Notes on Cornish Churches," 7.30 p.m.

SLATES — SLATES — SLATES.
 Bangor, Portmadoc, and Importers of American Blue Green Slates, a large stock of which can be seen on the premises.

SCAFFOLD POLES, 22ft., 2s. 6d. each
 28ft., 2d. per foot; 35ft., 2d. per foot.

DEALS — BATTENS — FLOORING
 Send for price list.—R. MAY & SON, Timber and Sash Merchants, Acorn Wharf, Old Kent-road, London, S.E.

Trade News.

WAGES MOVEMENT.

LONDON.—No change in the condition of affairs between the masons and their employers is to be reported. The strike committee again paid strikers pay, at the rate of 18s. per week, last Saturday, and still assert their confidence in the ultimate result of the dispute. On the other hand, the masters, at a meeting held on Tuesday, expressed equal confidence so no chance of a reconciliation is at present apparent. The men have expressed a wish to meet their masters in conference, but this has been declined. The importation of foreign labour continues.

WHITLAND ABBEY GREEN SLATES

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. Further particulars (with a list of important buildings covered by the slates) apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire. ADVT.]

Holloway's Pills are the snrest preventives of the many maladies begot by wet, damp, cold foggy weather. Under the influence of this purifying medicine the blood is pure and the lungs free. An occasional dose during the winter months proves salutary to all exposed to vicissitudes of temperature.

CHURCH METAL WORK

Altar Rails, Alms' Dishes, Coronas, Candlesticks, Communion Plate, Medival Gas Standards, Lecterns, Screens, Trowels, Vanes, Gates.
 SOLE AGENTS for Powell Brothers' Stained Glass, &c. Doulton Ware, and Architectural Terra-cotta, Ornamental Lintel, Façade, &c.
 Estimates Furnished for Special Designs.

CHUBB and SON,
 57, ST. PAUL'S CHURCHYARD, E.C.
 LOCK and SAFE WAREHOUSE, 125, Queen Victoria-st.

TENDERS.

BAYSWATER.—For new sheds for the Patent Straw Limited. Mr. E. W. D'Avigdoe, engineer:—
 For iron shed:

Whiteley	£1,723
Dixon and Co.	1,690
Handyside and Co.	1,650
Young and Co.	1,600
Cocking	1,328
Brittle	1,241
Wrightson & Co. (ironwork only)	690
Whiteley (all bnt ironwork)	531

For wooden shed:
 Elford 817
 Whiteley 800

BRISTOL.—For the erection of the David Thom Memorial church and schools at Bishopston. Mr. St. Colman, Bristol, architect; quantities by Mr. Deane
 William Veals £7,660 0
 Eastbrook and Sons 7,584 0
 Baker and Son 7,332 0
 Hill and Prior 7,285 6
 Davis, J. E. 6,990 0
 Wilkins and Hill 6,726 0
 Banner, W. 6,678 0
 Stepheus and Bastow 6,676 0
 Lewis and Edbrook 6,611 10
 Hatherley, E. J. 6,283 0
 Cowlin and Son 6,237 8
 Howell, E. C. (accepted) 5,863 0

BRISTOL.—For erection of new offices, Black Horse yard, West-street, and heating same, for Joseph Henney, Esq. Mr. W. Cloutman, surveyor; quantities supplied:—

Wilkins and Son	£410 16 0
Cunningham	390 0 0
Lewis and Edbrook	359 0 0
Hill, T.	333 0 0
Wilkins and Hill	329 5 0
James, J.	315 0 0
Caldor (without heating)	308 3 4
Hatherley, E. J.	308 0 0
Eastbrook and Son	307 0 0
Davis, J. E.	289 0 0
Phillips, Geo. (accepted)	286 10 0
Banner (ditto)	280 0 0
Hayes, C. A. (ditto)	253 0 0

[Surveyor's estimate (whole) £310]

FELIXSTOWE.—For the erection of schoolrooms, w master's residence, for the School Board for Walton T. Felixstowe. Mr. Brightwen Binyon, Princes-street, Felixstowe, architect:—
 Saunders, Dedham £2,465
 Bennett, Ipswich 2,410
 Gibbons, Ipswich, 2,350
 Thurman, Walton 2,133
 Ward, Felixstowe, (accepted) 1,969

THE BUILDING NEWS.

LONDON, FRIDAY, NOV. 23, 1877.

THE DECAY OF MÆDIEVAL MONUMENTS.

THE French Institute, amid its other learned labours, has been engaged upon an inquiry into the causes which led to the decadence and ultimate downfall, for a time, of the art which belonged to the middle ages, and the neglect of its monuments at the present time. The subject is one of high interest, and might have been rendered even more so, had it been borne in mind that an almost precisely similar phenomenon was witnessed in the Classic period, or towards its close, of European history. The second crisis of art, however, though identical in its aspects, was a contrast, in so far as its origin was concerned, with that which, by some centuries, preceded it. From the 11th to the 14th century Europe enjoyed an art of its own, new and creative, as those terms were then understood, and contemporaneous with a certain revival in philosophy, poetry, and architecture. Suddenly a downward tendency was manifested. With the progress of human liberty came, strangely enough, the enslavement of the arts, and the epoch of geographical discovery proved, in more than one respect, the epoch of barbarism. Yet the soil of Italy was then yielding up harvests of antiques; Grecian and Roman relics were turned up by the plough of almost every peasant; and museums were filled while students were wanting. The art world was in confusion, and the anti-Gothic maledictions of Vasari were anticipated by the anti-pagan denunciations of his predecessors in criticism. There were others—Montalembert, Viollet-le-Duc, and Lessus among them in our time—who thought a mediæval restoration in the 19th century possible; but they found it a hard task to re-unite the broken traditions of 400 years. The professors of the Institute, at any rate, declare that the effort was a failure, that the sole result of this neo-Gothic movement was the publication of some admirable archaeological literature; and that, as to practical fruits, they amount only to casts and copies from the past. The Institute, however, is not discouraged. It proposes a series of questions to be answered, which, *being* answered, may, we are told, restore the secrets of the past for the advantage of the future. Among them three are insisted upon as of cardinal importance. How did this great Gothic genius originate? What was the state of society amid which it flourished? Why could it not transmit itself through a succession of noble schools, like those of Italy?—though here, it may be suggested, the fortunes of Italian art in modern days have been even less prosperous. There is another problem started: Why did France never have a "Middle-Age," as that term is commonly applied? The epoch so full of brilliance, of boldness, and of invention in other countries, left her with a multitude of mediocre artists, without name or character; and yet Villard de Honnecourt was all the while working upon his marvellous productions, outlining the old cathedrals of Vaucelles and Courtrai, the rose windows of Chartres, the cloisters of Meaux and Lausanne. More than this, he studied Madonnas in Hungary, and, when the Dutch, German, and Italian genius had begun to fade, this patriotic painter imagined that he had discovered a hope for France. But the fragments we possess of him—his gladiators, dice-players, lions, wild boars, swans, and dogs—tell us, only too emphatically, how hopeless was the paralysis which had

smitten the art-life of Europe. The grotesques of the earliest and most infantile schools were reproduced, and Villard himself painted "a Saracen" in a Grecian tunic. Wandering away from sacred subjects, the artists of that degenerate time floundered in the universal ignorance, until they represented Alexander the Great in the costume of an ancient Briton. But, we are reminded, the painter was never so vitally Gothic as the architect, and even he forgot his true inspiration when rearing the roofs of St. Denis, of Chartres, of Noyons, Senlis, and Fécamp; though, in the last instance, the barbarising of the abbey, as seen in ruin, is so slight as to be almost imperceptible. While lamenting, however, the decline of a sumptuous style, our Academicians deny that the North has any right to be regarded as the creator of it. We will not re-enter upon a controversy which has been exhausted a hundredfold, because the present point of interest lies in the assertion, on the part of the Institute, that a great art has fallen away, and that the endeavours to re-inspire it have been failures. Certainly, the later examples in Brittany, Normandy, Lorraine, and Flanders are represented in the living schools more richly than the more antique monuments in the Isle of France, Veroy, Valois, Le Beauvoisis, and some districts of Champagne—"old France," in fact, over which the Capetonne dynasty ruled. The archaeological aspect of that region, indeed, is a written history in itself. We tread at every step upon the traces of Gothic tradition. The Institute is right—they are all, more or less, mouldering from the surface of the earth, and sinking beneath it; as, besides others already mentioned, Saint Remi de Reims, Notre Dame de Chalons, and the Church of Saint Leu d'Eperons. Not one of these is perfectly pure as a representative of any particular style, for the Roman arch interferes here and there in all with the Gothic plan. Much the same may be said of St. Etienne de Beauvais, St. Martin de Léon, St. Evremont de Creil, and many other edifices of which the Gothic character has been almost obliterated by the predominance of a barbarous taste. Yet it is claimed by French architects, and by the Professors of the Institute above all, that these were among the first purely Gothic edifices in Europe, and that their defacements were due to the corrupting influences of a later time, at which such architects as those of the Isle of France and Picardy—Jean de Chelles and Villard de Honnecourt—would have stood aghast.

It follows, according to the history and reasoning adopted by the French Institute, that the Gothic is essentially and exclusively a French form of art, and that France therefore, while deploring its decay, has the best right to champion on its behalf a new Renaissance. The hopes, even of the enthusiasts, however, are not very exuberant. They point to the many ruins on the banks of the Rhine; but where is French Gothic in that valley? They celebrate the Frenchmen who reared "Cantorbery" Cathedral, and lament that they are no longer called upon to keep it in repair, and they quote the record of their builders who spread themselves over Europe, carrying their style with them, and impressing with it a character upon the architecture of centuries. It is curious to read, however, the complaints in which their modern critics indulge. The builders of Strasbourg and Cologne, they say, working upon French models, claimed them as their own; the Italians borrowed, but paid their debt to the Tudors. All this is exceedingly little to the purpose in the second half of the nineteenth century, especially when the question is, not to whom we owe our Gothic monuments, but how they may be preserved,

and whether there is any possibility of that genius—which may almost be termed mysterious—being revived. So far from this last hope promising its own fulfilment, it is pointed out that, wherever new churches are being erected in France—in Auvergne, Provence, and Languedoc more particularly—the tendency is to abandon the Gothic altogether, or to mingle with it other elements in, as the writers say, with unnecessary emphasis, "frightful proportions." Colour is usurping the place of form; pillars are multiplied, more for ornament than use; the nineteenth century is once more overwhelming the middle ages, and again is art threatened with a disgraceful shipwreck. We do but re-echo the prophecies of evil which come to us from the left bank of the Seine. The Gothic is blending with the Arab, and the Arab with the Italian, and a Renaissance or ruin must be near. What are those towers of exaggerated height, pinnacles resembling lacework, open galleries, canopied images, plethora of detail, and stone embroideries that look as if cut out of cardboard? Then, to what are we to ascribe this decadence, decay, and neglect? The reply is ready. Gothic was born of enthusiasm; genuine enthusiasm exists no longer. Therefore, the vitality of Gothic has ceased. That is the explanation which we receive from a distinguished section of the Institute, and with it, perhaps, we must be contented. It is true that there was a certain degree of romance about the rearing of the old cathedrals—voluntary labour, gifts of charity, the free-will offerings of penitents, and so forth. They had nothing in common with the Parthenon, Pæstum, or Baalbek: they breathed the inspiration of the age, and are now, it is said, perishing for want of it. Says M. Ernest Renan, the Gothic contained within itself the germ of its own decay; it was an accident, not a principle; a defiance of principle rather, and doomed accordingly; a paradox destined to an ephemeral existence, and no more. Yet France assumes it as her own, and the wise men of the Institute tell us:—"It is true we never had a Giotto, but we have artists by far his superior." It might be said, were the controversy worth insisting upon, that the celebrated "pictures of Avignon" were all by Italian masters; that the "Roman basilicas" of the South were not French at all, and had nothing to do with Gothic; that the canvases and panels of Saint Severin came, for the most part, from Germany; and that the earliest Gothic porticoes executed in France were wrought in what was not French territory or regarded as belonging to the French nationality at the time. But this would be beside the subject, although it is forced into connection with it by what we may call, perhaps, a corporate spirit of egotism. Passing on, it is certain that, while the venerable monuments of Gothic art were mouldering, no endeavours, during a long course of years, were made, either to preserve or to multiply them, and the enamels of Limoges were prized more highly than the spires of Beauvais or St. Front de Perigueux. It was during this interval that a vast amount of dilapidation took place, which no catholicity of sentiment can ever now redeem. The Fifth Charles, with the aid of those accomplished artists, Raymond du Temple and Jean St. Roman, tried the experiment, and failed. Gothic was dead in France. So much, at all events, is avowed by those who never fail to insist upon the pre-eminence of her intellectual charters. Then, like a second growth, we perceive the grand grey edifices of time overflowered, as it were, with ornament; luxury within the edifice, instead of without; gilding, painting, tapestry, decorated mansions, ginger-bread chapels; and contemptible imitations from Florence, Bologna, and Milan—though in

all these three a similar lassitude had succeeded to the former enthusiasm, and their noblest fanes remained unfinished. Few cared to undertake the works, fewer still to pay the cost of completing them. The rare additions made to the great structure at Reims were servile reproductions from the antique, or from semi-barbarous Byzantine shrines, and copies from Giunta and Cimabue flamed above the altars of edifices whose artists and builders had deserted their labours. The Golden Legend of Art was lost, and France was no longer in the mood to attempt its recovery. Such is the story—a somewhat lugubrious one—told to the Institute of France, and the conclusion of the Lamentation is characteristic. It was through no fault of the sixteenth century that its genius was not transmitted to after ages—it never completed itself; it was not the creator of Gothic, but for awhile its conservator; it neither inherited nor bequeathed a perfect art, for the Gothic, belonging to other epochs as well as to that, was never more than a fragment—a mighty one, no doubt—yet one of which the relics are decaying before the final stone was set in its place to crown the fabric. These are the Academical conclusions of Paris in 1877.

THE GOTHIC SECESSIONISTS AND "QUEEN ANNE."

IT has been urged by some of the devotees of "Queen Anne" that it is the offspring of the Gothic—that its revival among us owes its origin to the spirit of that style, and that it fulfils all the conditions of modern wants. They tell us that so far from being the revival of the Classicist, it partakes, in its essence, of every advantage Gothicism has claimed as its legitimate property. It is very natural these claims should be made now on behalf of those who have assumed a new character after following a style like the Mediæval to the letter. It is very reasonable that the claims so unhesitatingly put forth a few years ago on behalf of the universality of Gothicism, and its elasticity to meet all wants, from a domestic building to a City bank, a civic structure, or a warehouse, should now be transferred to the new revival; but it is equally singular that the claimants should have transferred their allegiance to a style in which the detail is so thoroughly opposed to the spirit and meaning of Gothic. For if there be any reasonable ground for adhering to one style, it is that of preserving in its purity the *motif* of certain well-defined characters, such, for example, as the pointed or arched form of opening, the consensus of vertical over horizontal features, the *raison d'être* of mouldings, and such like. If we can conscientiously say these symbols or expressive features are capable of such extreme variation as we find them to be in Queen Anne, then we must confess that the principles upon which the partisans of Gothic swore had no real claim to the attributes imputed to them; and, in short, that the style has been tried and found wanting. We cannot possibly see how the uncompromising sticklers for Mediævalism can refute this argument. They may say we "design in Queen Anne because it is the nearest approach to the versatility of Gothic, because it admits of a free and unrestricted treatment, and because it lends itself to picturesque grouping, high roofs, and so on;" but this is plainly "begging the question"—it is like asserting Classicism is un-English, and therefore ought to be rejected. Far stronger are the reasons which assign domestic convenience and comfort as the proximate causes of the reign of 17th century architecture, once more among us. People were beginning to tire of Gothic villas, and pseudo-mediæval castles

—the partisans of that style, like most other partisans, were bigoted men, and would not allow any other views but their own to predominate. Common-sense reasons and conventional ideas were looked upon, only ten years ago, as vulgar, and as indicating a low taste; and the nearer the domestic planning and details approached the ecclesiastical idea or taste the better. It is extremely amusing to see how the spirit of the dream has changed. We are now deluged with the most stereotyped of the features committed during that reign of common sense and national independence, which the Mediævalist once unhesitatingly branded as unchurchmanlike—the era of whitewash, vandalism, and churchwardens. The very things that he denounced as sacrilegious and tasteless—the church galleries and high pews, and three-decker pulpits—so long as they retain a trace of the old mouldings or carved work, are now gloried in; it is held to be desecration even to touch or restore them, while the sash window and the vernacular fanlight have passed from the region of contempt into favour. We can understand the new Education Act, which gave so much umbrage to one section of the Church, should have brought with it a revival of those features associated with the progress of Protestantism in this and other countries, and we can appreciate the motive which prompted the Loudon School Board to clothe its new school buildings in a dress of that ultra-Protestant reign of Queen Anne; but we cannot fathom the motives which prompt Mediævalists of extreme views to take to it rapturously on purely artistic grounds. We repeat it there must be something deeper than the mere reaction of fashion.

It may be urged, with a great deal more fairness, that "Queen Anne" is a compromise between Gothicism and a recurrence to Classical types. It possesses more flexibility than either of the purer styles; it lends itself easily to modern ideas of domestic comfort, wide and roomy halls and staircases; it avoids unnecessary nooks and corners, and it deals in a commonsense way with woodwork, and above all acknowledges the "sash window." Moreover it is a brick style, the associations that surround it are thoroughly English, and more akin to our own tastes than the Mediæval style. In every one of these tests Gothic has been tried and found wanting. No Gothicist will deny that as a rule Gothic houses and villas are costly mistakes. We can point to a very few that are quite satisfactory as residences. Mr. Waterhouse, out of a large number of architects, has succeeded beyond many in bending and adapting the style to domestic and commercial purposes; but even these works show such a clipping and modification of feature that we can scarcely recognise in them the character of mediæval Gothicism. Again, take the interior finishings and woodwork of houses. Few architects will deny that they are extremely costly and unsatisfactory in this style. On the contrary, the vernacular requirements of the modern conventional house suggest to us many of the features in the Queen Anne of the moderate school; indeed, the plainest back elevation of discoloured brickwork, if only it has a parapet, square stacks, chimney-pots, and white pointed sash windows, has a lively interest, and to some an indescribable charm just now, despite the abhorrence the self-same men entertained of it but a very few years ago. Then the hole-in-the-wall or sash-window theory was decried as beneath the notice of architects, and worthy only of the most prosaic dabster in bricks and mortar. But, now, common-sense things as they are, it is none the less a truth that one or two of our fashionable architects swear by the flat-gauged arch and the sash-window—those sadly-abused members in the years of

our youth. Pedantry, conceit, and mancrism have done their best to wrap them up in a dress of pilasters and classical members, so much as almost to stifle their meaning in some hands, and this habilitation has been carried so far as to make the style depend upon it. It is very necessary for the admirers of the style to distinguish clearly between the real features and spirit of seventeenth-century Classic and the hybrid mixture of conceits termed "Queen Anne," to enable them to judge of the true merits of the style they are following. We would distinguish first the moderate common-sense "Classicism" of the seventeenth and eighteenth centuries, of the time of James I. and the early Georges, in which high-pitched roofs, sensible windows, and plain brick ornamentation existed, such as the style known in Johnson's time, and of which we find numerous instances in the Temple, Bedford-row, Queen Anne's-gate, &c. Secondly, we would mark that perversion of taste which was followed during the same period, or partially so, when the then imported Dutch fashion was combined promiscuously with Late Gothic features—a phase, or rather heterogeneous compound, of conceits and grotesque whims. It is right that these two developments of the same general movement be discriminated; it is right also to remember that Gothicism had died out in all but the name, and that a Classical school of thought was established. As typical of the more moderate combinations of the vernacular and Palladianism we may cite the historical examples of Hatfield, Audley End, and Charlton House, Wilts, in which we find the spirit of the vernacular still maintaining supremacy under a garb of foreign and semi-Classic detail. It is for the admirers of "Queen Anneism" to say which of these two phases they are bent upon reproducing or adapting. Much of the work called after this name has no more affinity to it than to Greek. They are really Gothic houses, dabbled up with sash windows, pilasters, and pediments, and may be designated Queen-Annesque-Gothic, if they are worthy of any name. There is neither the motive nor the breadth and simplicity of the style they mimic. About London there are heaps of this rubbishy kind of stuff, with no pretensions to Gothic, and with details of Classic that would make a tyro blush. But a composition as that of Merrist Wood, Surrey, by Mr. Norman Shaw, is thoroughly Gothic in spirit, at the same time devoid of senseless ornamentation. If the admirers of the style would first become architects of plan, and then workers-out of the detail upon either Gothic or commonsense principles, they would do much towards taking away the reproach we constantly feel when we look at one of these inflated attempts—that architects who try to be artists first always and signally fail. It seems, also, natural for a man of Gothic predilection to work in his own way, rather than to try to do something in a totally opposite spirit. If he does the latter he nearly always fails, or shows the result of pedantry or of rashness. He falls into numberless conceits, his work looks affected or operose, and there is a painful evidence of effort that completely destroys the unity of the work. If success is to be achieved in the style, it must be by honestly studying the plan, and not by the feverish desire to do something grotesque or quaint, as we see in some attempts at Kensington and the West-end. It is far better for the architect, if not a Classicist, to abstain from mimicking Classical features on the one hand, or to attempt to give variety and picturesqueness by an *omnium gatherum* on the other. Another consideration that is lost sight of appears to be the essentially Domestic character of the style. For schools, houses, hospitals, and residential buildings generally, it is admirably adapted,

but for civic and monumental structures—such as town halls—it scarcely seems dignified and eurythmic enough. From what we have said, it is evident that the claims set up for the style have been over-rated, and that to suppose Queen Anneism will take the place of either Gothic or pure Classic for the higher purposes of architectural design is to imagine that the aims of high art have retrograded. At the same time, we must admit that the requirements of our day demand a flexible architecture, that the style in question in some hands is capable of fulfilling all that is required of it, and that the chief consideration to promote this end must be attained by a careful avoidance of extremes.

PARIS AND LONDON HOUSES CONTRASTED.

IN another part of our impression we give an abstract of a paper, read by Mr. William H. White, Fellow, before the Institute of Architects, last Monday evening. We need hardly say the subject has been alluded to at various times in these pages. In Vol. XXIX., page 638, we gave an abstract of a similar paper, read by the author before the members of the Association, and in Vol. XXX., page 315, the subject was further illustrated. Mr. White's treatment of this theme last Monday was more fully developed, and was accompanied by plans of Paris and London houses, with suggestions for the application of the system to central London. The author succeeded in drawing a lucid contrast between the *maison-à-loyer* of Paris of the Second Empire, and the London middle-class house as we see it in the Bedford Estate and other residential parts of the metropolis. The picture was perhaps a little too highly coloured—we will not say "fanciful," as the President observed—though it must be observed there were many points dilated upon that will afford a profitable evening's discussion at the next meeting of the Institute. Mr. White, while tracing the development of the Roman *insula* or "island" of shops and superposed dwellings at the close of the first century, to the blocks of Old Edinburgh of the 16th and 17th centuries, and to the *maison-à-loyer* of the reign of Louis XIV., in Paris, urged the idea of this evolution as an argument in favour of the system in this country—doubtless without taking into account the fatal divergence from the system exemplified by ourselves. It may perhaps be retorted we have fallen back in our ideas of house organisation. We here simply note the fact: it is a point open to discussion, in which a great many social disparities and antipathies must enter. The plans illustrating the peculiarities of the model of the Pierre le Muet *maison* give us some clue to the ideas of the 17th century house-building, and as Mr. White remarked, it is highly instructive as the type of the London house after the Great Fire and the Paris house of to-day. We trace here the germ of after-modification. In one of these we find a large plot of about 40ft. by 100ft., divided in depth into four almost equal parts or two-roofed blocks, one being in front, alternating with open areas for light and air. The covered portions are connected by passages on one side containing the stairs and entrance, while the front block is pierced by a centre passage-way or entrance opening into the first courtyard. In front we have a stable, and a kitchen on either side of entrance. The second block contains two sitting-rooms. On the first and second floor, we have sets of rooms approached by the same stairs at the angle of courtyard. These are bedchambers and dressing-rooms, and each floor could be thus occupied by the head of a family and

his married sons and daughters, or let separately. We certainly trace in this not very felicitous arrangement the type of the modern *maison-à-loyer*; we also trace in it the arrangement of our old London houses, of which few now remain with the open courtyard. The plans exhibited by Mr. White, of the Paris dwelling-house, as it is now seen, were typical of the modified arrangement. One example in the Boulevard Malesherbes was interesting—of triangular shape surrounded by shops on the ground floor on two sides, with courtyard and entrance leading to the sets of apartments above; in general, however, the plan consists of a shop or shops on the ground level, a courtyard or area for light and entrance in the centre, approached through a passage in which is the entrance-staircase and lobby, a caretaker's or *conciierge's* lodging overlooking the entrance, while each floor above forms a suite of apartments or a single house of about eight or more rooms.

Let us turn, however, to the more practical part of the subject, and examine one or two of the propositions that were put forward by the author of the paper. The question resolves itself under three heads—the social, sanitary, and architectural, and it is under these we must consider the solution of the problem. We will not here inquire whether it is desirable to house our families between horizontal rather than between vertical division walls—that is a matter that will be looked at differently—but will content ourselves with examining the schemes proposed on more practical and commercial grounds. After all, the matter reduces itself to one of areas. One question is, whether we can house more families on the horizontal system than on the vertical; another, the cost of construction. Mr. White showed an imaginary scheme for converting a block or island of buildings in Regent-street after the Paris fashion. Here we have a block of 28 houses, some of which have amalgamated. They are, as usual, back to back, with frontages towards four streets. The proposed re-division gives five blocks of shops and houses, separated by two party-walls, and the total number of shops on the proposed floor plan is 21, some with mezzanine over for shopkeeper, and with basements. The only difficulty we see here are the necessary points of support for the superposed houses, though these may be regulated with a little ingenuity. The lighting is good from front and central courts. Turning to the houses, this plan provides 19 houses in the superposed structure of the "island," 3 distinct houses of 14 rooms, 3 of 10 rooms, another 3 of 9 rooms, and 10 of 5 rooms each, making a total of 149 rooms, plus the 33 rooms obtained over the shops, to place against 182 rooms, which the author estimates to be the number in the superstructure as it is. This plan also reduces the frontage devoted to private entrances; in the plan proposed, the frontage given up to private entrances to the houses or superstructure of the suggested island is 60ft., as against 80ft. of the existing plan. This is manifestly a great point of economy in favour of the scheme. But let us look at the houses. Mr. White's plans of course we take as merely types of what may be done; the reception-rooms are divided from the offices and bedrooms by divisional walls, which are carried up; each has its own corridor and conveniences; the courtyards are open at top, and into them are lighted the smaller apartments, bath-rooms, and closets. It will not be claimed for these plans that they are all the middle-class occupant in England requires; exception may be taken to the smallness of the rooms, the long and in some cases narrow passages required, and the want of open yard or garden. The main question is, however, whether the same size of rooms can be obtained in this

system as the old one offers. Let us look at the question of areas in another light. Suppose we take an ordinary dwelling-house of, say, 8 rooms, letting for from £40 to £50 in the suburbs. Taking the area of one floor we get a usual frontage of 18ft., and a depth of, say, 30ft., or about 540ft. superficial area. Multiply this by 4 times the number of stories, we get 2,160 square feet, or, say, in round numbers, 2,000ft. Now let us see what area of ground must be obtained on one floor by the proposed system to equal this. We find that we must get a plot of at least 20ft. frontage, by 100ft. deep, or just about double the quantity of the suburban house plot. If we try a middle-class house on the Bedford Estate the disproportion is still greater. Taking the figures of Mr. White as very usual—namely, a frontage of 18ft., and a depth of 36ft.—we get a superficies of 648ft. for one floor, and say we multiply this by 4, though there are generally more stories, we get 2,592ft. as the required area, or more than half again as much as the land upon which these houses are generally built. In the neighbourhood of Southampton-row and Tavistock-square houses with 8 to 10 rooms; besides the offices, let for from £200 to £150 per annum; the rooms are large, two going to each floor as a rule, and to many of them there is back garden about the depth of the house. The revenue return given in Mr. White's paper, for two houses on the Bedford Estate, shows a total return annually of £920, though we believe this to be a little in excess; while the probable revenue on the improved plan is put at £1,420 per annum; and estimating the cost of the latter at £2,000 more than the two houses, a profit of £300 in favour of the houses as they might be, is made. These figures show for the first-floor residences a rental of £70 each, for the second-floor a rental of £60 each, and the third £50 each—rather high rents, it must be confessed, when set against rents for some houses in that locality upon the isolated or vertical plan. However, we leave the question here. Much is due to Mr. White for his able and elaborate paper, and the Institute, we trust, will do their part towards the discussion of a scheme admirable in many respects, and which would be well suited for many parts of London—for bachelorhood especially. Into the question of construction we will not enter now. The mode adopted in Paris of fire-resisting floors mentioned in the paper is excellent, in which the rolled joists are embedded, or rather immersed, in plaster, and we must assure people first of their safety against fire before we expect them to inhabit third or fourth-floor sets over blazing shops; however this can be done. The merits and demerits of the system as a whole we leave; but there is the architectural part of the problem that will not be overlooked by some of the more aspirative members of the profession. It should not be lost sight of that the horizontal system, whatever merits it may possess—will not favour Gothicism. The very pronouncement of the system lends countenance to Renaissance or Classical design, and that only.

NEW SCULPTURE IN THE NORTH.

MR. WARRINGTON WOOD is at the present time the ablest of the English sculptors located in Rome, but his work has hitherto been little seen by the general English public. But quite recently some important and ambitious works from his studio have been erected in the North of England, and in the present dearth of great masters in English sculpture these additions are worthy of notice. The town of Liverpool possesses three figures—one an allegorical figure of Liverpool placed on the

top of the new Art Gallery. It is, however, so far from the spectator's view that anything like minute criticism of it is impossible. Liverpool is represented by a female figure seated on a bale of cotton. In one hand she holds a trident, whilst the other rests on a screw-propeller, to signify that the greatness of the town is founded on commerce and navigation. The idea is fairly happy, and the causes of the prosperity of the town are not so conspicuous as to make the mixture of ancient and modern ideas absurd, which is too often the case in allegorical sculpture of this kind. The other works are Raphael and Michael Angelo, in marble, placed at the entrance to the same gallery. These figures are more than life-size, and are evidently intended to represent the arts of Painting and Sculpture, as well as the two great masters themselves. For Raphael holds in one hand a pencil, and in the other a picture of a Madonna; whilst Michael Angelo is represented with a chisel. Praise must certainly be given to the sculptor for endeavouring to produce a work of really high art, so different from most of the commonplace and vulgar attempts which are conspicuous in the exhibitions of the Royal Academy. Raphael is a young and effeminate-looking man, as far as his face and long curls are concerned, but his lower limbs are so large as to be out of proportion to the girlish face above. The painter is seated with his back partially towards the gallery, and his face towards the square. But Mr. Wood, in endeavouring to be natural, has gone below what Gibson called the true "dignity of sculpture." For the attitude of Raphael, with one leg comfortably crossed over the other, reminds one far too much of the arm-chair postures of the smoking-room. The drapery, too, is decidedly stiff. Michael Angelo, on the other hand, is a more successful work. He is an old man with a stern, worn face. But there is, altogether, more general harmony apparent in the work; and the attitude, though still too *negligé*, is not so utterly without grace as that of Raphael. But when these well-meaning attempts to unite dignity and ease are compared with such a work as Flaxman's admirable statue of Burns, at Edinburgh, it is apparent that Mr. Wood is yet a long way behind some of his celebrated predecessors in art. The right arm, too, of Michael Angelo, resting on the wrist, is at once conspicuous, unnatural, and ugly. Still, this figure does possess a certain amount of truth and naturalness about it, and a certain rough harmony and power, which makes it, on the whole, not an entirely unsatisfactory work. But there are no signs of genius in its execution or conception, and it is only evidence of praiseworthy seeking after truth and naturalness, together with some high aims. But this is more than can be said for most of the sculpture of the present day.

The remaining work stands in the Fine Art Gallery which has just been opened at Warrington, and has been purchased by the Corporation of that town, with an unusual amount of public spirit, for the sum of one thousand pounds. The group is entitled "Michael overcoming Satan," and is, undoubtedly, a noticeable work, which cannot fail to enlarge Mr. Wood's reputation as a sculptor. The artist has chosen his subject from "Paradise Lost," and the moment fixed upon has been thus described by Milton in the Sixth Book:—

They ended parle, and both addressed for fight,
Unspeaking
Now waved their fiery swords. The sword
Of Michael from the armoury of God
Was given him, tempered so that neither keen
Nor solid might resist that edge.

The conception is high, but the execution is scarcely equal to the thought. The figures are of life-size. The archangel, with extended wings, raises his right arm high

above his head, grasping the sword with which he prepares to strike his foe. This sword is apparently meant to represent small flames, according to Milton's epithet of "fiery," but it looks much more as if covered with small feathers, and is quite contrary to the idea of the succeeding epithet "tempered," and is also out of harmony with the contest which is being waged. Michael is a young man with fine features, and a mass of curling hair, and his left hand extended presses back the head of Satan. The latter, also winged, is in the act of being overcome by the calm and resistless might of the archangel; his right hand vainly grasps the arm of Michael, and his left seizes him by the leg. He is beaten to one knee, and he looks up at his conqueror with head bent back, and unavailingly struggling with great bodily strength against a celestial power. This is clearly the contrast which Mr. Wood has endeavoured to depict, and which he has not been unsuccessful in doing. But the forms of Michael and Satan do not attain to the degree of ideal beauty which, united with the ease of Nature, is required to produce a work of the highest art. Again, by the very subject a comparison is inevitably challenged with Flaxman's great work, executed in the maturity of his power and based on the same idea, and Mr. Wood's work must be criticised accordingly. The form of Michael is inclined to be lean, and the left arm of Satan upon examination will be found square and stiff. On the other hand Michael's wings may be fairly pointed out as being admirably modelled, the soft feathers on the inside being smoothly life-like. But the want of complete bodily perfection in the archangel takes away that appearance of irresistible but unearthly power which is the central idea of this group. Yet, in spite of these defects, this work is one which must give Mr. Wood a distinguished place among contemporary sculptors. The conception is a grand one and worthy of the finest artistic treatment, and if the thought has not been carried out with that completeness of idea and manual power which the splendour of the subject demands, yet the high aims displayed and the standard actually reached show that time may do much to give the author of this work a distinguished and permanent place among English sculptors. In the same gallery two or three smaller works by Mr. Wood are exhibited by the owners, which, though spoilt by some affectation, show considerable technical power. The two best are a statuette of Rebecca—chiefly a study of drapery—and a bust of Apollo. With the temporary collection of pictures—though creditable for a local exhibition—we are not now concerned.

THE ARCHITECTURAL STUDENT, AND THE MEANS OF SELF-IMPROVEMENT AT HIS DISPOSAL.

IT is somewhat surprising that, with all the facilities just now open to the architectural student, he is so slow to take advantage of them. The season of lectures, papers, and discussions has recommenced, the architectural societies have started into fresh activity, the results of the autumnal recess in the shape of sketches and measured drawings will soon be laid before the student, but we may ask, judging from the past, to what extent is he likely to benefit from them? We ask this in no captious spirit, and at the same time to point out the unexampled advantages which the young architect of the present day enjoys. Compared, indeed, to his predecessors, whose works, the President of the Institute reminded his hearers the other evening, "will need all the learning and patient study of the young men of the present day to equal or surpass," the young man of the profes-

sion has a hundredfold the opportunities they possessed. It is a fact to be deplored that those who are most happily circumstanced are frequently the least willing to learn. We may refer to the younger members of the profession in London as an instance of this remissness. At the present moment there are two or three admirable libraries free to those who can attend them. There is, first, the Institute library, the most comprehensive of the kind in this country; yet we hear very few students ever take advantage of its shelves. Now the regulations for admission are less irksome, and the hours are less restricted, the members of the Association are to blame if they do not take advantage of it. Every year the contributions are valuable in varied departments of professional study, yet the attendance is so meagre that it may be pronounced a wasted source of power. If we turn to the library of the Royal Academy we hear similar complaints. No one ever uses it, though it contains some of the rarest and most valuable treasures of artistic literature. There is a splendid library, too, at the South Kensington Museum that is little resorted to by young architects. The same tale comes to us from every quarter—the young art-student does not avail himself of the abundance thrown open to him. There is the Architectural Museum at Westminster, which has been languishing for years, and is purely sustained by a few amateurs and energetic members of the profession. Here we have a very fine collection of chronologically-arranged and classified mediæval examples, and we understand classes for instruction in art-drawing have lately been inaugurated in connection. With all these advantages it lacks support—it does not receive the encouragement from the art-workman and student it deserves. It may be said it is too restricted in its examples; that Classic and Renaissance art examples are not represented; still, for all this, such a collection of casts from the actual masterpieces of middle-age art must be invaluable. If we turn to the Soane Museum, in Lincoln's-inn-fields, we shall find also a munificent bequest well-nigh deserted by the student for whose especial benefit it was left, supported only by a miscellaneous public and open for a few months in each year. An amalgamation of these two collections has, we believe, been contemplated, and we have reason to think their union would be strength, as they are each imperfect. We might mention other instances of this indifference—the Museum of Economic Geology, Jermyn-street, &c.—but we point to the few to show how badly they are supported by the younger members of the profession. We can only attribute this apathy to that kind of unconcern with which a Londoner will often tell a visitor that he has never been curious enough to enter the British Museum or to scan the interiors of Westminster Abbey or St. Paul's. The pupil in London, surrounded by these libraries and museums, hardly seems to trouble himself about them; he procrastinates till the value of their knowledge is lost, or becomes of indifference to him by the lapse of time. We can only account for this singular unconcern, even among the *alumni* of the Institute and the Academy, by reflecting that a prodigality of resources and materials has not always been an unmixed advantage, and that the *embarras de richesses*, whether in the materials at command of the student or the artist, is sometimes unprovocative. In contrast with the London pupil we may remark that the country student, with far less resources, and without that plethora of artistic and intellectual agencies at his command, not unfrequently puts his London cousin to the blush. To refer again to the classes of the Association, it was remarked not long ago by an ex-president that very few London

students entered them. We need only corroborate this by our own experience in the classes we have opened in connection with this journal. Out of nearly fifty students the bulk of those who have entered the competition, both in the science class and our designing club, belong to the provinces, and those who received prizes and honourable mention have been, with two exceptions, country students. One gentleman, referring to the falling-off at the Association classes of design, said the BUILDING NEWS Club had interfered with the Association class. Be this as it may, out of the hundreds who are engaged in the metropolis it is singular so little interest is taken in these voluntary means of self-improvement. Is it because the London pupil is harder worked, and has fewer opportunities of joining societies? We think not. Provincial hours of office work are longer than metropolitan ones, besides which there are very few provincial offices that give the Saturday afternoon to their pupils.

Mr. Bowes A. Paice, in his opening address at the Architectural Association, adverted to the subject of artied pupils, in some very judicious remarks. It is an old and rather worn-out theme, but none the less important than formerly, as every pupil has to pass through the same ordeal again and again. Mr. Paice re-echoed our own sentiments when he said that "the present system of binding a young man for four or five years, and paying a large premium at the outset, is the bane of the architectural profession." It binds him to something he has had no opportunity of understanding, far less liking; it makes a contract into which one of the contracting parties must necessarily enter without sufficient knowledge, and from which he cannot escape till four or five years of valuable time have passed. Mr. Paice proposes what was mentioned some time ago in these pages—a preliminary test, a probationary term of one year, during which the youth would have an opportunity of seeing the ordinary routine of the architect's work, attend the University lectures, the classes of design, or other means of ascertaining the work of the profession. If, after this term, the pupil liked the vocation, he might be artied, but it is suggested that the premium should be paid annually as a college fee, and not as a lump sum. Before entering the state of pupilage the student should pass a preliminary examination at the Institute. These proposals are reasonable enough, and it would be well if the Institute and Association drew up some recommendations to the profession generally, embodying them. Pupilage is an ever-erying grievance: where it turns out one architect, it manufactures a dozen crude apprentices, raw and inexperienced young men, who are glad to turn their hands to any other more lucrative business they find themselves more capable of fulfilling. To this system, probably, we owe much of the apparent apathy and indifference displayed, the frivolity and questionable tastes we find some young members of the profession following, and their preference for the music hall rather than the library. If those in practice were not so commercial in their requirements, and made the honour and position of the profession their first thought, we should have fewer of the disappointed and discontented Chuzzlewits, who affect to sneer at the work of more earnest and intellectually-minded pupils. Much may be accomplished by both the Institute and Association in exposing the traditional abuses of the pupil system, in checking the Pecksniffian propensities of architects, and in establishing a standard of ability for the young student. But far more will be done by the younger members themselves in taking advantage of the opportunity open to them, and in making

themselves more competent to judge of their own aptitude for the profession. One additional reason to urge the young architect to prosecute his studies with unremitting attention is the fact that the Civil Service examinations, the engineering and other colleges, are bringing forward a number of highly-qualified young men to fill positions of responsibility in connection with the Government works both at home and abroad. The education they are receiving is of a superior order, in which science and technical instruction are largely represented. The young architect has, it is true, the classes of King's College, the lectures on science and art given at Kensington, and other places open to him; but, as we have said, he does not choose to use them. He seems to repose too much upon one faculty; he may possess that of being able to draw and sketch freely; but, as we have hinted before, this quality must not be overrated by the aspirant to the profession. Though a great aid, it does not furnish the mind with original materials, and without a well-stored mind the artist is little better than a mimic. The faculty of drawing is seldom accompanied with that of invention, and it is, perhaps, to be regretted that the future destiny of a youth is so often predetermined by this penchant. The student of architecture must, if he wants to succeed in his profession, overcome the exclusiveness of the pencil. He must try and bring himself to understand that architecture is a concrete art, requires an omnific intelligence, and that, in fact, the most opposite qualifications and tastes must be conquered and brought into reconciliation. If he can look kindly on both high art and mechanical skill so much the better. In proportion as the student is many-sided, he will advance in his work, and we may instance some of our most successful architects as examples of the omnivorous mind. It may be questioned at what point the practical or workshop training should begin. We think that during the probationary stage the pupil should be brought face to face with practical work—not in a regular way, perhaps, but so that he may comprehend the nature of the study he is entering upon. Office instruction and workshop practice should be prosecuted *pari passu*. Now, the architectural societies might supplement their classes by the technical school. The Association has well done this in one way—that of the Saturday inspections of buildings in process of construction. But the artied pupil should prosecute this, or have facilities for enabling him to do so afforded him by his master. Attending the workshops—the masons', carpenters' and joiners', ironfounders', &c.—should be made a part of every curriculum. Drawing and technical instruction would thus be taught together, and with the inestimable advantage of throwing light upon each other. No amount of learning or simple draughtsmanship can give the eye-education acquired in the workshop, and which makes every good workman an artist as well. Hence the pupilage system at present is defective, mainly inasmuch as it is not a school of practice as it ought to be. The novice has to pick all this up as best he can. It seems to us, therefore, the reform required to improve the architectural status rests with the architectural societies to supply the needful pabulum. Their classes are admirable, though they do not fill; their visits to works are valuable, though insufficient and unorganised; but there is still a link missing—it is the technical school or workshop, by the agency of which the student may see the raw material converted into the finished structure.

The Arts Club is about to be enlarged, the application for membership in the club being in excess of the accommodation.

NEW WORKHOUSE FOR SHEFFIELD.

SINGULAR PROCEEDINGS.

THE Sheffield Board of Guardians some time ago issued advertisements for tenders to build a new workhouse for Pitsmoor, in that town. The guardians met to receive the tenders, and they were assisted in their examination of them by the architect, Mr. James Hall. Some of the contracts were entire—that is, they included the whole of the work necessary to be done in the erection and completion of the buildings, while others were for only a portion of the work. The following are the contracts for the whole of the buildings:—W. Bissett, Sheffield, £149,400; B. Bottomley, Bradford, £145,736; Briers and Co., Dewsbury, £157,585; G. Carr, Sheffield, £144,000; Mr. Garlick, Birmingham, £136,740; H. Thorpe, Leeds, £159,769; J. Tomlinson and Son, Leeds, £124,136; S. Warburton, Manchester, £144,700; T. Whiteley, Leeds, £157,000. From these tenders it will be observed that that of Messrs. Tomlinson and Son was very much the lowest, being £20,000 less than the tender next to it in amount, and about £33,000 below the highest. Before accepting it, however, the guardians went through the tenders for portions of the work, and picked out the lowest tender in each department. Adding these together they found that the total was £125,085 3s. 4d., being £994 8s. 4d. more than Messrs. Tomlinson's tender. This being so, it was considered unwise to divide the contracts, so that Messrs. Tomlinson and Son's was accepted in its entirety.

At the next meeting of the guardians it was announced that Messrs. Tomlinson, who had already given references, could not proceed with the contract on the ground that several tradesmen had misled them in their estimates. It was stated that on Messrs. Tomlinson finding their tender so much lower than the others, they would have liked to amend it to the extent of £10,000, which would still have brought it beneath any other. The guardians, however, decided that fresh advertisements should be issued for entirely new tenders, and accordingly a special meeting took place last Thursday evening to consider the new tenders. The lowest tender for the whole of the work was that of Mr. J. Garlick, of Birmingham, which amounted to £134,800. The amended tender of Messrs. Tomlinson and Son was just £100 more, being £134,900. The total of the lowest contracts for the various kinds of work necessary in the formation of the building was £134,187, or about £600 less than the tender for the whole of the work sent in by Mr. Garlick. Under these circumstances, therefore, it was proposed that Mr. Garlick's tender should be accepted, subject to his references and sureties being considered satisfactory. After some discussion, in which a good deal of unpleasantness was shown, the proposition was carried. The works will occupy more than two years.

In Ardfert diocese, and under the supervision of Mr. J. F. Fuller, F.S.A., diocesan architect, the new glebe-houses of Ardfert and Valencia have recently been completed; one at Killynny is in progress, also one in Mill-street. Mr. Fuller has also alterations going on at Tarbert and Ballyheigue churches, the contractor for the former being Mr. Crosbie, of Tralee. Ballyseedy church is being enlarged by the same builder and architect, and works are in contemplation at Ballymacelligot church, for which also Mr. Fuller is architect.

The annual dinner of the Liverpool Master Builders' Association was held last week, under the presidency of Mr. William Tomkinson, jun.

The foundation stone of a new Roman Catholic church was laid last week at Wath-upon-Dearne. The style of the building will be Perpendicular, and the architects are Messrs. Hadfield and Sons, of Sheffield.

The memorial stone of a new Congregational chapel at Coatbridge, N.B., was laid last week. The chapel, which is from designs prepared by Mr. J. W. Small, architect, Edinburgh, is in the Gothic style, and will accommodate about 500 persons. Underneath the chapel there is a large hall and other conveniences. The cost of the whole is estimated at £2,500.

The Gravesend Corporation has adopted a new code of bye-laws with respect to the erection and alteration of buildings, and last week it was decided to issue notices to all builders and contractors in the district, calling attention to them, and announcing that they will be strictly enforced.

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ILLUSTRATIONS.

"BUILDING NEWS" CLUB DESIGNS FOR WALL PAPERS—
TREGUIER CATHEDRAL—DETACHED VILLAS AT BEDFORD
PARK—PROPOSED BOAT AND CLUB HOUSE, PUTNEY—
CHURCH OF OUR LADY AND ST. JOSEPH, CARLISLE—THE
LITTLE NAG'S HEAD COCOA HOUSE, CHESTER.

OUR LITHOGRAPHIC ILLUSTRATIONS.

PUTNEY BOAT-HOUSE.

TO-DAY we give an illustration, as promised in our last number, of one of the drawings sent in for the Putney Rowing Club Boat-house competition. It was sent in under motto, "De mieux je pense en mieux." It was proposed to build it of red brick, with Bath stone dressings, and in some of the gables half-timber with plaster between, and a device scratched on the plaster, and in the rest of the gables half-timber and ornamental brickwork between. In our review it was stated the entire cost was not to exceed £1,500, which was a mistake, as in the second conditions received there was not any limit to the cost but that cheapness was to be considered. The club-room has the ceiling formed in the roof, divided in panels by moulded ribs for decoration. A pavilion was formed at one end of balcony, which was to be glazed so as to form a resort in wet weather. The proposed cost was £3,500. The architect is Mr. J. Martin Brooks, the Grange, Park-lane, Stcke Newton, N.

THE LITTLE NAG'S HEAD COCOA-HOUSE,
CHESTER.

THIS building, which was formerly known as "The Little Nag's Head Inn," has recently undergone extensive alterations to adapt it to the requirements of a working men's coffee-house, and was opened on Saturday last by his Grace the Duke of Westminster, K.G., to whom the property belongs. The ground floor now contains a restaurant, with smoking-room, kitchen, &c., in connection therewith, and two staircases to first floor. On this floor there is a large club or refreshment room, extending the whole width of front, and a separate room for women in the rear, with convenient offices. The attic floor is occupied by a club-room overlooking the street, a manager's room, and bedrooms at back. The frontage of the old building was in a line with the adjoining houses, but the new front has been set back on the ground story to allow greater width of pavement, the upper stories being projected to increase area of rooms and carry out bay windows, from which a good view is obtained up and down this busy street. The timber-framing is executed in English oak, filled in with thin bricks on the first floor and sgraffito work above, the latter being carried out by Messrs. Trollope and Son, London. The upper windows are glazed with plain lead lights. The old sign has been purchased of the former occupant, and will be fixed with wrought iron supports. Messrs. F. T. Farrimond and Co., of Chester, were the general contractors for the work, which they have carried out in a very satisfactory manner, from the designs of Mr. John Douglas, architect, Chester.

TREGUIER CATHEDRAL.

TREGUIER is situated in the department of Côtes du Nord, on the north coast of Brittany, and the cathedral, said to have been begun in the 13th century by St. Yves, consists of a lofty nave with fine western doorway, aisles with side chapels, central tower, transepts, and a well proportioned choir which is surrounded by an ambulatory, with several small chapels. There are some remains of the choir stalls which are elaborately carved and of good design. All the roofs are beautifully vaulted. The tower which terminates the south transept has an uninteresting spire, pierced all over with square and ohlong-shaped openings, and over the end of the north transept is a massive tower with semi-circular headed windows and circular staircase at the north-east angle, being the only part left of the early building. Adjoining this and the northern side of choir is the cloister, which appears to be the latest addition to the church. According to "Joanne's Dictionnaire Géographique de la France," the dates of the leading features are:—Nave, rebuilt by St. Yves in 1206, choir re-erected in 1339, the Duke's chapel on north side in 1420. The finely-proportioned tower over the south transept, which forms the principal feature in our view, was added in 1432. Prior to 1785 it was crowned by a leaden flèche, but in that year the flèche was replaced by the stone spire already referred to, but which is not shown in our illustration. The total height of the tower and spire is about 212 English feet. Our view is a reproduction of the drawing exhibited by Mr. John Medland in the Royal Academy this year.

NEW ROMAN CATHOLIC CHURCH AT CARLISLE.

WE give to-day a perspective view from the south-west of the new Roman Catholic Church of Our Lady and St. Joseph, and the adjacent presbytery, about to be erected in the centre of Warwick-square, Carlisle, from the designs of Messrs. Dunn and Hanson, architects, of Eldon-square, Newcastle-on-Tyne. A general description of the church, which will, when completed, cost about £12,000, appeared last week in our Building Intelligence, p. 497. We may add that in general design the church will be cruciform. The style adopted, is the pure type of Early Decorated work, with which we are made familiar at Lincoln, Tintern, &c. The Lady Chapel will be a handsome and prominent feature in the design, being placed at the east-end of the church, projecting, as in mediæval cathedrals; it will probably be set apart as a "chantry," in memory of the benefactress, Miss Lowry. At the south-west corner is to be the tower and spire, 200ft. high. The presbytery contains on the ground floor library and dining-room, the rector's private room, and a waiting-room, also complete kitchen offices; above which are sitting and bedrooms for three priests, the spare-room, and hath-room. The buildings in their complete state will cost nearly twice the amount of the fund now available, but there is sufficient in hand to allow of as much being erected as will admit of service being conducted within the walls of the new edifice. The old church will then be devoted, probably, to educational purposes, and the new one will be proceeded with by degrees.

DETACHED VILLA, BEDFORD PARK ESTATE.

CONTINUING our series of illustrations of the houses now building on the Bedford-park Estate, Turnham-green, from the designs of Mr. R. Norman Shaw, A.R.A., we publish today detailed drawings of the detached villas now in course of erection. The several rooms and offices are clearly shown by the plans, while the piquant architecture of the design, at once characteristic of the author, is illustrated by the elevations. The materials employed are red brick, with red tile hanging to the upper part and roofs. For further particulars see an article in the BUILDING NEWS, November 9th. We shall give further illustrations in an early number.

"BUILDING NEWS" DESIGNING CLUB.

IN the wall-paper competition we give the sets, of two designs each, which we rank as first, second, and third in order of merit. For critical review see p. 446, in our issue of the 2nd inst.

LIFTING A RAILWAY STATION.

CHEPSTOW Railway Station was lifted bodily a height of 22in., last week. Passengers have long experienced much inconvenience arising from the difficulty and danger of descending from, or climbing into, the carriages. This arose from the fact that the platform was but a few inches above the level of the rails. Some time back Mr. Lancaster Owen, engineer of the Great Western Railway, suggested by way of a remedy for the evil, the feasibility of lifting the station bodily, and building it up from below. Chepstow station comprises two stone buildings, one on either side of the line, built of native freestone, with dressings of Tintern Ahhey stone, and its estimated weight about 150 tons. Each building is 56ft. long, by 18ft. 6in. wide, and 12ft. 7in. high, with an overhanging roof of corrugated iron, on the platform side stretching out 7ft. or 8ft., and is divided into the usual waiting-room and offices. Tenders were advertised for, and that of Messrs. Whalley and Pearse was ultimately accepted. The "lifting" process was commenced on Monday week. The building on the down platform has been first operated upon. The floor was taken up to facilitate the working of the jacks, but all the sashes and doors were left in their places, each opening having been securely strutted. Then holes were made through the building, about 2ft. under the string course, and in these holes were inserted haulks of timber, called "needles," to the number of eleven, their ends standing out a few feet on either side of the building. Fastened on the ends of these "needles" were half pieces of haulks, called "cills," which were tightly keyed all around the bottom of the building; whilst half-way up the building were similar pieces, resting on supports on the baulks, called "walings," with hars of iron running through the building, bolted all firmly together. Similar hars ran lengthways of the building. Having thus firmly braced the building together, the lifting commenced. A trench for the men to work in having first been dug, a powerful lifting jack was placed under the end of each "needle," at which a man was stationed, and there were two others under the centre part of the end "needles," and others inside the building, making 31 jacks in all. At a given signal from Mr. Whalley, each man gave a turn to his jack, and as turn after turn was made the building slowly but surely rose, without a crack or flaw, or even a pane of glass breaking; and when the men left work on Monday night they had lifted the whole building 3½in. (22 inches was the total amount to which the building had to be raised). On Tuesday morning, having secured the building at the point reached, another succession of turns were taken, and 3¼in. more were accomplished by 8.30. The same process was repeated, and by one o'clock the height reached was 12in. The afternoon work proceeded without the least hitch, and on leaving off at 5.30 on Tuesday evening, 19½in. had been reached; and the remaining 2½in. were subsequently accomplished. The walling was filled in, and the platform raised in the usual way.

The district of Widmore is being sewered for the local board of Bromley, Kent, by Mr. Pfeill, contractor. Mr. A. Williams, C.E., is the engineer.

A vestry meeting has been held at Bungay, Suffolk, to consider a report as to St. Mary's parish church made by Mr. R. M. Phipson, diocesan architect and surveyor. Mr. Phipson considers the tower to be unsafe, and that the porches, roof, and windows are in urgent need of repair. These works would cost about £1,000. The renovations and improvements required internally include the removal of galleries, re-benching throughout, and removing organ to ground floor, involving the outlay of another £1,000. Plans and specifications were submitted in the report, and were adopted by the meeting, subject to alterations in details. It is also proposed to build a new chancel, should funds be forthcoming.

The imposing monument to Bishop Montague in the nave of Bath Abbey is about to be restored and re-decorated, under the superintendence of Mr. Davis, city architect.

The Wesleyan chapel at South Willingham, Lincolnshire, was reopened on Friday, after enlargement and improvements, carried out by Mr. John Thompson, of Louth. The foundation stone of a Wesleyan chapel, to cost £1,100, was laid on the previous day at Binstead, in the same county.

THE BUILDING NEWS, Nov 23. 1877.

Bedford Park Estate

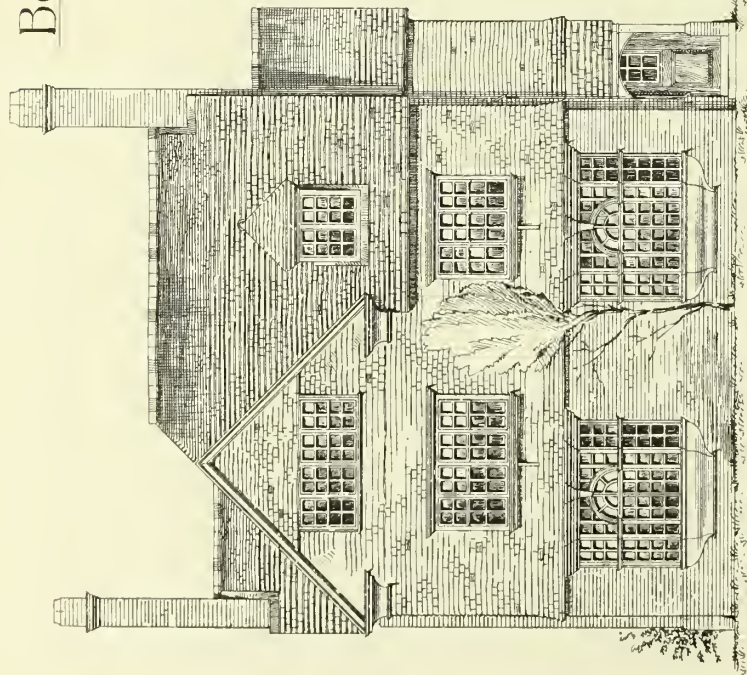
TURNHAM GREEN

detached Villas

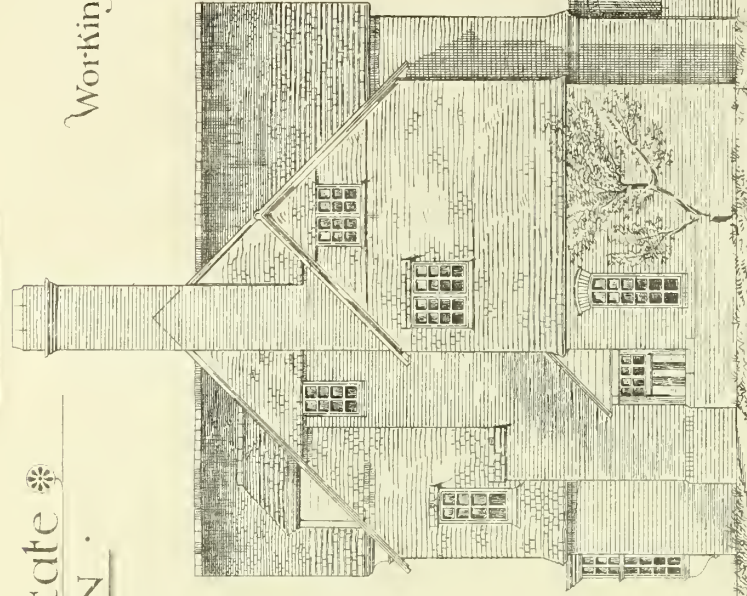
R. Norman Shaw, A.R.A.

Architect.

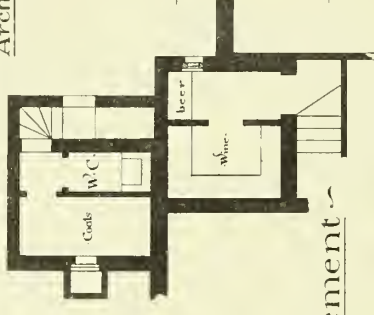
Working drawing N^o 3



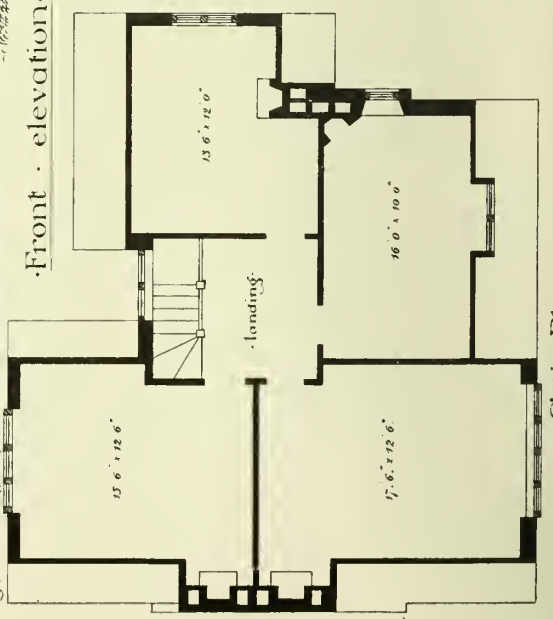
Front elevation



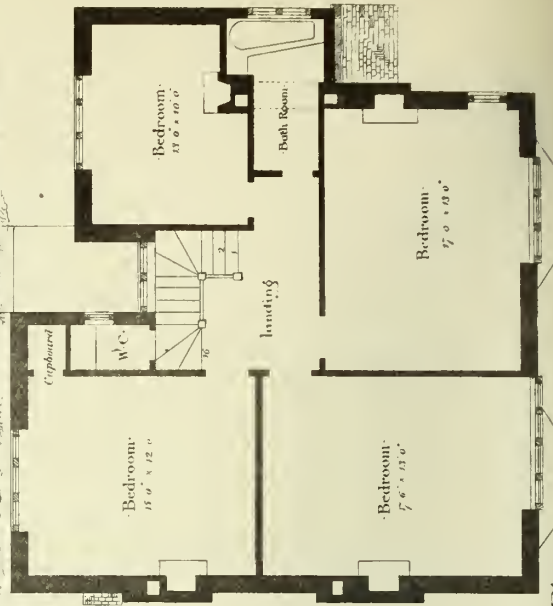
End elevation



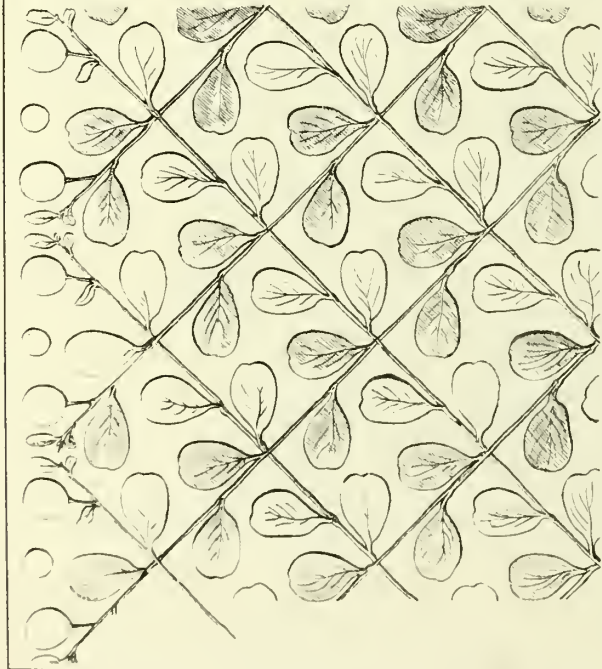
Basement



Ground Plan

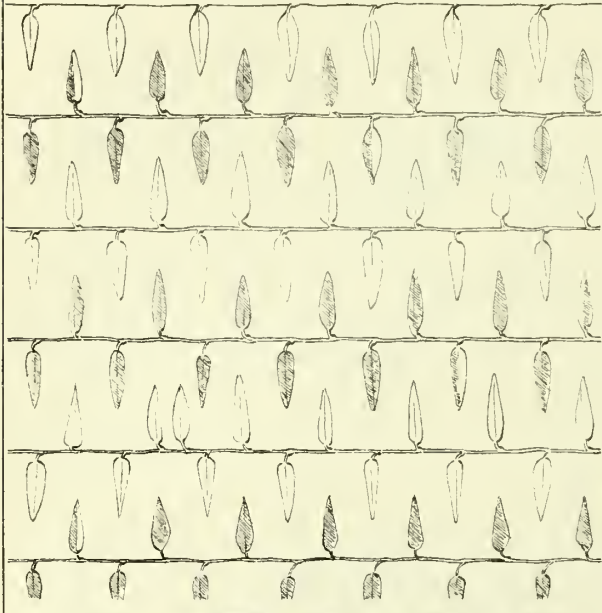


Bedroom Plan

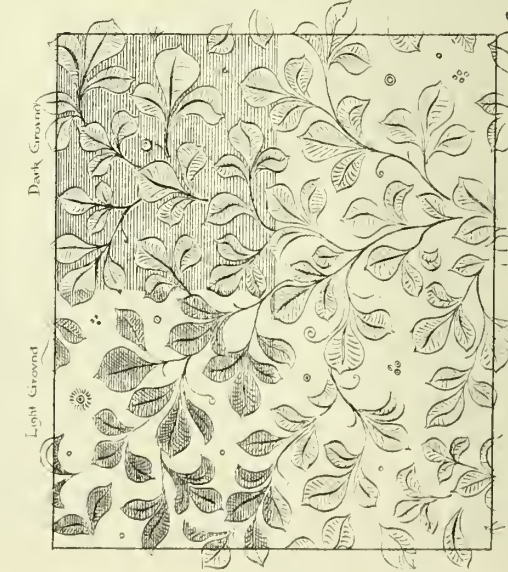


A BUILDING NEWS DESIGNING CLUB
AND DESIGNS FOR BEDROOM WALL PAPER

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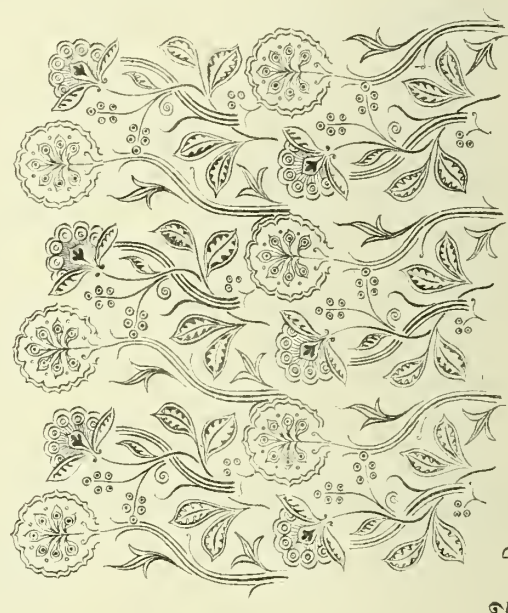
B



Light Ground

Dark Ground

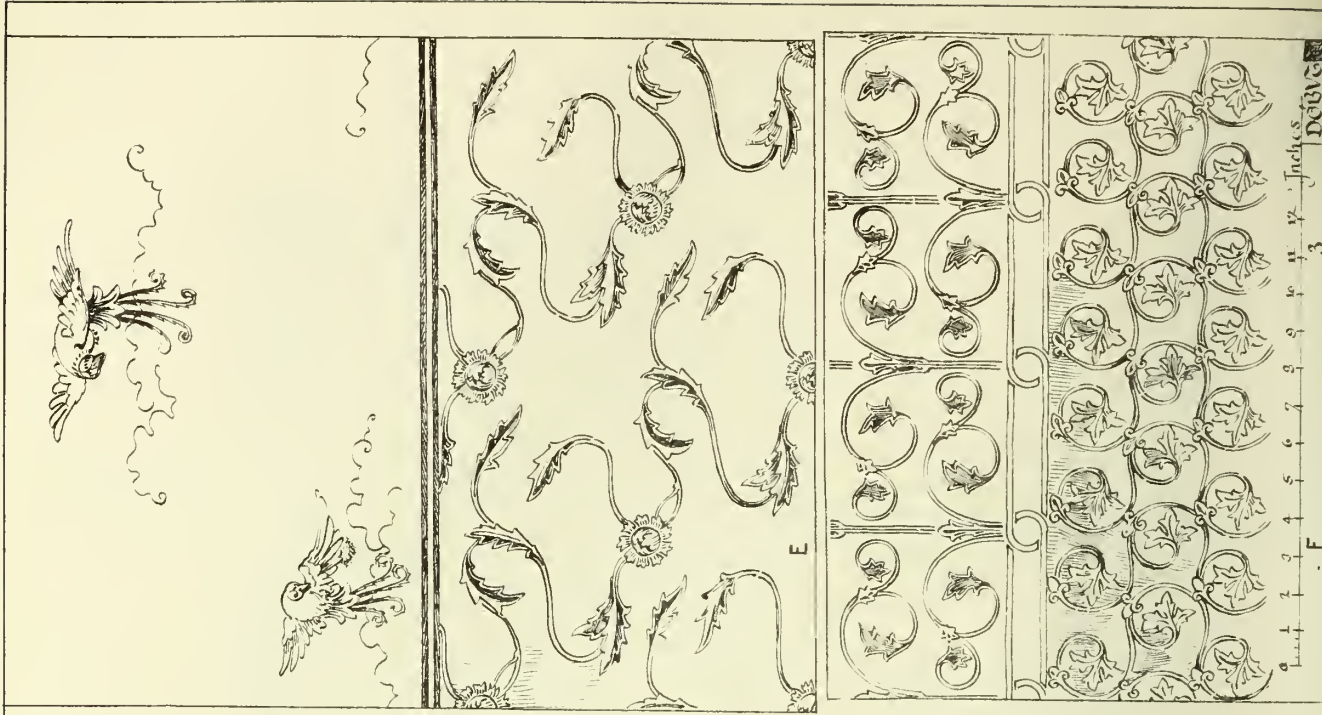
C



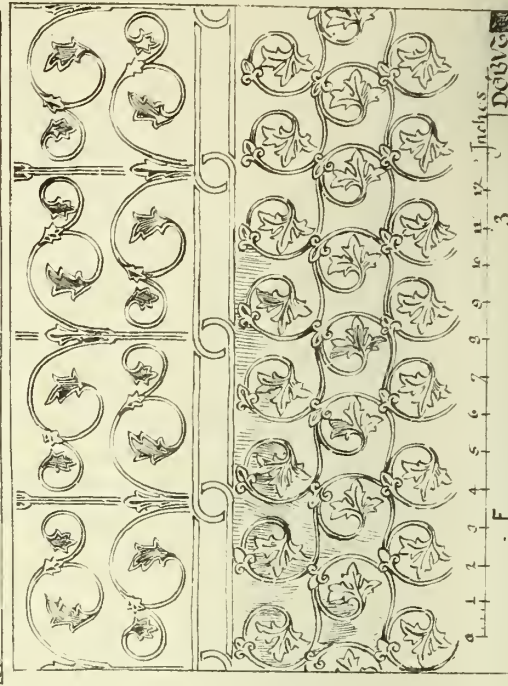
D

Colors: { Leaves - Greenish Brown
Ground - Beady Grey

Pattern a Slab-Grey
on Yellow-Ground



E

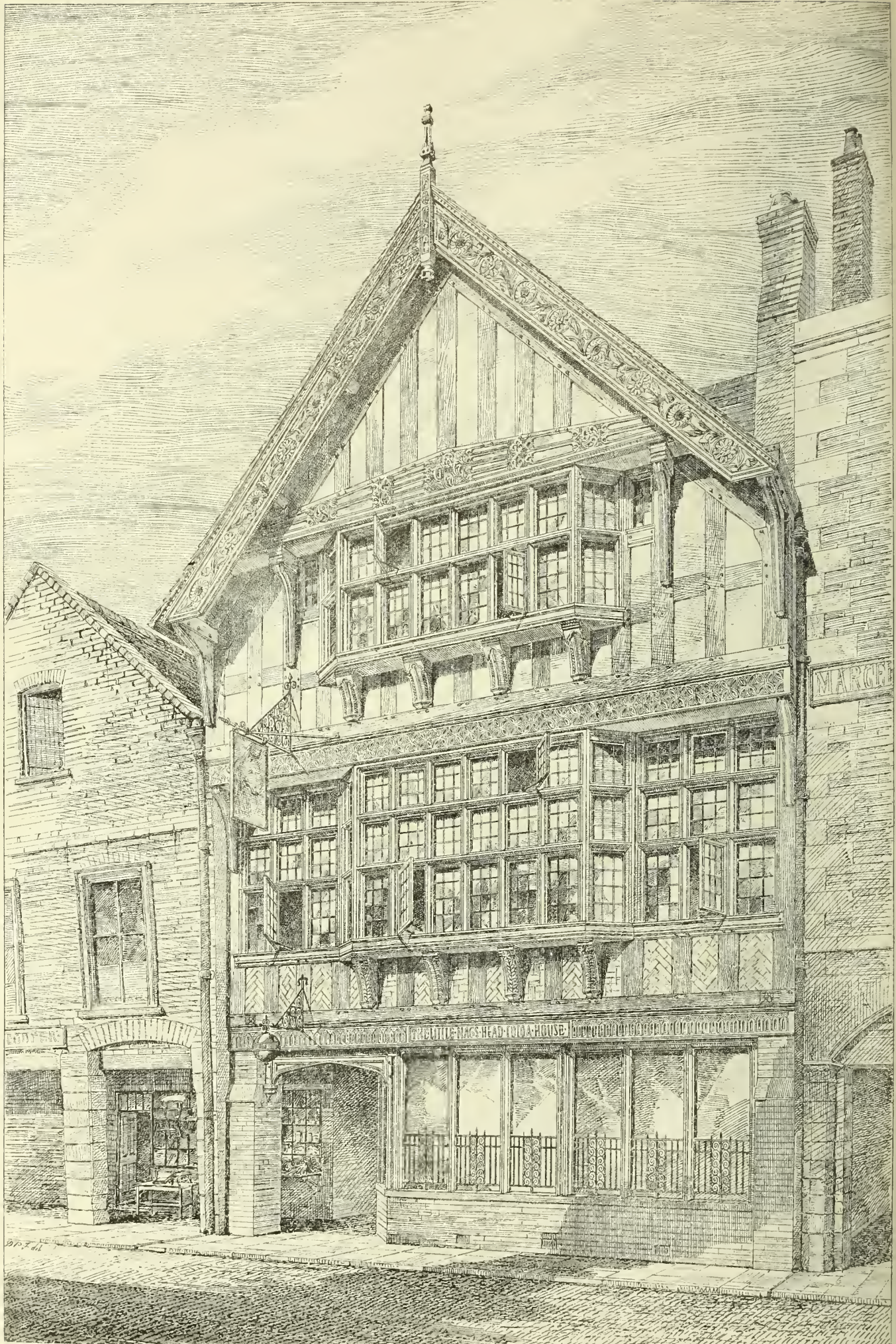


F

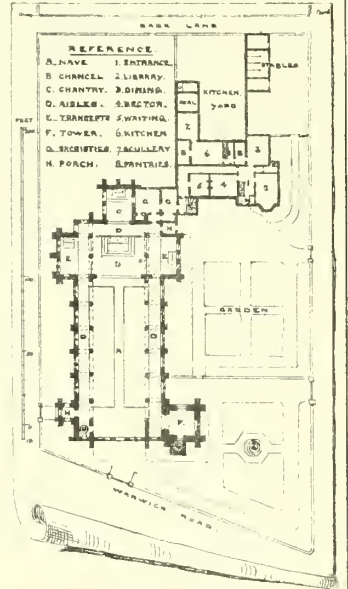
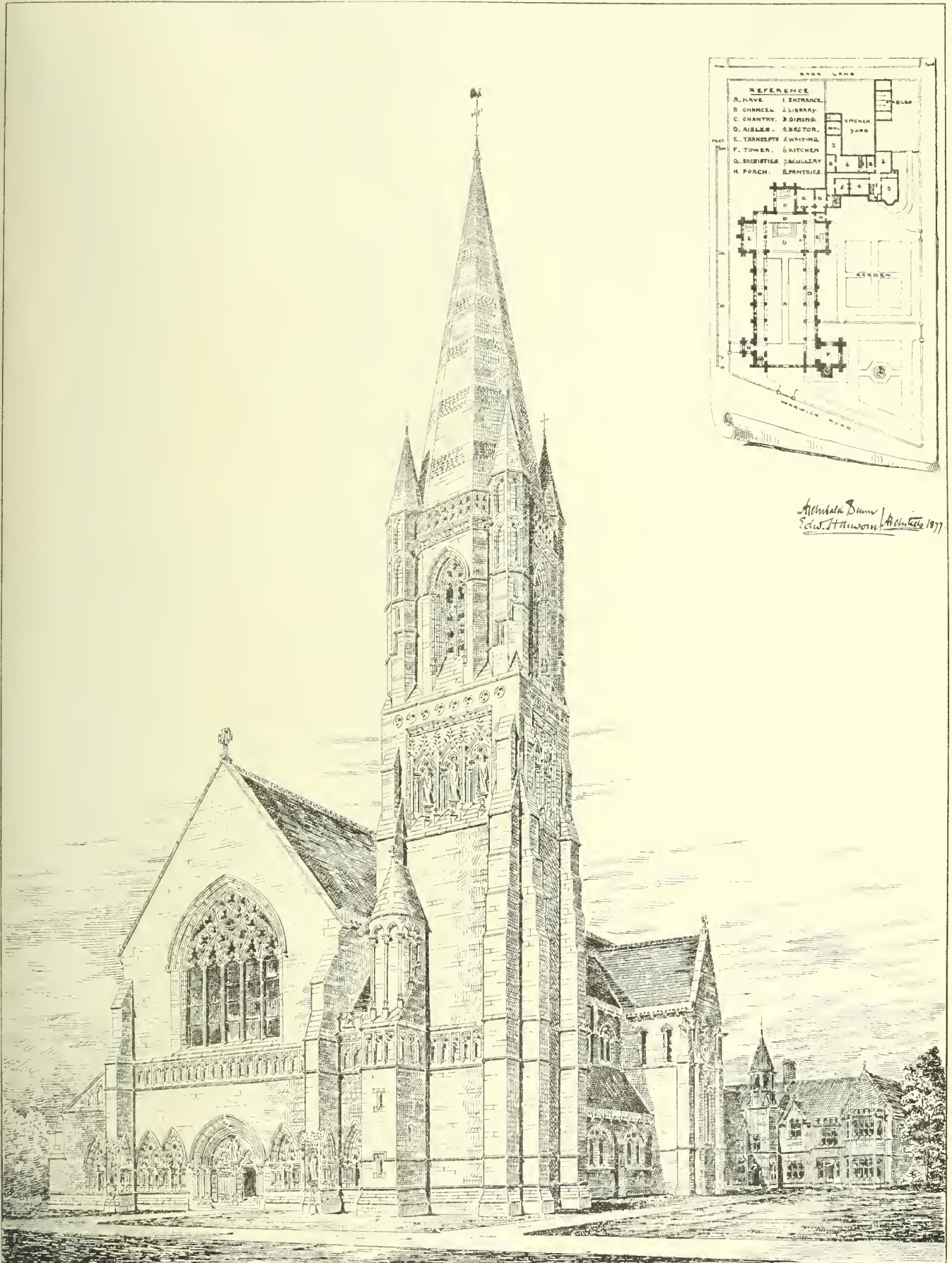
1 2 3 4 5 6 7 8 9 10 11 12 Inches

3

DOUGLASS



THE LITTLE NAGS HEAD COCOA HOUSE, FOREGATE ST CHESTER.



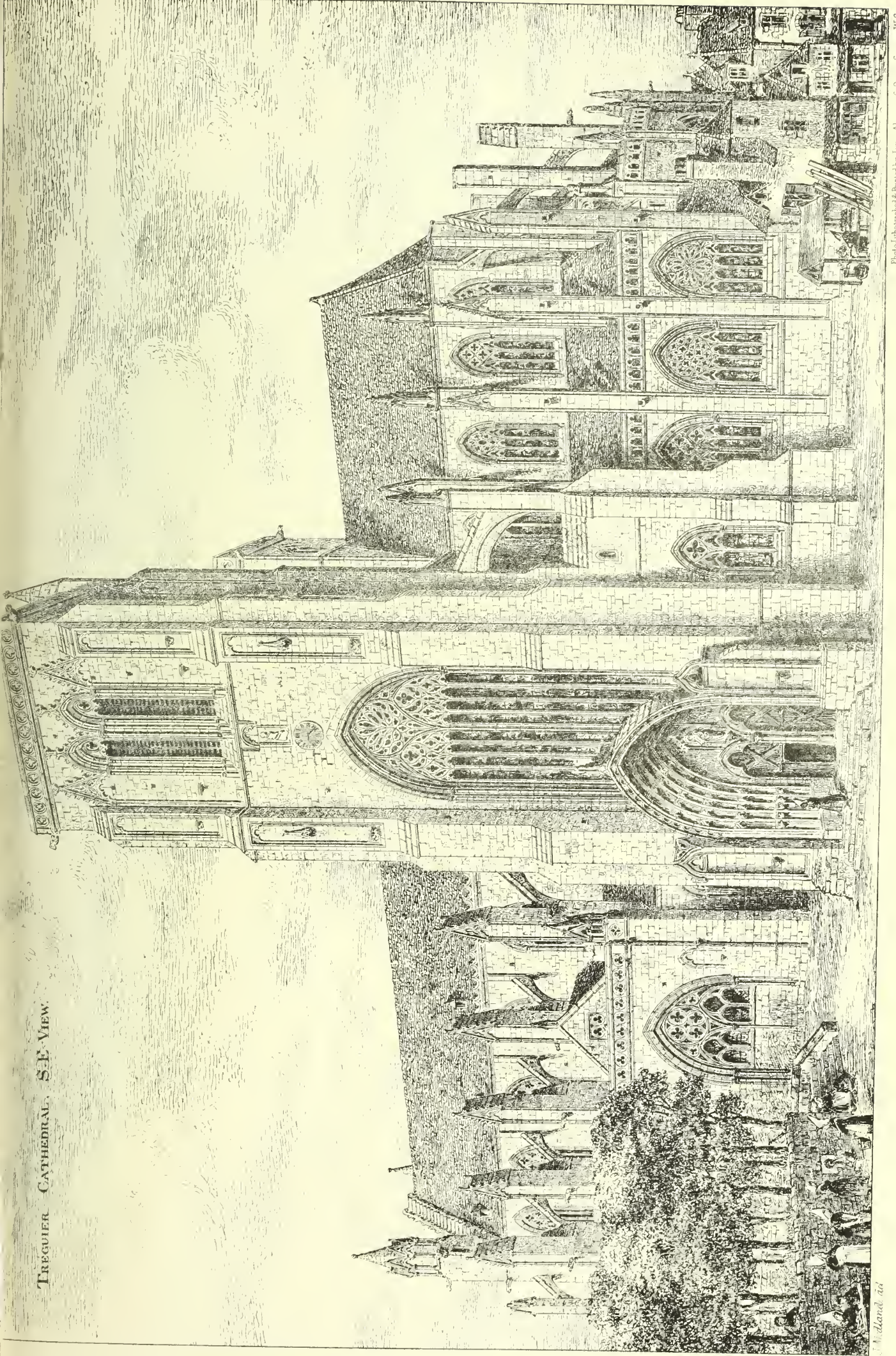
Architects
Edw. Harrison & Son
 1877

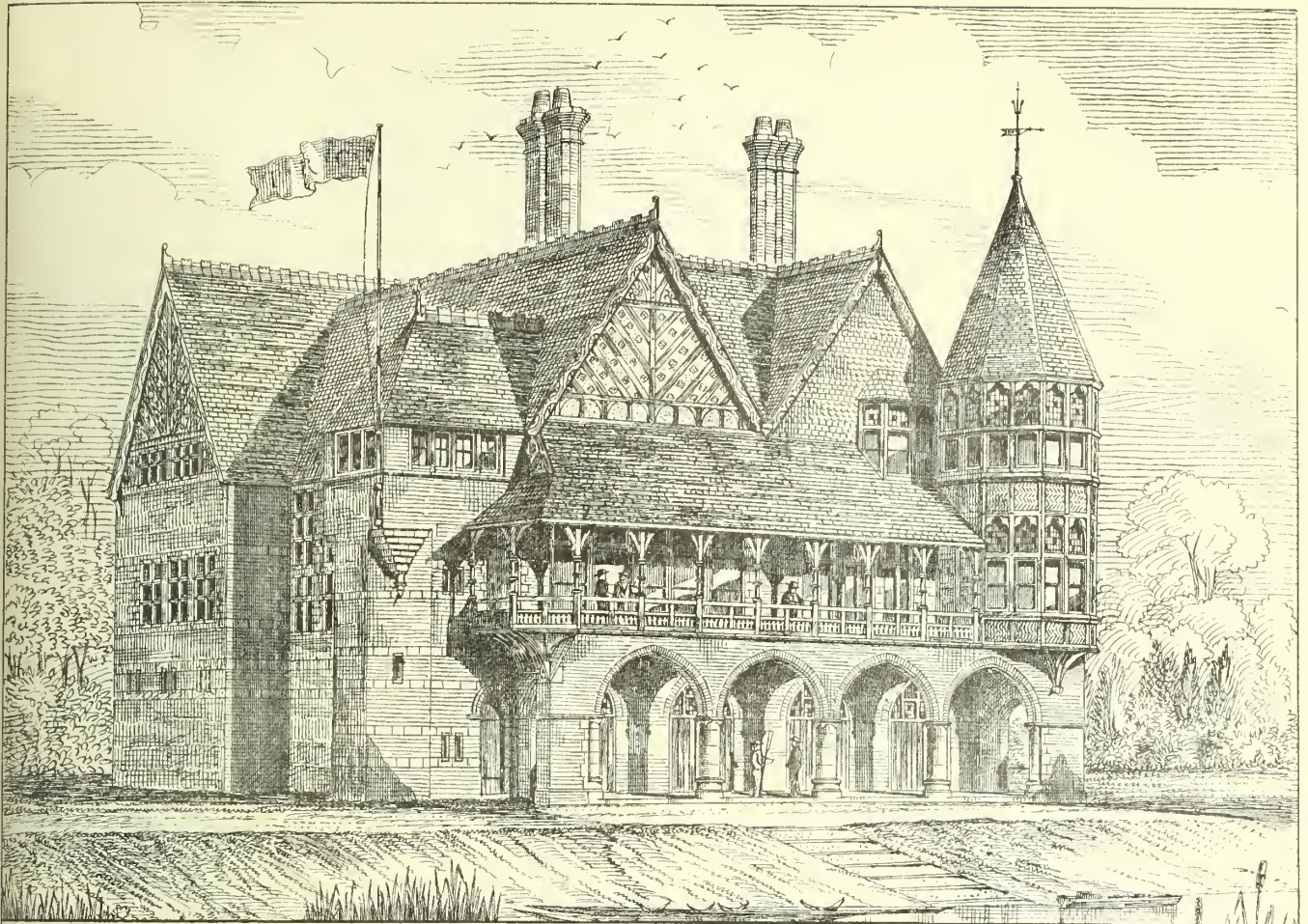
Church of Our Lady and St. Joseph, Coalbrookdale.

The Presbytery.

Photographed & Printed by James Agerman, 6 Queen's Square, W.C.

TREGUIER CATHEDRAL. S.E. VIEW.





Ground Plan

First Floor Plan

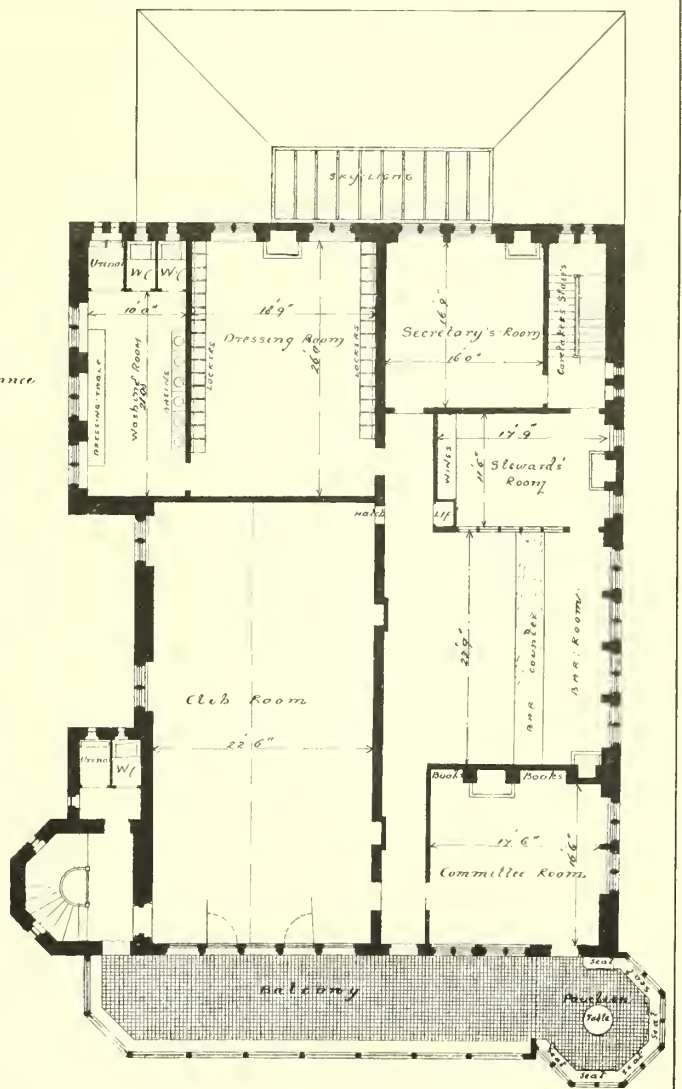
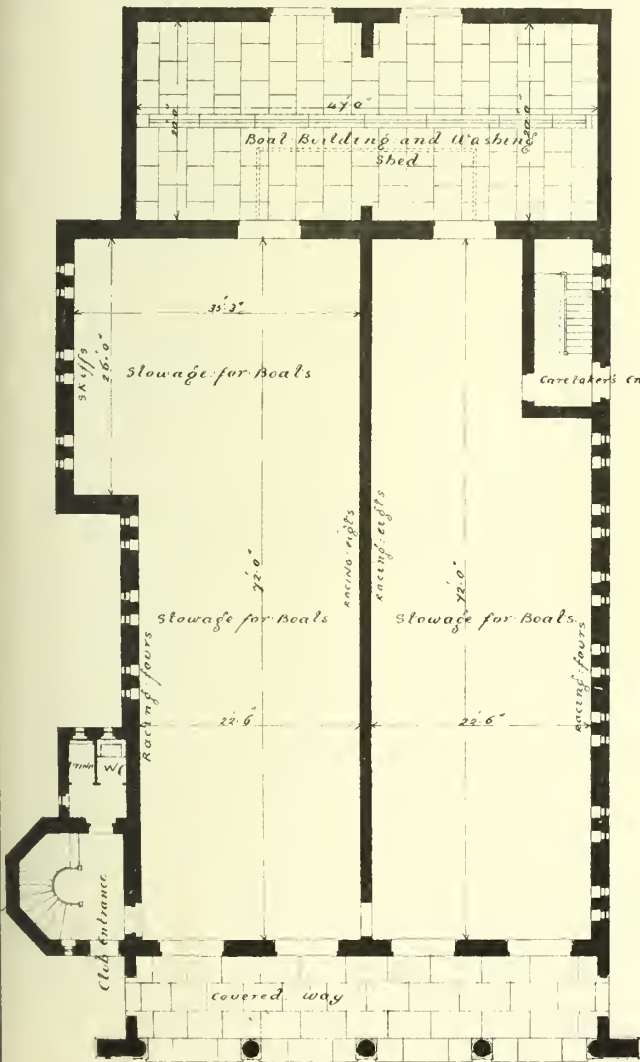


Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

BUILDING IN THE WEST OF BRIGHTON.

WE are sorry to see the West Brighton Estate—a site with few equals—bids fair to fall a prey to speculative builders' architecture. Last year we noted that new roads or avenues had been formed, and that a few houses of pretension had been erected. Since that time we find the north portion of the estate is being rapidly covered. Three or four rows of houses have been built abutting on the Western road or main thoroughfare to Hove, but all in a debased kind of stucco architecture, modelled after a stereotyped pattern. Of course the bay window, that favourite feature in Brighton architecture, is made to do service. This is carried up two or three stories in some cases, but nothing fresh or piquant has been attempted. The ornamentation, too, is often of the most trashy kind. We saw some houses building along the main thoroughfare of white stocks of good colour, but spoilt by the introduction of a fancy nail-head or "dog-tooth" kind of brick, which is used as a dressing round windows and doors, and even over the arches as a label. We are obliged to ask if any architectural supervision exists, or if builders are allowed to do anything that pleases them? It is a pity the elevations of these roads are not under some control, and that the vulgar and bizarre kind of ornament one sees is not condemned. On the fourth side better houses have been built. Mr. Spreadborough has completed some large contracts, and Mr. E. W. Hudson has been the architect in many instances. We may ask, however, whether the supply of new houses is not in excess of the present demand. In the Hove district we hear of houses from £100 to £600 rental, and on the West Brighton Estate plots of land realise, we are informed, prices varying from £2,000 to £6,000 per acre. These prices, one would imagine, would be sufficient to command some attempt at architectural design, and a few new residences have been erected that show the work of the architect. Thus, on the Stanford Estate some of the new houses have pretensions to architectural display. Mr. Galsworthy Davie is now completing a rather successful attempt to adapt Gothic to prevailing ideas in respect to plate glass, stock bricks being used with terra cotta dressings. The treatment of gables, loggia over bay, giving view of the sea, is noticeable. We hope to illustrate the design. There are a few blocks in a sort of Lombardic Gothic of Gault bricks and stone dressings, the interiors being finished in a costly manner in pitch pine. In some of them lifts are provided. We should say the cost of these residences amounted to from £4,000 to £6,000 each. Half timbering has been adopted in some cases, but without the solidity and simplicity of character necessary to produce the effect desired. It is strange to us architects will reproduce a style whose beauty and meaning depend solely on its being the natural outgrowth of a wooded country where timber was plentiful. Unless stud-work is solid and massive it is nothing. To produce the effect of timbering by surface battens, not of the same thickness as the wall, and to which they render no support or substance, is as reprehensible a sham as we know of. Architects who adopt such counterfeit means of effect cannot fairly say a word against stucco, marbling, and imitation graining. But the half-timber style is manifestly out of place in such a *locale* as Brighton. Divested of wooded scenery, and near the sea, the only appropriate style of building is that which, *par excellence*, Brighton claims as its own—a palatial kind of stucco architecture, impervious to damp

and the action of sea air. We know that few kinds of stone stand well, and the only kind that has resisted with any success the sea air is Tisbury stone, which has been largely used in the new buildings in the west of the town. As for Bath stone, we have only to refer to the Church of St. Paul's, in North-street, as an instance of rapid decay. Another and more traditional style observed in the new suburbs is the Italian. Facing the sea blocks of buildings have been erected from the designs of Mr. Knowles; Mr. Chappell being the builder. Their fronts are relieved by balconies of stone, supported on colonnades. Gault bricks have been used. The rents, we understand, are from £250 to £450 per annum. At the corner of Queen's-gardens, on the Stanford Estate, a club—a branch of Prince's Club—is located. The interior of the houses that have been converted (originally Baron Grant's) is finished with every convenience. The internal fittings are said to be sumptuous of their kind, and lifts are provided; while a portion of the building is residential for the use of members. A sea-water service is provided in many of these terrace houses; while a winter garden and palace is in contemplation. At present, however, there is little of the rural element to entice us; the only contrast to the lines of stucco and white brick frontages is the blue sea, and we should rejoice to see more colour, even if it be in a variation of tint in the building material. The balconied fronts certainly give us play of light and shade, but the eye seeks a rest in some oasis of green. If the esplanade was planted, and the avenues fringed with verdure, great relief would be afforded, and the tedium of the architectural lines broken.

Now, what we think is, that some higher class of ornamentation might have been introduced on this brand-new estate. It had no old buildings to study or to keep in countenance; its residents are comparatively young, and of the present generation; and there was an admirable opportunity for some new building materials to be applied—we will not say new-fangled "fads" of manufacturing firms. The use of concrete applied in panels, and ornamented with parge-work, would have been one means of rendering the architecture attractive—at least, it would have been out of the common. Relieved with red brick, the contrast would be pleasing in this neighbourhood, and some enterprising architect might try his hand. Then, it is singular so little invention has been evinced in the treatment of the bay window, instead of the production, *ad nauseam*, of stereotyped forms. We have nothing fresh or original, no attempt even to Queen-Anne-ise the estate, no Gothic work of any character, but a repetition of the manufacturing builder's or surveyor's "eligible and delightful villa." In the design of the semi-detached houses a variation in the plan and elevation might have been tolerated with advantage, and in some cases an artistic grouping of three or more villas might have been attempted. Instead of the hackneyed repetition of two gables, with central or side entrances, blocks of residences, with ample squares and spaces in front of them, might have been planned, making these new districts worthy of the architecture of Kemp-town, Adelaide-crescent, or Palmeira-square. On the Goldstone estate, at West Hove, builder's stucco repetition in semi-detached blocks is well-nigh nauseating. Here we find houses from three to more stories in height with crude projections and badly proportioned bays. We should say it would be a good speculation to build some houses in another style, and to import some of the elements of 17th century architecture in the midst of this modern wilderness of the speculative builder. There is certainly a

dearth of invention and an unenviable casting of features in this western suburb that does not happily compare with the buildings of old Brighton of a generation ago, when the last of the Georges made it a residence.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the Institute was held on Monday evening; the President, Mr. Charles Barry, in the chair. The following nominations of gentlemen proposed as hon. associates were read, amidst applause:—Alfred Morrison, Ponthill; J. Gascoigne Lynde, Manchester; P. H. Anderson, R.A.; Charles Neate, C.E.; Charles Manby, C.E., F.R.S.; and Wm. H. Barry. Donations of books were acknowledged with thanks, on the motion of the President, who remarked with reference to one item in the list—copies of a reprinted article on "Illicit Commissions," presented by Mr. Cates—that it referred to a matter in which all had a very deep interest, and architects were very much obliged to authors, even anonymous—much as he disliked anonymous writing—who pointed out their shortcomings, real or supposed: real ones to be condoned for, supposed ones to be exposed. Mr. Hyman H. Collins, of Old Broad-street, E.C., was elected as fellow. The Secretary announced that an interesting series of drawings, illustrating Japanese architecture, had been received from Mr. Josiah Conder, in 1876 a Soane medallist of the Institute, and now of the Imperial Engineering College of Tokio, Japan.

MIDDLE CLASS HOUSES IN PARIS AND CENTRAL LONDON.

A full and almost exhaustive paper on this subject was read by Mr. William H. White, Fellow, who remarked that he had enjoyed unusual opportunities for study during a ten consecutive years' residence in middle-class Paris, of the method there employed to house groups of people of different denominations upon the same restricted area of ground; to combine in a single block shops complete in themselves, and distinct houses each complete in itself; to enable the lower stories of a building to be occupied by business people who reside away from their shops and offices, and the upper stories to be inhabited by families without confounding them with the tradespeople, or confounding one family with the other; but housing all the tenants in distinct groups, and in a manner conducive to their mutual advantage. The author then traced the origin of the modern Paris house to Pierre le Muet's designs, published in 1663, and greatly improved, chiefly in the arrangement of plan, in the period just prior to the Great Revolution. That progressive development has continued in Paris from the close of the last century to the present hour, in spite of the worst disasters; and the architect experienced in French domestic buildings can trace through the reigns of Napoleon, Louis Philippe, and the late Emperor the ameliorations introduced into the house of the middle class. Having described, with the aid of plans, the *maison-à-loyer* of the Second Empire, consisting of a shop and five superposed flats, the lecturer gave a sketch of Parisian domestic life in one of these houses let out in suites, dwelling on the important functions sustained by the house porter, and on the perfect isolation of each dwelling from its neighbours. Recent improvements have tended to increase the comfort rather than the elegance of a Parisian home. Water is now laid on to the topmost house, and a heating apparatus is often maintained by the landlord, which is lighted during winter in the basement, and the warm air conveyed by flues into the hall of every house, and also to a hot closet attached to each dining-room. The servants' stairs are improved in size, shape, and lighting, but the principal stairs are scarcely so commodious and easy as in the older houses. Even in the best houses the kitchen accommodation, which in London would be subdivided into kitchen, scullery, servants' hall, housekeeper's room, and butler's pantry, is compressed into a single room, and although the cooking range is fitted with every improve-

ment, cupboards provided, and plenty of light given, no attempt is made to increase the kitchen space. The servants are often abominably housed in a roof; but none are ever condemned to inhabit below the level of the soil. This kind of residence, reduced to a set of three rooms, or developed to one of fifteen, is the Parisian system of habitation. Some of the sets let for £1,000 per annum, exclusive of taxes, others for as low as £40. The strangest fact is that the older and cheaper houses lose their tenants, and the new ones are eagerly sought and taken. This he attributed to the elegance and refinement with which they are endowed. To the character of the construction, richness, and excellence of the materials, the security afforded by a practically fire-resisting house, is due the extraordinary success of private building in the French capital. At the same time noblemen and gentlemen are still building hôtels for themselves—and intended for the exclusive use of one family—outside the main lines of traffic and business. Like the great mansions of the last century, there is little in them of outward show—at least, towards the street, for between that and the courtyard is often a high stone wall pierced with a huge archway closed by polished oak doors. Yet some of them, only recently erected, surpass for size and beauty the majority of patrician homes in London as much as the earlier hotels of the Faubourg St. Antoine surpassed the palaces of the Strand and Westminster in Evelyn's or even Lister's days. Turning now to consider the advantages of London, Mr. White pointed out that no fortifications have impeded its spread, that railways pierce to its centre, and bind compact suburbs to its heart, disgorging every morning trainfuls of travellers who regard town simply as a place of toil. Hence the demand for office room has extended to the uppermost stories of new buildings; interminable lines of houses, the vast majority of which are inhabited by one family only, stretch away from central London in every direction. Such a system which gives to each family not only the superficial area of a plot of land, but also the whole cube of space above it, must be a right one. Any one conversant with habitual phases of life in Paris and London will freely admit the advantages of a system that grants to the head of a household the partly poetical licence of breathing his native air on his own ground. But in the survey he made, he had passed over the nondescript mass of central London, neither purely commercial nor official, neither residential nor monopolised by trade or manufactures. Here, within a certain radius of Temple-bar, and even of Regent-circus, the great mass of the residents are lodgers, who occupy a story, a set of rooms, or a single apartment in a house planned as a single residence. When a lease runs out the house is rebuilt on a strip of frontage so restricted that by no possibility can the upper portions of the premises be made to yield a profit on the money invested, they being only reached by a narrow and steep stair, which by night is pitch dark, and by day is totally unguarded. In order to explain the inconvenience and unhealthiness occasioned by the London practice of leasing each narrow strip of land separately, the lecturer showed a typical block in the midst of fashionable trade, bounded by Regent, Warwick, and Beak-streets, and Regent's-place, where, to meet the necessity for lateral extension, the breathing space in the centre of the block has been gradually encroached upon, and the party walls of the houses have been pierced with holes, large and small. The lecturer next dealt with the laws and restrictions by which construction is governed in Paris, with especial reference to the rule by which the height of façade is made dependent on the width of street. Having shown that the architect alone makes all contracts with the tradesmen in each branch of work, and is solely responsible to the client, and thus is indispensable to people about to build, the lecturer proceeded to describe in detail the process of building a first-class *maison-à-loyer* in Paris. In substance, this was nearly the same as his lectures before the Architectural Association (reported and illustrated by plans in the BUILDING NEWS, Vol. XXI., p. 633, published Dec. 10, 1875),

and the Society of Arts (see Vol. XXX., p. 315, published March 15th, 1876). The progress of the building was traced from the digging out of the cavities for the cesspools to the covering in of the mansards and roofs, and the construction of the principal staircase, and the completion of the several residences sketched out. The island of London buildings and shops in Regent-street was then contrasted on diagrams, with the treatment of a similar block of premises in a similar position in Paris, and the lecturer contended that by the suggested arrangement this island might, under the Parisian system of plan, be rendered healthy and comfortable; that a few of the shops might have the means of extension at the same level larger than the largest shop now on the island; that all the shops might be distinct from the residences erected over them; that instead of sham party walls pierced and mutilated, there need be only two solid vertical divisions; that from the necessary connection of the internal courtyards with the external streets the gradual filling up of those courtyards with even low buildings would be impossible; that forty shops and houses of different sizes might be made to occupy less space of ground than the twenty shops and houses of different sizes which now crowd the island—and without increasing the average height of the front walls. He proposed to do away with the numerous and narrow private entrances in each façade, substituting for them three archways, of 10ft. each, and on the other side of the courtyard carriageways, open to the sky, of 15ft. each, throwing the others into the shop-window spaces. This would allow of setting back each of the frontages without taking more than 10ft. from the total extent of shop windows and fronts of supports. On the space he would construct 21 ordinary shops, which, without the removal of one support, could be turned into 5 extraordinary shops; or by the addition of a few brick partitions, removable at will, could be converted into 23, and even 30 shops. Of the suggested 21 shops, 17 would possess three stories—a basement, a ground floor level with the street pavement, and a mezzanine floor over. The four others had only two stories—a basement, and a ground floor. Only 17 had a story over, intended exclusively for the shop-keeper—as an important part of the shop. Collectively the 17 shops possessed 33 rooms, some of them 22ft. by 17ft. in size. The connection between the mezzanine, the shop, and the basement, might be maintained by a small staircase specially provided for each shop. A sitting-room, a lavatory, even bedrooms, could be arranged in the mezzanine; and 20 of the shops would possess window space before or behind, sufficient to construct a counting-house or a sitting-room on the ground floor. The basements to the whole could be lighted with facility from both the streets and the courtyards. In fine, besides the usual two stories—a ground floor and basement—to the 21 shops, there were eight shops with mezzanines, containing together 14 rooms; 7 with 9 rooms; and 6 with 10 rooms; a total of 33 rooms. Above the actual island there may be, say, 182 rooms, some of these being mere attics, and at least 150 but single rooms. He would give instead: (A) 3 complete and distinct houses of 14 rooms each; (E) 3 ditto, 10 rooms each; (B) 3 ditto, 9 rooms each, and (C and D) 10 of 5 rooms each, being in all 19 houses, containing 149 rooms, in addition to the 33 rooms over the shops. In the first block (A) of 3 houses, each of 14 rooms, each dwelling-house would be divided horizontally into (1) hall and reception or living rooms; (2) private or sleeping rooms; and (3) kitchen and servants' rooms. The house, Mr. White explained, contains four sitting-rooms, the largest of which, the dining-room, is about 22ft. by 17ft.; seven rooms suitable for use as bedrooms, toilet-rooms, or nurseries; also a bath-room with a fireplace; on the servants' side, a kitchen, about 20ft. by 13ft.; a coal-store and a larder; two rooms, each 10ft. by 8ft.; also a serving pantry and a wine cupboard. Only the hall, the bedroom corridor, the bath-room, three water-closets, two small rooms, and a larder are lighted and ventilated from the courtyard, which is not closed. He would construct at the level of each story a terrace open to the external street and

the internal courtyard; it would be supported at each end by columns, and protected by a balustrade. Block B consisted of three houses of nine rooms each, and, like the preceding houses, each was divided into three parts. In the servants' portion there was a kitchen 16ft. by 13ft., a scullery, a larder, a coal-store, a water-closet, and a serving pantry. There was also a servants' room 17ft. by 10ft. The servants' staircase had one side entirely open to the external air, and a broad landing at the level of each story permitted the working of the goods lift, which is in the centre of that staircase. The next block, C, of five houses of five rooms each, would be ordinary dwellings with one staircase and consisting of two sitting-rooms, two bedrooms, a w.c., a kitchen, and a coal-store; lift for coals and other heavy objects is placed outside the wall in the courtyard. Block D will be five houses of five rooms each, ordinary dwellings with one staircase, which also contains the goods lift. There is nothing to prevent the four living-rooms from being divided into one sitting-room and three bedrooms. The dwelling also contains a kitchen, a water-closet, and a coal-store. Block E will be three houses of ten rooms each, divided into two distinct parts, the family division and the servants' division. The living-rooms consist of drawing-room, library, and dining-room. The four bedrooms are arranged in two sets on either side of the corridor, between which and the rooms a small antechamber intervenes. On the servants' side is placed the family water-closet, approached from a lobby behind the dining-room. The corridor then leads straight to the kitchen. A scullery, a coal-store, and a larder are provided, as well as a water-closet for the servants. Two rooms, 13ft. by 10ft. and 13ft. by 8ft., with fireplaces, would make excellent sleeping-rooms for female servants. There is also a serving pantry. The author then pointed out several of the leading peculiarities of the plan, urging that the courtyard is a thoroughly English institution, and that, in a rainy country like ours, covered entrances to houses are a necessity. He next referred to one of the building restrictions existing on the Duke of Bedford's estate in central London, and to the appeal he recently made to the Duke to remove it. The lecturer showed plans of a block of houses on the Bedford estate, and a suggested rearrangement of the same block. The revenue from the two houses as they now existed, each with its two rooms over two rooms, and a central superfluous party wall, might, he thought, be safely calculated in the following manner:—Shop No. 1, with basement story of both houses, and work-rooms at the back, £350; shop No. 2, ground level only, £150; first floor of the two houses, £180; second ditto, £140; third ditto, £100; fourth ditto (for two house keepers), nil; total annual revenue, £920. The probable revenue from the houses as they might be was as follows:—Two shops, ground floor and basement, £700; eight offices, mezzanine £360; two residences, first floor, £140; two ditto, second floor, £120; two ditto, third floor, £100; total annual revenue, £1,420. Calculating the cost of the block as it might be about £2,000 more than the two houses as the now stood (all other expenses being equal), the new system showed, he held, a clear profit of £300 per annum over the old one, thus:—Total annual revenue obtained from two houses as they might be, £1,420; total annual revenue obtained from two houses as they are, £920; balance, £500; the increased cost of the two houses as they might be, interest on £200 at 10 per cent., £20; balance of profit in favour of the houses as they might be, £30. In conclusion, the lecturer said a paramount obligation on those building houses in flats was that the horizontal divisions should be fire-resisting, and this could be secured by the use of a framework of rolled iron joists enveloped in concrete—the latter being composed of materials that have passed through the fire. The joists should be coupled on the French system, and thereby made solid lintels, protecting top and bottom with plaster of Paris. The horizontal space between the lintels and the walls should be filled with fire-resisting concrete. Then, having roughly plastered the walls and ceilings; having finished the staircase, as well as the public entrance to both offices and re-

lences; having closed the building throughout with shop shutters and house windows; having established the position of the water-closets; having put the lift in its place; having fixed the private entrance doors to each residence from the staircase; and having duly installed a caretaker in a box on the ground story, he would leave the building to dry, while possible tenants paid probable visits, or offered their own ideas as to the best way of arranging the shops and their basements, the partitions of the mezzanine, and the distribution of rooms in the different residences.

The President remarked that the utility of the new rule, by which the discussion upon a paper is not entered upon till the following meeting, was clearly shown on this its first night of being applied. There were so many points to be considered in Mr. White's suggestions—as, for instance, how it would, in the face of the Metropolitan Building Act, be possible to gain all the advantages which had been so fancifully laid before them—that it was very desirable time should be given for thought. On one point they would all agree, and that was in tendering hearty thanks to Mr. White for the very attractive way in which he had treated his subject. He looked forward to the discussion to take place at their next meeting, on December 3rd, and at its conclusion a paper would be read by Mr. James Neale, F.S.A., on St. Alban's Abbey.

A DECORATIVE PROCESS.

THE latest and one of the most successful efforts in art decoration we have seen has been introduced by Mr. Aldam Heaton, of Bloomsbury-square, who has applied hand painting in a way that will find favour among architects and their patrons desirous of favouring the art decoration of interiors, in contrast to the "manufacturing" processes. Having seen some of Mr. Heaton's work, we can explain it simply by saying it is a kind of raised or gesso painting on panel, applicable to interiors of houses of a superior class. The work we saw was done on oak and pitch pine; and for the decoration of panelled work it is extremely suitable. One panel on pine was an admirable rendering in a naturalistic spirit of the oak and mistletoe, entwined or blended in a pleasing and thoroughly artistic manner, in which the leaves and berries were raised or painted in relief, the raised parts being discriminately juxtaposed with the portions flatly represented. The preparation of gilded gesso is, we believe, chiefly composed of lime mixed with oil and other ingredients, and productive of a remarkably fine surface. The colours chosen in the panel we saw were in a low scale—the leaves were of a bronze hue depicted in transparent colours or glazings upon the gilded ground, while the groundwork, or panel itself, was apparently stained with a dark colour transparent enough to show the natural grain of the wood. There is a remarkably pleasing solidity and cabinet-picture-like effect in the work, which the smoothness and high polish and transparency of the ground enhances. Another panel was treated with a lighter ground, the surface of the wood being apparently grounded with gold. The figure subjects treated by this process have all the beauty and finish of cameos or alto-relievs, owing to the polish of surface and reflection thereby caused. Mr. Heaton has recently executed a fine series of this panel painting for Mr. Ripley, M.P. for Bradford, for the billiard, smoking room, and other apartments of that gentleman's residence, "Acacia." The rooms are divided into panels by pilasters of conventional folial patterns, and contain subjects of rural pastimes and sports—boys climbing, hunting, fishing, shooting, &c., after the model of Luini. Above this is a frieze of foliage, children, birds, &c., is formed. The process has certainly more of the finished cabinet picture of oil, than the decorative and flat treatments that have recently been introduced for woodwork. Stamped leather supplies some analogy to it. We are informed that the best and highest class of subject can be done in this manner for about £5 per superficial foot, though of course the cost varies with the subject, and the labour bestowed. One immense gain in

this kind of art decoration is that it cannot fall into the hands of indifferent or manufacturing decorators, as its value consists in the high-class hand-work of the artist.

BOOKS RECEIVED.

Quantities, by Banister Fletcher (London: B. T. Batsford), is, our readers need hardly to be told, a good treatise by a competent master of his subject. The chapters which comprise it originally appeared in this journal, but some new matter has been added, and the series generally revised. It will, doubtless, be as successful as Mr. Banister Fletcher's other text-books, if we may judge from the number of inquiries that have reached us during the past two years as to whether it was likely to be published in a complete form. *The Geometry of Compasses*, by Oliver Byrne (London: Crosby Lockwood and Co.), is a collection of geometrical problems, resolvable by the description of circles only. The ability to describe a circle with a pair of compasses is the only previous knowledge required on the part of the student. The treatise is a good one and remarkable—like all Mr. Byrne's contributions to the science of geometry—for the lucid character of its teaching. *The Pleasures of House Building*, by J. Ford Mackenzie (London: G. Routledge and Sons), is a well-rendered version of the old story of the woes of the victims of jerry builders. An instructive comparison, of the fortunes of two friends who start house-owning and building is presented. One invests his carefully hoarded savings in a pair of semi-detached villas of the usual lath and plaster type, the creation of an unscrupulous rascal who disappears from the scene before even the houses are sold, and is glad, after a year or two's worry and bother, to part with them for half the original purchase money. The other, with no money of his own to start with, places himself in the hands of a respectable architect and building company, and, paying a fair and honest price for his work and materials, has the satisfaction of making money and becoming the possessor of a structure worth calling a house. The story is told with some humour.

New police buildings are about to be erected at Portobello, N.B., by Mr. H. Lake, at a cost of £4,120. Messrs. R. Paterson and Co. are the architects.

The ancient parish church of Selborne was reopened on Thursday week, after restoration under the care of Mr. White, of London, a relative of the genial naturalist who has made Selborne famous. The builders were Messrs. J. H. and E. Dyer.

A resolution was passed unanimously at the Court of Common Council of the City of London, on Thursday week, empowering the Gas and Water Committee to confer with the Government and the Metropolitan Board of Works upon the subject of the supply of water to the metropolis.

The directors of the Manchester Mechanics' Institution have resolved to establish a class for practical instruction in carpentry, and with that view they have obtained estimates for the supply of benches, lathes, and other appliances necessary for a model workshop. One of the rooms will be fitted up, and by the new year the first carpenters' and pattern-makers' workshop of the kind will be opened in Manchester.

The Corporation of London have given notice that in the next session of Parliament they intend to apply for leave to bring in a bill to enable them to widen London Bridge and to construct the necessary works in connection therewith, and for such purposes to borrow money on the credit of the Bridge House estates. The widening of the bridge will be to the extent of eleven feet on each side. They will also ask to amend any Acts relating to the bridge, and for other powers.

Queen Anne's statue in St. Paul's-churchyard was again attacked at the meeting last week of the Court of Common Council, one of the members remarking that its dirty and dilapidated condition was a disgrace to the dean and chapter of the cathedral.

The memorial stones of a new Wesleyan school at Shoreham, for 100 children, were laid last week. Mr. C. Bell, of London, is the architect, and Mr. J. Willis, of Sevenoaks, the builder, and the total cost of the erection will be about £1,000.

The West Kent Main Sewerage Board, on the 14th inst., raised the salaries of several inspectors of works in their employ, and appointed Mr. Wright to be an additional inspector, making the eighth. It was stated that an agreement with the Sevenoaks urban sanitary authority, for admission of that town into the board's system, was in course of preparation.

Building Intelligence.

AINTREE.—On Tuesday the new Church of St. Peter, Aintree, Liverpool, was consecrated. The church is designed in the style of the thirteenth century, and is simple in character throughout, both in plan and detail. It will consist, when complete, of a nave 26ft. wide, with north and south aisles, tower, forming north porch, north and south transepts and chancel, having the organ chamber on the north side, and double vestries on the south. The contractor has been Mr. Edward Hughes, of Bootle. Messrs. Asahel P. Bell and George Freeth Roper, of the Temple, London, and Royal Exchange, Manchester, are the architects.

CHELTFENHAM.—The new Roman Catholic church of St. Gregory, Cheltenham, has been consecrated, having been at length completed. The church is in the Early Decorated style, and consists of chancel, nave, with aisles and tower at the western end. The total length from the western door to the chancel wall is 153ft. 6in.; the chancel being 30ft. by 21ft.; the nave 103ft. by 30ft., with the aisles 69ft. by 12ft. 6in.; and the tower 25ft. square, independent of buttresses, which make the total base of the tower 35ft. The church is cruciform in shape, the transepts being 65ft. in length and 20ft. wide. The general width of the church is 55ft.; the height of the nave is 70ft., and the height of the tower and spire is 202ft. The total cost has been little less than £20,000. The church has been built from the design of Mr. C. F. Hansom, architect, of Clifton.

GATESHEAD.—Schools erected in Askew-road by the Gateshead School Board have just been formally opened. The schools are arranged in three departments, and will accommodate 800 children. Mr. Lee's contract amounted to £6,202, which equalled a cost of £7 15s. per child. The cost of land, furniture, &c., made the total expenditure about £10 per child. Mr. Edington has acted as clerk of the works, and the buildings have been designed and carried out under the superintendence of Mr. Thomas Oliver, architect, Newcastle. This makes the fourth block of schools completed by the board, in all affording accommodation for 3,351 children.—On Thursday, 15th inst., the new church for the parish of St. Cuthbert, Marley-hill, Gateshead-on-Tyne, was consecrated by the Bishop of Durham. The structure is built of local sandstone, the walling being of coursed rubble, with dressed stone to buttresses, quoins, doors, windows, water-tables, &c.—It is in the Early English style of architecture, and consists of a chancel 24ft. 6in. long, and 18ft. wide, a nave, 61ft. 6in., by 24ft. wide, a western porch, 14ft. by 7ft., and an organ-chamber at the north-east corner of the nave, opening into a vestry on the north side of chancel; under the vestry is a fire-proof heating-chamber. The building will seat 256 persons. The nave has an open-timbered roof, and both nave and chancel roofs are plastered under the rafters and divided into panels by moulded ribs. The nave is lighted by groups of lancets on the north and south sides, and by a rose window over the western porch, while the chancel has coupled lancets on the south side, and two enriched lancets at the east-end, with a vesica-shaped opening above. Over the chancel-arch is a stone bell gable, containing two bells. The chancel is seated with choir seats of pitch-pine, with priest's stalls at the west-end, and the nave has low, open seats of stained deal. The altar, rail, and pulpit are of oak, and the lectern of brass and iron. The font, of stone, with shafts of Frosterly marble, is placed on one side of the western door. The church is heated by Gundy's hot-air apparatus. The churchyard is surrounded by stone walls, with oak gates, and dressed stone piers. The cost has been about £3,000. The works have been carried out by Mr. S. B. Burton, builder, of Newcastle-on-Tyne, from the designs and under the superintendence of Mr. C. Hodgson Fowler, architect to the dean and chapter of Durham.

INCORPORATED CHURCH BUILDING SOCIETY.—The usual monthly meetings of the Incorporated Society for Promoting the Enlarge-

ment, Building, and Repairing of Churches and Chapels were resumed on Monday, at the Society's House, Whitehall, S.W. Grants of money were made in aid of building a new church at Eastbourne, All Saints, Sussex; enlarging or otherwise improving the accommodation in the churches at Bedstone, Salisbury; Bexhill, St. Peter, near Hastings; Cherry-Hinton, near Cambridge; Dordon, near Tamworth; Llangybi, Carnarvon; Marple, near Stockport; Sevenoaks, St. Nicholas; Whitsbury, near Salisbury; and Wormshill, near Sittingbourne. Under urgent circumstances the grant formerly made towards re-seating and restoring St. Luke's Church, Old-street, London, was increased. Grants were also made from the Special School-Church and Mission House Fund towards building schools or mission churches at Broom, in the parish of St. Oswald's, Durham; Camberwell, St. John the Evangelist, Surrey; Saxilby, Lincoln; St. Neot, Cornwall; Wadsley, near Sheffield; West End, in the parish of Silverstone, near Towcester; and Weston, in Portland. The society likewise accepted sums of money as repair funds for the churches at Walton-on-the-Hill, St. Cuthbert, Lancashire; and Branksome, All Saints, Dorset.

LONGWOOD.—On Thursday week the new Church of St. Mark, Longwood, in the diocese of Ripon, was consecrated. The new church is in the Early Pointed style, and as yet has no chancel or tower, and only temporary timber vestries. So far as it is completed, it has cost about £5,000, and will accommodate 468 persons. When the chancel is added there will be accommodation for 513 persons, but for this addition another £1,500 will be required. The church contains a nave 71ft. by 26ft., divided from the two aisles by five bays of pointed arches on octagonal columns, and each aisle is 9½ft. wide. The west elevation has a four-light geometrical tracery window, with a lancet window in the tympanum. The north and south elevations are divided into five bays by quoined buttresses, each bay containing a two-light tracery window, with label moulds and bosses. The clerestory is six feet high, and has five tracery windows on each side. The architects are Messrs. J. W. Cocking and Co., New-street, Huddersfield.

METROPOLITAN BOARD OF WORKS.—At Friday's meeting of this board, Sir J. McGarel Hogg, Bart., M.P., was for the eighth time unanimously re-elected chairman. The tender of Messrs. Mowlem and Co., of Westminster, was accepted for the execution of general works of the board in district A, north of the Thames. As the Fulham District Board have failed to comply with a resolution of the board of the 27th July last, requiring them to reconstruct the sewer in Blomfield-road, Hammersmith, it was decided that an order under seal be made upon the district board calling upon them to execute the necessary works within 21 days. £5,000, being half the estimated cost, was voted towards the expense of a proposed improvement by the Vestry of St. Luke's in Bath-street, the sum to be paid on the completion of the work. Advertisements were directed to be issued for an additional first-class officer in the superintending architect's office, at a salary of £200 a year. The Penge Vestry wrote, requesting the board to establish a fire-brigade station in the hamlet, and to take immediate steps for forming the telegraphic communication between Penge police-station and the existing engine-station; referred to the fire-brigade committee. This committee submitted a design for a medal proposed to be given to men of the Metropolitan Fire Brigade who distinguished themselves by extraordinary bravery at fires, and recommended that the medal be of silver instead of bronze. Some discussion arose on the latter point, and the design itself was objected to, a member declaring that he "could see no design in it." The whole matter was referred back to the committee. As to the "model" lodging-houses in Choumert's-road, Peckham, complained of by the Camberwell Vestry, the solicitor to the board was authorised to take proceedings against the builder. A letter was received from Mr. Russel Aitken, transmitting plans of a proposed railway from Chelsea to Charing-cross, and of a proposed terminus at Charing-cross, to be

constructed under Northumberland-avenue and other property owned by this board; and requesting that, as Parliamentary plans cannot be deposited in time this year, the board would arrange to keep the land open and free from new buildings until next year; and a further letter, stating that it is proposed to acquire the Millbank Penitentiary for a coal and goods depot. This was referred to the works committee, as was one from Mr. Brand, comptroller, stating that the Court of Common Council of the City have had under their consideration the desirability of constructing a bridge across the Thames from Little Tower-hill and Irongate-stairs, on the north side, and from Horsleydown-lane and Stairs on the south side of the river, and that the subject has been referred to a committee, who are desirous of a conference with the Metropolitan Board of Works thereon.

NEWCASTLE-ON-TYNE.—On Wednesday the foundation stone of the new Science and Art School, in Corporation-street, Newcastle, was laid. The building will be erected in stone. The design, though plain, is neat and appropriate. Upon the first floor will be placed the lecture-hall for science subjects, and also several large science class-rooms. On the second floor the rooms are to be devoted to art students. The chemical and physical laboratories will be placed on the third floor. The contract for the work has been placed in the hands of Mr. Humphrey Atkinson, Blydon, and Mr. Thomas Oliver, Newcastle, is architect.

PENN (BUCKS).—The chancel of St. Margaret's Church, Tyler's-green, has lately undergone considerable alterations and additions, the roof having been lined with pitch-pine boarding, fixed and panelled with moulded ribs and richly-gilt pateras. A reredos has also been erected, of Caen stone, with carved caps and columns of Mexican onyx and other marbles, and alabaster panels; the central panels over communion table are in gold and coloured mosaic, by Messrs. Salviati. A new ciborium on north side, and double sedilia on south side of chancel, have also been formed. The floor is laid with Messrs. Maw and Co.'s encaustic tiles. The new altar rail is wrought brass, and with the corona of four brilliant lamps, with duplex burners, was supplied by Messrs. Hardman; the whole of the interior of the church is about to undergo colour decorations in stencil patterns. The work has been designed by, and is being carried out under the superintendence of, Mr. H. G. Liley, 8, Bradmore-park, Hammersmith.

SHEFFIELD.—New Turkish baths, considered the finest and most complete in the kingdom, have just been opened in Victoria-street, on a triangular site at the rear of the old swimming bath and saloon, by a limited liability company. The exterior has no architectural pretensions, but the interior is luxuriously fitted with tessellated pavements, white and coloured glazed brick walls, arched and decorated ceilings, easy chairs, and marble and felt-covered seats, so as to conduce to the comfort of those using the baths. The heating apparatus has been manufactured by Messrs. Vickers, Sons, and Co., from the designs of Mr. T. E. Vickers. Only a portion of the building is finished as yet, and a new first-class swimming bath is in course of formation. This will be 77ft. by 30ft., and will have a depth of water at one end of 3ft. 6in. and at the other of 6ft. 6in.; the total capacity will be 70,000 gallons. The footway round the bath will be of marble; the bath itself is to be lined with white glazed tiles; the walls, too, are also of glazed bricks. The water will be filtered by an apparatus manufactured by a London firm. The old swimming bath has been improved, and the saloon has been re-decorated; there are two new retiring rooms, a large refreshment-room, and a supper-room and kitchen. The architect for the alterations and new building is Mr. E. M. Gibbs, Change-alley, Sheffield.

TORQUAY.—The memorial stone of a new Wesleyan chapel and schools were laid at Torquay the other day. The style is Classic. The plan of the chapel is a parallelogram, 79ft. in length and 50ft. 6in. in width. The main roof is to be formed in one span, with the tie-beams only exposed, and the plaster ceiling brought

to this level will have a circular cove formed the angles, where the tie-beams are supported with carved and moulded ribs. The ceiling will be thus formed into panels, picked out in color and stencilled, to relieve the plain surface. Accommodation is to be provided for 1,000 persons on the ground floor, and 350 in the gallery. The school buildings are to be situated at the side of the chapel. The front will be carried out in the same style as the chapel, but of rather less costly character. The plans have been prepared by Mr. J. W. Rowell, architect of Newton Abbot and Torquay; and the buildings will be carried out by Mr. E. P. Bovey, Torquay, the amount of the contract being £5,773 10s.

TUNBRIDGE WELLS.—The foundation stone of the pump-room, about to be built at the end of the Parade by a joint-stock company, was laid by the Marquis of Abergavenny on the 6th inst. The building will be Domestic Gothic in character, of white brick, with yellow malm-band courses and gables, filled in with ornamental brick panels. Mediæval lead-light glazing will be used for the windows; the roof will be slated with ribbed-tile edging. Facing the Parade will be a carved stone porch entrance. In the basement will be located the janitor's apartments and cellars; the ground floor will be devoted to library, reading-room and ladies' rooms, lavatories, and offices. The pump-room proper will be 73ft. 6in. x 38ft. with bay windows in front and a recess at the rear, in which will be a fountain supplied with chalybeate water. On the right hand side of the room will be provision for an orchestra. The ceiling will be moulded. The upper floor will contain a billiard-room, masonic lodge and ante-rooms, &c., and will be approached by a grand staircase. The architect is Mr. T. Ladds, and Messrs. E. J. Strange and Sons are the builders.

WHALLEY RANGE.—On Monday the foundation stone of a new Presbyterian church at school was laid at Whalley Range. The cost of the buildings is estimated at from £3,000 to £10,000. The building, which is being erected from the designs of Mr. H. R. Price, architect of Newcastle-on-Tyne, will be in the Early Gothic style, with a spire 127ft. high, rising from the principal entrance. The church will be 90ft. in length, with a breadth of 45ft., and will consist of nave, aisles, and transepts with galleries. In the church accommodation will be provided for 750 worshippers.

The Corporation of Sheffield decided, on Monday upon an extensive scheme of street improvement. They are promoting eight schemes in addition to thirteen for which power has already been obtained. The schemes will involve the outlay of an immense sum of money, and in the case of one of them a loan of nearly £100,000 has been rendered necessary, the running of tram-cars in narrow and crowded streets.

The new church of All Saints, Hawsker, near Whitby, was consecrated on Monday. The design was furnished by Mr. E. H. Smales, architect, Whitby. The style is Early French.

The Carmarthen Guardians anticipate getting their workhouse altered—so as to meet the wishes of the Local Government Board—at a very cheap rate, and to be able to dispense with the services of either an architect or builder. At their last meeting "very neat ground plans" were exhibited by Mr. Lewis, the master, showing the alterations which he and the medical officer (also Mr. Lewis) had agreed upon, including the erection of a tramp-shed and the formation of bath-rooms—that for males of the present dead-house, and that for females of a disused water-closet. The master said that he was a mason in the house, stones and broken bricks were on the premises, and all that he needed was to buy a little timber. The guardians direct their obliging official to set about the work at once, and to superintend it during progress; but no suggestion was thrown out as to payment for the extra labour involved thereby.

In our notice last week of the completion of the new military brigade depôts at Caterham and Reeding we should have stated that the locks and keys were supplied by Mr. James Hill, of 37, Upper Thames-street—not by Messrs. Higgs and Hill, the builders. The error was caused by the similarity of name.

The memorial stone of a new Sunday school lecture-room was laid at Pombury last week. Mr. J. W. Brooker, of London, is the architect.

A new Wesleyan mission chapel is being erected at Ipswich by Messrs. Smith and Welcham. The building, which is Gothic in style, will cost £400.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress, price 2d., post-free 2d. The number published November 23 contains articles on Our Roadways and Their Repairs, Nutrition and Health and Disease, The Medical Officers of Health Society's report of Prof. or Arsted's Paper on Water Supply, Improvements in Ventilation, Vegetable Nutrition, The Origin and Prevention of Infection, Public Health Reports, Legal Intelligence, Water Supply, Correspondence, Intercommunication, the Editor's Table, Gleanings, &c.—31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence. All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C. TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces. Cheques and Post-office Orders to be made payable to PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—Spero.—T. S.—E. P. Williams (drawing received).—L. P. Co.—E. L.—T. W. R. and Co.—T. W. C.—T. D.—W. P. M.—B. and B.—M. H. H. and Co.—J. H. R.—0 per cent. from Tradesmen.

Spero. (If the bay window projects beyond the line of building prescribed by the building committee, it is an infringement. You say the plans were sanctioned by the town surveyor, but did he sanction the projection of the bay window beyond the line? The old custom does not affect your case.)—T. C. NICHOLSON. (We do not know; but a very good one on the same principle is made by Colman and Glendinning, of Norwich.) "BUILDING NEWS" DESIGNING CLUB.—Drawings Received:—Cave Canem, Medicus, Josephus Orange Blossom, Navite, Fleur-de-lis, Magnet, X in circle, St. Lucy, L. in G.—Jag. (All drawings are returned, excepting those we intend using.)

Correspondence.

ILLICIT COMMISSIONS.

To the Editor of the BUILDING NEWS.

SIR,—Allow me to add to your able remarks, and the letter of your correspondent on "Illicit Commissions," a few observations. The facts related in the article are galling to every conscientious man, and they only confirm the opinion you expressed at the early part of this year. But, Sir, the evil is now so widespread among all professional men that there is considerable danger that the weaker men of the profession will become largely infected with the disease. I say weaker advisedly, for however much some men plume themselves on what they have made or pocketed by a little manoeuvring in the shape of fees—a little tactical sharpness that they think shows cleverness and worldly acumen, which they like to boast of to their friends—there is really nothing that displays such utter folly, so low an estimate of one's own ability and resources, and so contemptible a standard of morality as the pocketing of a dishonest fee, whether in the shape of commission to builders and advertising manufacturers, or the equally dishonest practice of making a stroke of business on behalf of an employer the means of private gain. There seems a danger that if the dishonest doer is not taken there is a great deal more tricky of another form, equally reprehensible, but perhaps even more selfish and antagonistic to employers, going on in a more concealed way. For example, I know some men in the receipt of salaries who double their income. How is this done? Either

by robbing their employers of time, or, what amounts to the same thing, physical capacity for their work, or by carrying on a little underhand business of their own. To take the architectural profession there is a great deal stealthily made, as "M." acquaints your readers, by assistants or managers pocketing fees from contractors, agents of manufacturing firms, and so forth; but a far greater evil is the trafficking in another's brains, name, or reputation, the secret and reprehensible practice of carrying on a business with the clientele of the master or firm—in short, robbing in another's name. It is not uncommon to find here and there individuals who like to make capital out of every little transaction they are engaged in, not on behalf of their employers, but on their own account. Shakespeare says:—

Who steals my purse steals trash. . . .
But he that filches from me my good name,
Robs me of that which poor not enriches him,
And makes me poor indeed.

A moral that points with great force to the habit of secretly plundering another's brain or reputation. As much of this kind of dishonesty is committed by otherwise useful and often religiously-convinced men, it deserves notice. Draughtsmen and assistants are sometimes addicted to this kind of delinquency. In firms a partner is sometimes found villain enough to do a little quiet business in this way, and whenever a firm is made up of an individual of this sort and a man of ability or strict integrity, there is always a danger of the latter being plundered. This source of dishonesty is, I am sorry to say, rather common in the architectural profession, where, as in other vocations, prigs and pilferers are met with rather largely; but both the prig and the pilferer are, in my opinion, equally dishonest men, and deserve the reprobation they sometimes get. Generally, however, my experience and observation have convinced me that the priggish individual is rather the better business man, the most oily, facetious, and bouncing individual of the two. With all professional men a high standard of morality is required, and till we find men act up to this law, we cannot value any pretensions of a more pronounced character.—I am, &c.,
G. H. G.

SIR,—It is high time that this matter was taken up by the powers that be so as to settle the matter once for all, and put the profession right with the public if possible.

There is one thing that has struck me forcibly for some time back respecting this attack upon architects, and that is why should the architectural profession be made the scapegoat on the point of illicit commissions when other professions are equally involved? As we are threatened with the law to put us right (?), would it not be as well to commence with the lawyers? The following extract is from a weekly local paper for this month, and I think will be apropos:—

"It appears that the solicitor, to begin with, is by no means *rectus in curia*. He takes large assurance commissions for the introduction of business, regardless of the stability of offices, he shares with stockbrokers and auctioneers allowances he would be ashamed openly to claim, and it is said that if he do not divide fees with counsel he is on the best of terms with official liquidators and accountants whenever estates with good assets are being wound up. Then the banker, who, if any one, should be above fear and reproach, is barely ingenuous in his system of charges on stock transactions, for, besides the commission he gets as his own proper demand, he shares with the broker the profit charged as 'brokerage.' Thus, if not obtaining money under false pretences, he is getting at least fictitious merit, for in those cases wherein he 'generously' foregoes his own commission he is realising a very fair profit. Tradesmen have been long known to be in the habit of giving douceurs for the purpose of obtaining custom."

In my opinion the public is not altogether free from blame in this matter, especially in his commission to a starvation point in many instances, and yet expected to be true to his client. It is scarcely possible, as a rule, to obtain honest labour at a dishonest price, and before illicit commissions are done away with, I appre-

hend the public have a duty to perform on their part by giving a fair price for labour received. To accomplish this desirable end, should not the Institute take up the matter seriously, as matters are at present looking somewhat ominous, and it is desirable that decision and promptitude in those assuming to be the mouthpiece of the profession should take place, and assume that leading position which is expected of them by the profession at large? Granting the architect's dignity up to late has been unsullied, and on that account he can afford to laugh to scorn his accusers, yet a continual dropping wears away stones, and his character may become so undermined by continual petty attacks, weak in themselves, yet when added together and disseminated before the world as truth, without any defence by the sufferer, the verdict of the public may go by default on account of the very fact of the accused's silence, leaving outsiders to conclude there must be some truth in the charge so pertinaciously brought forward.—I am, &c.,
PROVINCIAL.

ILLICIT ARCHITECTS.

SIR.—The few idiotic remarks of "50 per Cent." in your last issue show clearly enough his entire ignorance of the whole subject. Every one knows, and deplores the fact, that the illicit commission dodge exists, but every one does not know that its supporters are almost exclusively illicit architects. The ranks of quackery are daily being increased by builders and contractors; foremen joiners more particularly are very partial to setting up in what they call the architectural line, and are chiefly patronised by people like "50 per Cent.," who are deluded by their boasted practical knowledge and nominally ridiculously low charges.

Only lately I was promised a commission to the extent of 6 or 7 thousand pounds, and which might have given me a start in practice. I however hear from the proprietor that he has engaged a first-rate architect, recommended by solicitors, who is only charging 2 per cent. for his entire services. On inquiry I find that this first-rate man is an ex-artisan, and may be seen any day, now that the works are in progress, striking attitudes against the hoarding, smoking a very dirty clay pipe, and fraternising with the excavators. This ornament to the profession never writes a specification, but calls his quantities "quantities and specification," and writes a private note to tendering builders, telling them how much to add to their tender for payment for this mongrel document.

If "50 per Cent." and some others who have written plenty of twaddle on this subject would go to the root of the evil and expose illicit architects, instead of throwing their dirty bit of spiteful mud at the profession, they would do much more justice, and help architects' assistants to commence and carry on business in a straightforward and honourable manner—a thing at present almost impossible.—I am, &c.,
AN ARCHITECT'S ASSISTANT.

COMPETITIONS.

SIR,—It is encouraging to find the President of the Architectural Association (in his inaugural address) protesting so earnestly against open competitions, and denouncing the system as "a bane not only to the architectural profession, but to the art of architecture." It is not very easy to suggest a remedy, but if the members of the Institute and of the Architectural Association could be induced to pledge themselves (by their bye-laws or in some other equally powerful way) never to enter the lists of open competition, the profession would increase in affluence and rise in dignity; but united action is absolutely necessary to eradicate a system from the effects of which all are more or less suffering.

If united action is at present unattainable, and the younger members of the profession think their only road to influence and reputation is by means of competition, respect must doubtless be paid to their opinion, and the most that can then be done is to accept the system and endeavour to modify its baneful influence as much as possible.

One of the weak points of the competition system results from the inability of promoters to estimate the merits of a set of competition

drawings; and, however earnestly they may desire to act conscientiously and select the best design, they are often carried away by the subtle pen-and-ink or highly-coloured perspective placed before them (some of them, indeed, marvels of artistic ability regarded as drawings merely), to the exclusion of designs which are superior in pure architectural treatment and arrangement, but which lack the advantage of being so powerfully and subtly represented pictorially. Even to an educated and practised eye it is by no means an easy task to go through a large set of designs and intelligently select the one possessing the greatest merit in plan and elevation; and it is not, therefore, to be wondered at if amateurs so frequently fail in appreciating all the good points of an architectural composition.

This serious defect in the competition system might surely, to a great extent, be obviated if the Institute and the Association respectively were to appoint a "competition committee" of six or eight members whose duty it should be to examine competition drawings, and thereby encourage promoters of competitions to make these bodies the referees in all competitions. An impartial and professional examination would thereby be secured for all the designs, and an intelligent and authoritative award be made, such as would be received by the profession at large with confidence and respect.

A fee for such reference might easily be arranged at a percentage—say, $\frac{2}{3}$ per cent. on the advertised contemplated outlay on the buildings over £10,000 and 1 per cent. under £10,000. This would provide a fair remuneration to the gentlemen forming the committee for time expended in attending meetings to consider the designs, and the fee thus paid would at least be equal to the fee paid to directors of public companies for attendance at board meetings, added to which the benefit that would result to the profession in other ways would be incalculable.

The absolute financial loss to the profession, annually resulting from the competition system, must be very large indeed, and as all buildings of any importance would probably, under any circumstances, be entrusted to architects, if competitions were given up altogether, every architect of even average ability might hope to get his fair proportion of buildings to carry into execution.

I fear, however, the time has not yet arrived when the total abolition of the competition system would be received with universal favour, but that it will arrive sooner or later may be pretty safely predicted. THOMAS PORTER.

2, Westminster-chambers, 19th Nov., 1877.

BEDFORD-PARK ESTATE.

SIR,—My attention has been directed to your leader of Nov. 9, wherein my name is mentioned. Permit me to say that I have had nothing to do with the superintendence of any building on the Bedford-park Estate. I was asked for two designs, which I furnished, and for nothing else am I responsible.

Seeing a curious caricature of them at some of the metropolitan stations I was induced to visit Bedford-park Estate, where I found that my designs had been carried out with as much knowledge of the details of architecture as that exhibited in the railway caricature. If it were human to be amused at the sight of one's invention travestied, I should have had occasion for merriment as I looked at the mantel-pieces and staircases.—I am, &c.,

E. W. GODWIN.

8, Victoria-chambers, Westminster, S.W.

[Our chief objection was not so much to the detail as to the plan, which has been substantially carried out, and which we have already illustrated. We suppose Mr. Godwin leaves his plan undefended].

SIR,—As one who found reason for adversely criticising the houses first erected on the above estate, will you permit me to note in your pages the satisfaction with which I have inspected those recently erected from the designs of Mr. Norman Shaw, and which have been well described in your issue of the 9th inst.? They appear to me to be exceedingly well-planned houses, possessing every convenience which a

middle-class resident could expect. Of the two classes of houses which you have recently illustrated I certainly think that, as regards a thoroughly satisfactory interior, the palm must be given to those erected in "the Avenue," and although the staircase cuts the house in two, it is convenient, and we lose that overwhelming display of newel which we find in the houses erected in the Woodstock-road.

The elevations are, perhaps, matters of taste only, but I think the panels with the triangular pediment over them, between the windows of the first story to the houses in "the Avenue" might be omitted, as ugly and expensive luxuries; that the chimney-pieces and stoves to the drawing-rooms are far too small; that the centre flowers in the same rooms are ditto; that the fastenings to the scullery windows are inducements to burglary; and that the particular man or men who pointed the frames should point a few more, and then be sent to the place appointed for those who have done evil in their day.—I am, &c.,

WILLIAM WOODWARD.

OLD LEAD CISTERNS.

SIR,—Good specimens of ornamental lead cisterns belonging to the last century are always interesting when they are met with. There are two of these at the Star Castle, on the picturesque island of St. Mary's, Scilly, which seem to deserve a passing notice, for, being remotely situated, they are probably not familiar to the majority of your readers.

Both cisterns (there were originally four, but two have disappeared, although the downfall pipes of the missing ones still exist) are in capital preservation, and measure respectively 5' 4" long by 2' wide, by 2' 9" deep. They are richly panelled with raised moulds; whilst a bold bead runs right around the top. The fronts are divided into three compartments—the central one being the largest. Here occurs a shield, bearing three cannons and three balls, resting amidst a mantling composed of flags, barrels, ramrods, &c. Over and above these arms is a cupid with outstretched wings; whilst below another little cherub assumes a like position. Under all is the date, "1727," in raised 2" letters. On either side (the side panels) is a monogram G.R., with a little 2" nicely interwoven into the G. The royal crown occurs immediately over these; whilst above and below cupids stretch their wings continuously. The ends of the cisterns are panelled similarly to the front, but the central enrichments vary. One has, on either end, a wreath of laurel, surmounted by a crown; the other exhibits more elaborate work, consisting of very fairly modelled Italian ornament. A figure of a Roman centurion sits in the middle; whilst others of nude boys occur amongst the foliage by the side of him. Above two angels hold between them a basketful of fruit, over which an eagle hovers, carrying a spray of laurel in his mouth. At one end of each cistern, in quaint raised $\frac{3}{4}$ " letters, is the name:—

HEZ WALKER.

LONDON.

Inside the cisterns are divided into three equal parts—the leaden partitions ($\frac{3}{4}$ " lead) reaching up to within 5" of the top. The downfall pipe comes into the central compartment. The heads of these pipes are circular and moulded; but, although old, are not interesting. The cisterns, which are in a capital state of preservation, stand upon blocks of granite.

The Star Castle commands one of the most beautiful views of land and sea imaginable; but is quite uninteresting architecturally speaking. Built in 1593, it has no real strength; and as a place of defence is little better than a sham. Granite is the material used in its construction, and over the entrance portal is carved "E. R., 1593;" whilst on the base of either jamb occurs "R. A." on one side, and "F. C." on the other. Those, however, who know Pendennis Castle, at Falmouth (built in, or just before, Henry VIII.'s time), and the excellent granite work that building presents, will be sorely disappointed on first acquaintance with the masonry of the Star Castle on the Scilly Isles. And yet both—distant about 60 or 70 miles from each other—stand on singularly similar positions; both had the best of granite to fall back upon for their

construction; and both were built nearly about the same date. The two castles are remarkable illustrations of good work and bad.—I am, &c.

HARRY HEMS.

St. Mary's, Scilly Isles, Nov. 8, 1877.

P.S.—There is an old cistern on the top of St. Michael's Mount, near Penzance, close against the entrance door to Sir John St. Aubyn's picturesque residence, which occupies the summit. It is 5' 11" long by 5' 1" deep, and 3' $\frac{3}{4}$ " wide, and is simply panelled in three panels, with raised moulds around. In the centre is a small shield bearing a St. George's Cross. This is surmounted by a crest—a bird (apparently an eagle or dove)—and there is slight mantling around of palms. The shield stands upon what I take to be a cap, having the corners lifted up. Underneath, in raised 3 letters, runs the inscription:—

SEPT.

29

1784.

The head of the downfall pipe is circular, and not unlike those at Scilly.

CHIPS.

A new Wesleyan chapel has been opened at Aylesbury, erected by Mr. Charles Hayes, at a cost of about £3,000, from designs by William Watson, architect of Wakefield. It is of Classic design, of red brick with Hollington stone dressings, and is 60ft. long by 45ft. wide inside, with galleries on both sides, three pews deep and at end, vestry at the rear, and organ chamber over. The building will seat 750 worshippers; the fittings are of pitch pine; the galler front, rostrum, and fittings of the same material French polished. Ornamental iron railings and gates enclose the site.

The new reredos in Winchester College chapel has just been completed by the placing in position of the twelve statues. The five nearest on either side of the central cross are those of saints, whilst at the extreme ends of the structure are figures of Alfred the Great, said to have been educated in Winchester, and William de Wykeham, the founder of the institution, the two latter facing the Communion table. The carving has been executed by Messrs. Eardley and Co., of Westminster.

Two memorial stained glass windows have just been placed in the chancel of the parish church of Banham, Norfolk. The subjects are figures of the four Evangelists, under rich canopies, and the quatrefoil in the head of each window contains a censuring angel. The windows were supplied by Messrs. Powell and Son, Whitefriars Works, London, and fixed by Mr. Cracknell.

The restoration of the chancel of Belgrave parish church has been completed, under the care of Mr. Ewan Christian, and the building will be re-opened on Tuesday next.

Mr. Thomas Woolner has just completed the clay model of the gigantic statue of Captain Cook about to be cast in bronze for the Legislature in New South Wales. It represents the great sailor in the costume worn by naval men in the early years of George III.'s reign, with uplifted right arm. It is to be placed on a pedestal, 22ft. high, on a site overlooking the whole Bay of Sydney, and where it will be visible as far as Port Jackson Heads.

The works executed by students in the Lewes School of Science and Art during the past year were exhibited last week, and are said by the county press to have been more than equal to those of other years, and to have borne evidence to the efficient training of the head-master, Mr. Robinson. A marked feature of the exhibition was the numerous drawings from casts.

A new Free Gospel chapel at Liverpool was opened last week. The building, which has cost £1,800, is Gothic in style, and will seat 450 people. Mr. Middlebrook, of Walton, is the architect.

The mortuary chapel on the north side of the chancel of Hatfield Church, belonging to the Marquis of Salisbury, has recently been restored and decorated. The decorations consist of Italian fresco paintings.

On Wednesday evening the roadway in New Bridge-street, Blackfriars, gave way, just opposite Tudor-street, and above the old Fleet ditch. A policeman had to stand on duty at the spot to prevent danger to life.

The ancient church of Lanerton, near Tavistock was destroyed by fire on Monday night. It was restored last year at a cost of £1,600, Mr. J. P. St. Aubyn being the architect. The church was erected in 1588. Nothing but the four walls and towers remain, everything else being in ruins.

The School Board for London, on Wednesday, by a majority of 19 votes to 10, decided to instruct the school management committee to report as to the advisability of allowing any parish adopting the Free Libraries Act the use of board schools as free libraries and reading-rooms.

Intercommunication.

QUESTIONS.

[5200].—Antiquities of Malta.—Will some reader kindly inform me of any books speaking of the architectural history or antiquities of Malta?—R. MORRISON MARNOCK.

[5201].—Surveyor's Valuation.—Can a surveyor, without holding an appraiser's licence, legally value, for the owner's information, property proposed to be taken, under compulsory powers, by a railway company for new works; or is it necessary that he should hold a licence, and that his valuation report should be stamped? If so, can he charge for the stamp duty?—W.

[5202].—Appointment of Surveyor.—Is the appointment of a surveyor the architect's prerogative, according to custom, or is it not? Will some "intercommunicator" kindly give reasons for or against?—IPSE.

REPLIES.

[5164].—Surveyor's Charges.—The question hinges on another—were the quantities sanctioned by the employer? If so, then it is answered by answer No. 5176. The employer is liable for the fees. Quantities are prepared for the benefit of employers. The contractor receives the amount of the commission only as an agent.—IPSE.

[5178].—Surveyors and Inspectors of Nuisances.—If "T. S." will write to Dr. Lory Marsh, 20, Spring-gardens, London, S.W., he can obtain list of subjects and full particulars of the examinations.—G. B. M.

[5179].—Binding "Building News" Plates.—Thickness is avoided, and the larger plates are seen to best advantage, by taking one of them as the size of the volume. As regards the smaller plates, they are in almost all cases half the size of the larger ones. I have formed four handsome books, about $\frac{1}{2}$ in. thick, bound at 6s. each. The mode of procedure was, firstly, to pick out all full-page or double-page plates, then to cut asunder those which had no reference to each other, and stick together those which had. Paste and a narrow strip of foolscap, $\frac{1}{2}$ in. width, hold the plates together very well. The dates of publication show how long I waited for the interior or exterior; but the arrangement brings together public buildings and villas for secular volumes, and exteriors and interiors of churches, paintings, and ornamental designs for the ecclesiastical volumes, with details at the beginning of each respectively. This attempt at classification has added to the interest of the plates, and when a decided mistake occurs I cut out the plate, and put it aside for next year. It is a great thing to have them in good condition, and accessible for reference. Perfection of arrangement is, perhaps, of secondary importance.—H. I. W.

[5179].—Binding "Building News" Plates.—Will your correspondent, "T. E. O.," kindly give some particulars as to the way in which he bound up the plates of the BUILDING NEWS? Did he use guards? If not, what size was the book? If only of the size of one page of the newspaper, how did he manage with those plates which extend over two pages?—A. C.

[5187].—Board of Health and Building Line.—The Public Health Act, 1875, clause 156, enacts:—"It shall not be lawful in any urban district, without the written consent of the urban authority, to bring forward any house or building forming part of any street, or any part thereof, beyond the front wall of the house or building on either side thereof, nor to build any addition thereto beyond the front of the house or building on either side of the same."—G. B. M.

[5191].—Inaccessible Heights.—The theodolite, or box-sextant, may be applied to this very easily, and with great approximation to the truth.—WILLIAM BELL.

[5191].—Inaccessible Heights.—"Anxious" will find the rule he wants in the BUILDING NEWS for November 29th, 1872. Also another method in the BUILDING NEWS for October 25th, 1872.—SC. AND A.

[5193].—Hoop-iron Bond.—Though there may be no objection to hoop-iron bond in a rubble wall, it is not in the least essential, and is not often used in stone walls. It is requisite, however, that there should be occasional stones, termed "through-stones," laid across the whole thickness of the wall, placed, say, two to every superficial yard of wall surface.—R. H.

[5199].—Safe Load for Girders.—It is necessary, in order to arrive at the load which the girders will safely carry, to ascertain the net sectional area of the bottom flange, together with the angle irons, deducting the area of section of the rivet-holes. For this purpose "Anxious" has given scarcely sufficient data, in not having stated the size and number of the rivet-holes. The result may be got at by the following method:—Let W = load (distributed) in tons; S = strain on flanges in tons; L = length of girder in feet; D = depth of girder in feet.

$$\text{Formula: } W = \frac{8DS}{L}$$

Taking first the case of the large girder, the gross sectional area of one flange, together with the angle irons, is about 60 square inches, and, assuming that there are three rivet-holes, say, $\frac{1}{2}$ in. in diameter, to be taken into account (two in flange, and one in angle irons), this will give a net area of 53 square inches. If the load is to be stationary the iron will bear safely a tensional strain of 5 tons to the square inch, which gives 265 tons as the total amount of strain the flanges are capable of bearing. Applying the formula, we have:—

$$W = \frac{8 \times 4 \times 260}{72} = 115\frac{1}{3} \text{ tons, or } 1\frac{1}{6} \text{ ton per foot run.}$$

In the case of the small girder there is a gross area of about 23 $\frac{1}{2}$ square inches in the flanges, &c., and a net area of about 18 square inches. This will give a strain of 90 tons as the maximum for the flanges to bear. Applying the formula again:—

$$W = \frac{8 \times 3\frac{1}{2} \times 90}{42} = 64\frac{2}{3} \text{ tons, or } 1\frac{1}{3} \text{ ton per square inch.}$$

From the weights just found must be deducted the weight of the girders, which will give the safe (distributed) load. If the lengths given are the extreme lengths of the girders, the part lying on the walls must be deducted for the span—i.e., "L" in the formula.—R. H.

WATER SUPPLY AND SANITARY MATTERS.

CHAPELTOWN.—The inhabitants of this mining district have been greatly inconvenienced by the scarcity of water during the last few years; but at length there seems a probability that an abundant and constant supply will be procurable, as a draft agreement has been prepared as between the Sheffield Water Company and the Wortley rural sanitary authority, to which Chapeltown is one of the contributors. The Sheffield Water Company charges 7 $\frac{1}{2}$ d. per 1,000 gals., and undertakes to lay and maintain a water main of sufficient capacity to meet the requirements—about 20 gals. per head per day for the 6,000 inhabitants. The main will be laid from Sheffield to Potter Hill, where the authority will provide a tank to hold 14,000 gals. of water. From this it will be distributed through a low-pressure meter to Chapeltown, Barnecross, High-green, and Lane-end. The sanitary authority is to have power to use or sell the water for any purpose they think fit within their district, but not out of it. It is stated that the reduced price of iron has enabled the water company to offer terms which could not have been entertained by them when the negotiations commenced.

DORCHESTER.—The town council have applied for sanction to borrow £8,000 for works of sewerage and improved water supply. A Local Government Board inquiry was held before Lieut-Col. Cox, R.E., on Tuesday week. Both works are, it appears, required for the new and upper part of the borough, now beginning to be built upon. The estimated cost of the sewerage works is £3,850, while for a new elevated reservoir £1,350 is needed—£350 for an engine, £318 for buildings, and the balance for mains. Towards the reservoir expenditure a recoupment of £1,250 is anticipated from the Government in respect of the new barracks now being constructed. The sewerage works include provision for rainfall, and Colonel Cox criticised this portion of the scheme, remarking that if the surface water were excluded, the present 20 in. outfall-pipe would suffice for a population three times as great as that of Dorchester. He also condemned the proposed passing of the sewage into the river Frome.

MOUNTSORREL.—The drainage of the populous village of Mountsorrel is shortly to be commenced, from plans by Mr. Hodson, the engineer to the sanitary authority. Some opposition was manifested at the inquiry held by the Local Government Board inspector on Wednesday week, but evidently to little purpose. Mr. Martin, of the Mountsorrel Granite Company, has considerably facilitated matters by offering the use for flushing purposes of a considerable volume of water from the works of the company, and to allow the sewer ventilators to be connected with the shafts of the company's furnaces.

SEWAGE IRRIGATION NEAR BISHOP-AUCKLAND.—On Saturday last a Local Government Board inquiry was held at the Colliery Inn, Middlestone Moor, before Mr. Arnold Taylor, C.E., respecting an application from the Auckland rural sanitary authority to form portions of the townships of Middlestone and Westerton into a special drainage district, and to execute works of drainage irrigation therein, at an estimated cost of £2,000. This sum includes the expenses of draining and sewerage, the purchase of a plot of nine acres of land, and the preparation of the same for irrigation purposes. The scheme is strongly opposed by a portion of the ratepayers.

WESTON-SUPER-MARE.—At a special meeting of the town commissioners, held on Wednesday week, resolutions were adopted declaring it to be expedient that the commissioners promote, in the ensuing session of Parliament, a bill authorising them to purchase the undertaking of the water company, and that the sum of £65,000 be paid by the commissioners to the water company for their undertaking at the expiration of 60 years from the passing of the Act, and to be secured by bonds, which may be paid off at any time on giving six months' notice.

Our Office Table.

A NEW iron bridge which Sir William Armstrong is building across Jesmond Dene is rapidly approaching completion. It has a total length of 550ft., and its breadth is 24ft. 3in. The bridge is supported on 50 cross girders, each weighing about two tons, and is divided into eight spans. These rest upon seven pairs of iron pillars, erected on solid masonry bases. The columns vary in size according to the dip in the ground, the first two pairs nearest the Newcastle end of the bridge, being 36ft. high, the third pair 41ft., the next three pairs 44ft., and the last pair 41ft. Upon them, and rising to a height of about 5ft., stand the supporting pillars of the parapet, also relieved with circular-headed panels. Upon the cross girders already mentioned, and composing each span, are thirty intermediate girders and thirty cross-intermediate girders, making 450 intermediates altogether. The pillars supporting the structure are further strengthened by cross-stays, one cross-stay and four diagonal stays being riveted between each pair. The ends of the bridge rest upon two solid masonry abutments, and are made fast there, the play for expansion and contraction of the iron being allowed for in the centre of the structure. Here the two immense masses of iron forming the halves of the bridge are made to rest upon small rollers, and four inches of space are allowed for their movement. The floor of the bridge itself is laid down in raised $\frac{1}{2}$ -inch iron plates, each plate forming a kind of small flat arch, and upon which of course will be laid the asphalt and macadam. The weight of the six largest pillars is 6 $\frac{1}{2}$ tons. Of the whole eight, six have a weight of three tons each, and the two shortest two tons each. The bridge has a gradient from end to end of about two feet, gradually rising from the Newcastle end to that on the opposite side of the Dene.

A CORRESPONDENT of the *Birmingham Daily Post*, calls attention to the large number of failures which have recently occurred in the Birmingham building trade. During the last six months some thirty or forty have instituted proceedings under the Bankruptcy Act to relieve them from their liabilities. Eighteen months ago, and for some time previously, house property, both for occupation and investment, was in great demand, and there was a strong temptation to speculative builders to run up property with borrowed money, which numbers of persons and societies were ready to advance. The class of buildings erected has been for the most part bad, both in character and locality. Latterly capitalists, and particularly building societies, have been less ready to lend upon security of this kind, and in some instances their refusing to find any more money has brought builders dependent upon such aid to a complete stoppage. Under such circumstances the builder, having all his estate locked up in the property, he has already built, has had to file his petition, upon which, as the next step in the proceedings, the building society steps in, forecloses, and sells the property to the first bidder who will cover their advances, leaving the unfortunate creditors without the ghost of a dividend. Some of the points involved in these cases need bearing in mind by those who are considering what amendments are desirable in the existing bankruptcy law.

THE Debenture Trust—a financial association founded in 1875—seems to be making considerable headway. We know nothing about the character of its projectors, but the principle on which it was started is undoubtedly a correct and safe one, and the success hitherto attained justifies the supposition that in practice it has been adhered to. The object of the Trust is to secure to small investors the advantages which are open to the prudent large capitalist, of a safe and moderate return on his capital. A man with five or ten thousand pounds to invest can insure a fair and certain return on the same by spreading it over various investments. Most of these will probably be fairly good speculations, some may prove indifferent or totally bad; but the deficit so caused will be made good by exceptional successes, and so an average good return is practically secured. The small capitalist, for a very obvious reason—the insufficiency of his

funds—is unable to do this. The Debenture Trust Fund, however, gathers together the small fragments of capital and invests them in the lump on the principle explained, so far certainly with good results. There are also other features about the undertaking worthy of attention.

"RIVERS and their Relations to Public Health" formed the subject of a suggestive paper, read by Professor Ansted before the Medical Officers of Health Society on Friday evening. The lecturer pointed out that towns on rivers are more healthy than those otherwise situated, both because they remove and oxidise material that would otherwise decompose, and because they afford a channel for the passage of purifying breezes to and from the sea. The oxidising properties of a stream are most important to health, and in a thickly-peopled country like England are utilised to the utmost, and in some instances are over-taxed. But even where the smaller streams are polluted by the industrial work carried on on their banks they are subservient to the purposes of health. In most cases, he urged, the natural purification of a stream by oxidation may be sufficiently secured to permit the river-water being safely used for household purposes when taken at a moderate distance before towns well drained, and whose direct sewage is kept out of the stream. There may be some risk from sewage contamination, but not greater than those incurred in our daily associations, and it is no more imminent in fairly good water than in that regarded as the very best. The possible danger from the use of river-water has, he held, been greatly exaggerated, and the certain good insufficiently considered. It is doubtful if the endeavour to prevent all pollution from the rivers in Yorkshire and Lancashire will result in success, and if we succeed we shall only do so by inflicting a mortal injury on some of our most important industries, and occasion more deaths by starvation than are produced by permitting the rivers to be utilised. A smart discussion ensued, Dr. Bartlett questioning the chemical perfection of the oxidation effected in sewage during its passage through a river, Mr. Bischof urging that filtration was always needed for river-water, and that it cannot be depended upon as a source of supply during floods. Mr. Bailey Denton complained that sewage contamination had only been touched on in a very loose way; and Dr. Tripe and the President (Dr. Stevenson) urged that water in which particles of excrementitious matter could be detected must ever be regarded with suspicion, however fully filtered. The lecture appears in *extenso*, together with a full report of the criticisms it evoked, in to-day's number of *Public Health*.

The architectural collection at Westminster is complained of as being too exclusive—too Gothic for present needs. The Council of the Museum have, therefore, issued an appeal to the profession and all who are interested in the matter, for casts or examples, either as gifts or on loan, of details illustrating the later styles of English architecture, including the Renaissance and, of course, Queen Anne, with a view of thus making the collection in Tufton-street really more comprehensive.

The dragon vane on the spire of the church of St. Mary-le-Bow, in Cheapside, having been much damaged by the late gales, Messrs. Proctor and Co., engineers, of Turnagain-lane, City, on Tuesday proceeded to remove it, the feat exciting much interest. The height of the spire is 220ft., and the length of the vane to be removed 8ft. 6in. Ladders were placed close against the building, and secured by a spike at the top; a second ladder was then hoisted from the first with a block and rope, the foot being well secured to the top of the other, and the second made fast as before, and so on until reaching the top. Three ladders were used to get to the vane from the top of the balcony. On Wednesday a stage was erected around the top of the spire about 3ft. below the ball. From that the engineers hoisted a derrick, by which they lifted the dragon from its place, and lowered it to the ground. The inspection proved the existence of a fracture in the dragon's neck, of so serious a nature that the only wonder is that it did not

come down during the gales. The spindle also is bent considerably out of the perpendicular. The ball and vane will be re-gilt and replaced, the spire meantime being re-pointed. A correspondent writes to us that the removal of the dragon from Bow Church has always been regarded by the superstitious as an omen of some national misfortune. Like many others our correspondent has run away with half the story. There was an old prophesy—or one was manufactured for the occasion—to the effect that when

The Grasshopper met the Dragon of Bow
England should be steeped in woe.

And this vague prediction was declared by the wiseacres to have been fulfilled in 1861, when, shortly before the death of the Prince Consort, the vane of Bow Church, and the grasshopper on the campanile of the Royal Exchange, were sent at the same time to the same goldsmith's shop to be regilded. Probably there was not a word of truth either in the history of the prophesy or its fulfilment.

LEGAL INTELLIGENCE.

CLAIM FOR PLANS FOR AN ABANDONED UNDERTAKING.—A claim was made in the winding up of the Eastern Counties Aquarium Company, in the Chancery Division, by Mrs. Pugin, the widow of the late Mr. Edward W. Pugin, the architect, and Mr. Calder, formerly his assistant, for a sum of £825, alleged to be due in respect of plans and drawings prepared by them for the erection of an aquarium at Yarmouth. The company was originally promoted in 1872, when Mr. Pugin was employed to prepare the plans for the building. At the first meeting of directors the plans prepared by Mr. Pugin, which were of a very elaborate description, were approved of, and he was requested to make further plans for carrying out the buildings in sections. This was effected, but the company were unable to obtain sufficient money to carry out the undertaking, and the project failed. The directors had taken an indemnity from Mr. Jackson, the contractor, and several of the persons to be employed in carrying out the buildings, that, in case the capital could not be collected, there should be no liability in respect of the contracts entered into with them; but, in the case of Mr. Pugin, no such indemnity was required. The defence was that Mr. Pugin was employed by the promoters before any company was actually formed or directors appointed, and was himself one of the promoters; and that these plans and drawings were only prepared provisionally, and in case it should turn out that sufficient capital could be procured; and further, that no formal steps were ever taken by the directors to sanction the employment of Mr. Pugin to carry out the plans. Vice-Chancellor Sir R. Malins, without calling upon counsel for the defence, said that the work carried out by Mr. Pugin, as well as by the contractor, was done upon the understanding that if sufficient capital could not be obtained to start the company there would be no liability incurred by the directors. The claim could not be supported as against the company, whatever they might be against the persons by whom Mr. Pugin had been employed, and the summons must therefore be dismissed.

SUB-CONTRACTORS AND THE ORDERING OF GOODS.—The case of Marshall v. Meaking came on for hearing at the Bloomsbury County Court the other day. Plaintiff supplied sash fasteners to Messrs. Dargate and Co., of Darlington, to the amount of £19 2s. 6d., to be used in fitting up a bank at Stockton. Messrs. Dargate got into difficulties, and arranged with their creditors; and plaintiff, finding that they were only sub-contractors, now sued the principal contractors for the building. Plaintiff cited Lord Tenderden in a case where it was held that should a person take an order from a person who he was led to believe was the principal, and should afterwards find that he was not, that the aggrieved party should have power to sue the party who really was the principal. The judge held that in this case the work was sub-let to Messrs. Dargate, and they had been paid in full, and therefore the case cited would not apply. Judgment for the defendant.

EDINBURGH.—Another addition has been made to the decorations of the restored portion of St. Giles's Cathedral, in the filling with stained glass of the great east window as the gift of Lord Provost Falshaw. This, just completed by Messrs. Ballantine, was publicly inaugurated on Saturday, the 3rd inst. The window, 40ft. in height, is divided into under and upper tiers of five lights each, terminating at top in flowing tracery. In the lower lights has been placed the Crucifixion. The five upper lights are occupied with the Ascension. The tracery openings in the head of the window are filled with angelic forms. Designed by Messrs. Ballantine, the work has been carried out under the supervision of Mr. R. Herdman, R.S.A.

A new scheme for the disposal of the sewage of Salford, from plans by Mr. Alfred M. Fowler, the borough engineer of Newcastle-on-Tyne, is about to be carried out, at a cost of £40,000.

STATUES, MEMORIALS, &c.

THE LATE DR. GRAVES.—The *Irish Times* says:—"The statue about to be erected to the memory of the late Dr. Robert James Graves, arrived on last Saturday in the King's and Queen's College of Physicians, Kildare-street. It is the work of Mr. Bruce Joy, of London, and is made of white marble."

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Institution of Surveyors, 12 Great George-street, Westminster. Paper by Christopher Stephenson, on "The Pruning of Coniferous Trees;" 8 p.m.

NOTICE OF REMOVAL.

CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS
Have REMOVED their SAFE and LOCK BUSINESS to new and extensive Premises,
123, QUEEN VICTORIA STREET, ST. PAULS, E.C.
Illustrated Price Lists gratis and post-free.
Makers to the QUEEN, H.R.H. the PRINCE OF WALES, and the Bank of England.

Trade News.

WAGES MOVEMENT.

LONDON.—The weekly pay to the London mason on strike in London was on Saturday last increased from 18s. to 21s., in consequence of the material assistance which other trades are giving to the committee. The number on the roll is gradually diminishing. Last week upwards of 70 of the men on strike were taken on by some of the master builders at the new rate of 10d. per hour, and it is estimated that upwards of 1,400 are now employed on those terms in London and the suburbs. Nearly all the Americans who joined the strike have left, some for Dublin, and others for Scotland and elsewhere. It is now decided that the masters will refuse the merger conference that was suggested. A levy is about to be made throughout the country in support of the men on strike in London.

MANCHESTER.—The United Trade Committee who have the direction of the carpenters and joiners strike in Manchester and Salford have just issued a balance-sheet, showing the money received in aid of their funds during 28 weeks of the strike. They state that £4,388 6s. in the form of local levies have been subscribed by unionist joiners who are at work in the city and neighbourhood; £3,442 15s. 4d. has been received from their fellow-tradesmen in other towns; and £231 11s. 10d. from other trades. When the strike began about 4,400 left work, and of these something like 1,800 have since obtained employment from the non-associated masters, at an advance of wages, while a similar number have found work in other parts of the country. The men declare that the employers require considerably more than the number remaining on strike, and are therefore confident that they will give way in the end.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered) apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire.—ADVT.]

Holloway's Pills.—Cold, Catarrhs, and other febrile affections can be readily arrested in their early stages by these pills if taken according to their accompanying directions. In addition to their cooling and purifying properties these pills control the circulation, reduce febrile symptoms, relax the skin, promote perspiration, and restore health.

TENDERS.

BRISTOL.—For warehouse at Sharpness; quantities supplied:—

Chubb	£3,601 0 0
Thompson and Roberts	3,530 0 0
Church, Wm.	3,211 0 0
Stephens and Bastow	3,208 0 0
Brook and Bruce	3,150 0 0
King, A.	3,068 0 0
Jones, D. C., and Co.	3,061 0 0
Robertson, S.	2,993 15 0

CLEE.—For the erection of Board School for the Clee-with-Weelsby School Board. Mr. Charles Bell, architect London; quantities by Mr. H. Lovegrove, 30, Dudgeon-row, E. C.:

Darby	£4,180
Fidler	4,052
Fletcher and Thompson	4,035
Thompson	3,999
Brown	3,727
Haywood	3,696
Hobson	3,659
Hensman	3,580
Snowden	3,579
Hutcliffe	3,515
Farrow	3,466
Smith	3,315
Ruggall	3,256
Topham	3,220

EMMER GREEN, NEAR READING.—For pair of cottages for Mr. Winslet. Mr. John J. Smith, architect, New Swindon:—

Patience and White (accepted)	£270
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THE BUILDING NEWS.

LONDON, FRIDAY, NOV. 30, 1877.

THE MAHOMMEDANS AS BUILDERS.

THE Architectural Society of Berlin, which, however, styles itself by a more complicated title, has lately had under discussion the various benefits which may have been conferred upon the world by the conquests and establishments of Mahomedanism. Among these, it is asserted, a new class and style of architecture was established, and Europe was introduced to Asia by the most powerful of all influences: for architecture leaves its almost ineffaceable stamp wherever it is created. Now, since Islam and all its works are in full view, historically and actually, of all thinking mankind, it may be worth while for a moment to examine into these new theories of the German professors. It is a custom to speak of the Mogul monuments, of Saracenic art, and so forth, as of other wonders coming from the East; but, with respect to the second, the epithet "Saracenic" has been greatly abused. The Saracen was the Arab rudely transformed. The men who dwelt in Arabia—and this is a fact to be noticed more circumstantially than it has hitherto been—never possessed a building of a permanent or substantial kind while they inhabited their native deserts. There is not a single structure in all Arabia worth describing, except on account of its traditions. Nevertheless, as the German *savans* point out with perfect truth, from the moment in which they emerged from the wilderness their genius took fire, and they mastered a mighty Art-dominion for themselves. It would be hazardous to accept this theory as containing the whole or even a considerable part of the truth. It is unquestionable that the Arabs, overflowing their geographical frontiers, did carry their tents with them, and, inspired by new sentiments, convert them after a fashion into edifices of stone; but nearly all the famous structures known as Mosques in European Turkey are simply Christian churches, mechanically converted by an addition of minarets to the dome—an addition rendered necessary by the objection of the Mussulman to bells. For religious tradition sets its stamp upon architecture as upon everything else. So far, while not a single great temple of Islam, albeit characteristic enough, possesses any dignity, or is worth a study, the patchwork of its labour has alone come into view. But nothing of the kind can be urged, for example, against that unique edifice, the Alhambra in Spain, or the palaces and tombs of the Mogul Emperors on the banks of the Ganges. With reference to both of these, it is now admitted that European genius came largely, in the first instance, and almost wholly in the second, to the help of the Mahomedan conqueror. No doubt a pure Asiatic idea reigned through the exquisite fretwork, alphabetic decorations, and marble elaborations of the most celebrated, if not the most admirable, structure of Europe in Spain; but, whatever the design may have been, the work was in a great measure Italian and French. And so with those marvellous monuments of the Moguls in India, which won for them the praise—"they designed like Titans, and wrought like jewellers." Neither the design nor the work was strictly theirs, though the style may have been unique and the elaboration luxuriously Asiatic. We find in both, once more, the touch of the European hand in all those splendid domes, slender towers, sepulchral halls blazing with mosaic, vast terraces sloping down to ornamental waters, and "lawns of marble," as a traveller calls them,

"indispensable to a country without grass." Yet there never was a Mogul without a band of French and Italian architects in his pay. The Prince suggested the magnificence, the Western artist gave development to it, and hence those wondrous structures which, though mutilated and desecrated, still embellish, beyond all comparison elsewhere in the world, the great Ganges Valley. They are not the trophies of Mahomedan art: they illustrate rather the spirit of Mahomedan splendour, calling to its aid the more practical and adaptive genius of the Christian West. But it may, at the same time, be admitted that the inspiration of these monuments was not purely Western in any sense of the term. Not a trace of the Norman or the Goth is to be detected in those bulbous cupolas, those pillared arcades—except that those contain a hint now and then of the Byzantine manner—those marble-edged lakes, which have been compared with the Italian, though resembling them in no degree whatever, or those ornate façades, to which not the Alhambra itself can offer a parallel. Nevertheless, the East was the birthplace of ornament, though its genius for invention disappeared centuries ago. It of course gave a name to the Arabesque, and, as one of our Berlin architects says, "made even geometry beautiful." Certainly, to an equal extent, the genius that dreamed, as it were, these designs, never alone, of its own capacity, was capable of giving to them an enduring life and form. It may be doubted, however, whether the German Council is right when it insists that the Arabs, floating off their own sands, derived an education in art from Persia, Assyria, or what is called Magna Græcia. The types are altogether opposite. It must be remembered that Europeans, entering the service of the Arabs, were compelled to acquiesce in all their ideas, however these might be rebel against the ordinary aspirations of art. There must be no image, no resemblance of any living thing. Consequently, all that was done had to be done in the way of ornament—colours, tessellations, variegations of pattern, the very filagree of architecture, so to speak, which was an attempt to make up for the absence of fresco and sculpture—a fact, asserts the Berlin Society, of inestimable importance in the history of design; "because nothing is more easy than to fill up barren space with groups of conventional statues, or to occupy staring walls with equally staring pictures." The high arts may not feel flattered by this avowal; but it must be confessed that, from an historical point of view, there is an admixture of truth in it. The whole group of the arts together have never flourished prosperously, in one country, or in one age, and the interludes, perhaps, between one and another, have prevented the decay of all. The Berlin discussion, however, speaks of "Mahomedan architecture," which, as we have seen, is capable of superb developments under competent tutelage. Of course, in the nature of things, and under compulsion of date, none of it can be antique; yet, if the works of the Moguls, apart from the French and Italian impressions stamped upon them, be rigorously examined, they will be found to possess an older character, approaching even to a Pagan type, which clearly shows how acute the German critics have been in refusing to them a purely Mahomedan character.

As a special episode, illustrative of the subject, reference is made to a remarkable document, altogether unknown to the public in this country, so far as we are aware, on the Mohammedan remains and monuments in Sicily. That island was the limit of the Mahomedan conquests in Europe. Coming with a camel's skin as material for a tent, the Mahomedans were speedily taught

to live within walls, to erect citadels, with forced labour to assist them, and to destroy cities without an effort to restore them; but it was no part of their instinct to rebuild, although, strangely enough, no race, not even the Persian, exulted more in the enjoyment and pride of possessing magnificent palaces, or of giving to their dead more gorgeous tombs. There is not a relic worth a sketch extant of the Sicilian conqueror. But, it is pointed out, a line of discrimination has to be drawn between the Mahomedan in his almost heroic devotion to architecture and art of all kinds, within the limits of religious prohibition; his transformation of the Arabic character into an ornament—than which none more delicate or graceful can be conceived, in default of statuary and painting, and the even more absolute renunciation, by the Turk, of all such ideas. He delights in a sumptuous palace, whether built for himself or for a Christian predecessor. He has taste in landscape gardening, with every architectural accessory possible, in the form of fountains, terraces, kiosks, and artificial grottoes; but his ambition rises no higher, and the incomparable artificers from the West of Europe, who served the Great Mogul, would not find at Constantinople the patrons they found at Delhi. Nothing could be more natural. Half the wealth of the world was then accumulated in India, and there is not a modern palace upon the earth which would have satisfied Aurungzebe, Akbar, or even the least of their successors. Times have changed, and what is called Mohammedan architecture survives only, in our day and generation, in the shape of fragments. And yet, whence-soever it came, it was, for its time, incomparable, the difficulty being to understand its sudden disappearance. For, notwithstanding its modern and medley aspects, as the Berlin experts remind us, its germs must be hidden in a far past—probably in coincidence with some of the Scriptural ages. That which remains—even if so much be ascribed to Mahomedanism, pure and simple—is the invariable and monotonous pilgrim's sepulchre, with its square white basement, and semi-oval dome, or the equally unvarying khan, or traveller's rest, with its four plain walls, open courtyard, covered galleries, and flat roofs, without a suggestion of relief. This may be, climatically, well adapted; but it presents fewer features of real interest than the ordinary village inn of England. And yet, it is pointed out, while the Moorish monuments of Spain present obvious evidence of the Christian workmanship which has been employed to carry out that Oriental idealism nowhere so richly illustrated as in Lane's edition of the "Arabian Nights," there are anomalous indications of kinsmanship in the greatest of the Spanish cathedrals and churches, as at Burgos and Seville—a strong Mahomedan tinge being visible upon those surfaces where the architect has permitted full liberty to his imagination. This implies, we are bidden to believe, not that the conception of the Christian edifices was Oriental—which it assuredly was not—but that the Spanish, French, and Italian builders who sent their pupils far and wide over the world in search of patronage at Courts—no matter how barbaric—and this, even, before the epoch of the Moguls—infused some degree of the Eastern spirit into their after labours. The hypothesis is ingenious and interesting, though the traces of its truth may be vague. Colonel Sleeman, however, whose noble volumes are left unnoticed by the German authority—yet who brought the Mahomedan monuments of British India nearer, as it were, to the English eye than any other traveller—hints at a somewhat similar explanation, adding that there have been discovered, amid the foundations of some among the more

curious structures, scratched, as if surreptitiously, upon the stones, names, as of those of perfectly unknown and unacknowledged artists, who, it may be assumed, were working for ambitious taskmasters, who were also generous paymasters, and who gave them money, while they refused them fame. But, upon another, and a principal point, no ambiguity exists. Of course, these palaces and shrines of Islam excepted, there is no such thing as an even comparatively modern Eastern architecture. The Orientals of the last century or so have undisguisedly taken the West as their model, though attempting to make it harmonise with their traditional requirements. Thus, the finest edifices in Constantinople and the royal cities of Persia really resemble in spirit nothing so much as that which has been contemptuously termed, "Italianised Gothic"—that is, the overlaying of one style by another hopelessly incongruous with it. They are left out of the perspective, indeed, by the practical Council of Architects at Berlin. Considerable stress, however, though by no means too much, is laid upon the circumstance that, in fact, so far as India is concerned, we are apt to confuse the monuments in the building art of the Mahommedan world with the relics which the builders found existent upon their arrival, and with others which they caused to be reared in their own honour. The shores of the Ganges, near the water, are rich in edifices, upon no grand scale, which may have served them as models, but were, certainly not the work of their hands, nor those of the artists whom they employed. Upon the whole, then, whether the authors of the German monograph—not yet given to the world, we believe—set out with a predetermined view in favour of which they have bent the testimony on every side, or whether their opinion is the result of critical research, may be a question of doubt in some degree; but all the historical probabilities and even coincidences sustain them. It is true that the Saracen left a distinct impression of his peculiar genius in more than one part of Europe, though never exceeding the limits of the South, whether in the Spanish peninsula or Sicily—though, in the latter, they bequeathed no more enduring memorials of their power than did the Byzantine Emperors themselves; but the interesting problem—who commanded the tombs and palaces of Mahommedan India to be built, and who actually built them, can scarcely, with the demonstration before us, be said to remain unsolved.

A GENERAL BUILDING CODE.

A GENERAL code of building regulations for the United Kingdom hardly appears yet in a fair way to settlement. Last year we referred to the subject, and the propositions that had been made at the Architectural Conference in relation to it. We then expressed our agreement with many of the views that were brought forward by Mr. J. Honeyman, of Glasgow, in a paper read by him at the Conference; and we endorsed Mr. Cates' motion to appoint a committee of the Institute to consider the subject of "Building Regulations for the United Kingdom," and to communicate with the Local Government Board and provincial societies thereon. Mr. Honeyman's suggestions, which we gave at the time (see p. 641, 1st Vol. for 1876), were briefly to make the Metropolitan Building Act the framework of a general Act to be enforced in all boroughs with populations above 6,000; to appoint an administrative court, and that a block plan and block section should be submitted before building. Mr. J. Clarke and Mr. T. Porter, it will be remembered, proposed other schemes, the

first, the extension of the present district surveyorship to rural districts, and the raising of the status of the surveyors appointed. Since then the matter has been discussed by a committee of the Society of Arts, and recently the Local Government Board have issued, as our readers know, a series of bye-laws for the use of sanitary authorities. The general effect of these regulations we have pointed out, and the Liverpool Architectural Society have lately reported upon various sections. At all events, the position of the question is rather unsatisfactory as far as the architectural profession is concerned, despite its efforts and assistance. It may be interesting just to point out the main objections that the Liverpool Society have raised. They say, very truly, "It is obvious this form of bye-laws, being issued by a department of the Government, is likely to be adopted implicitly by various local sanitary authorities throughout the country; and, at the same time, that their design is of very grave importance to all persons interested in building operations, and especially to the profession of architects, by whom those building operations are designed and supervised." It will be readily admitted that the suggested bye-laws cannot be very cordially accepted by the profession, of which a great many members are connected with buildings in progress or engaged in their design; and especially objectionable is the bye-law that deprives the architect of his copyright or property in the designs he prepares. Moreover, the Building Regulations at Liverpool and Birmingham provide quite different rules upon which buildings have been erected. But to refer to the structural points that have been raised by the committee, we find exception has been taken to the rules respecting the formation of new streets. With respect to the width it is provided a new street intended as a carriage road shall not be less than 36ft. in width; that when it is not used as a carriage road, and does not exceed 100ft. in length, 24ft. be allowed as the width, except in roads used for removing refuse. A width of 36ft. is deemed excessive for a back road which is not the only access to a house, and the Council think that landowners in laying out new estates, bearing this rule in view, will reduce the number of streets; but we suspect they have overlooked the operation of Section 5. But the objections to the rules as to the structure of buildings are more to the point. It is here shown that in the classification of buildings the composite structure, such as a public room or shop and dwelling-house, so usual in the provinces, is overlooked, and requires recognition or a reference to either of the three classes named. Again, the division of walls into "party walls," "external walls," and "cross walls," is mentioned, and it is commented, "To define a wall which in any part of its height or length separates adjoining buildings to be a party wall appears very arbitrary, for in large towns much property is so interlocked that cases will arise in which the greater part of a wall will be required only as an internal wall dividing the apartments of one tenement, and a small remainder only as an actual separation between two properties or two tenements," &c. Again, it is urged, because two adjacent owners cannot agree to build a party wall, to require them to build two external walls is oppressive to that owner desirous of building a joint wall. These remarks will commend themselves to architects generally. Section 15, on the projection of footings, opens an important question as to whether a builder of a new building can project his footings upon another's land. The report of the Council observes that this clause "aims at conferring an easement which may be difficult to establish at law, for it certainly looks very like a trespass." When, the bye-law

says, an adjoining wall interferes the footing on that side may be omitted. This is a saving clause. Party and external walls are by Secs. 19 and 20 to be constructed of the same thickness, this being regulated by the height; but the report does not see the reason of this. It is also considered that Bye-laws 10, 17, and 56 may be amalgamated. The first provides that every domestic building shall have its ground surface or site asphalted or covered with a layer of cement concrete 6in. thick; No. 17 provides a damp proof course beneath the level of timbers and at not less than 6in. above the surface of ground, while No. 56 provides an air or clear space of 3in. between the asphalt surface and under side of joists for ventilation. An irreconcilable point is pointed out between these requirements. The report observes:—"If the joists are laid upon the damp course, which is 6in. above surface of ground (see Sec. 17), and if there are only 3in. between the under side of joists and the concrete under the footings, it follows that the top of concrete will be 3in. above surface of the ground." To us, it is doubtful whether No. 10 intends the concrete or asphalt to be spread over the site below the footing or after they have been laid. It is to be noted, however, Sec. 56 says a clear space of 3in. at the least shall be provided, and does not say more. At any rate the rules are not so clear as they should have been. Another inference, not intended to be drawn by the framers of the model bye-laws, is pointed out—namely, "if the lowest timbers are above the damp-course, and that above surface of ground, it is clear that they cannot be any wooden floors in the basement." It is also shown that Sec. 10 is irrespective of a rocky or impervious soil which ought to be taken into account. As regards the schedule of thicknesses of wall the Council do not say much, but comment the principle of allowing a reduction of thickness for piers and cross walls. It is thought that Bye-law 48, prohibiting the insertion of any wood too near flues or hearths, is sufficient protection without Bye-law 31, which prohibits the insertion of any plate or plug of wood into party walls. We pass over a few minor points and come to Bye-law 53, which requires that every domestic building shall have an open space in front of 24ft. at least. To this rule it is objected that it is arbitrary and may be injurious to the owner of property, and that in the case of a shop recessed from line of street it would be ruinous. The Council suggest that it would be better to substitute the centre line of street instead of the "boundary of any land or premises" and a space 12ft. wide instead of 24ft. We quite see the awkwardness of the operation of this rule in some streets. It appears the one useful suggestion, made by the Institute of Architects, has not been adopted—namely, that of inside areas or wells in confined localities. As regards windows, it is objected that by Bye-law 55 the windows are to be placed, irrespective of the comfort and convenience of occupants, fronting open spaces, and other restrictions are shown to be injurious to business premises. The bye-laws relating to drainage are criticised into which it will be needless for us here to enter. But the most important and interesting points touching architects' interests is in reference to the bye-laws relating to the giving of notice before forming streets or erecting buildings. The report speaks of the silence as to the length of notice required, and the period that must elapse after the plans are submitted, before building can be commenced. Bye-law 92 provides that every person who intends to erect a building shall give to the sanitary authority notice in writing, and "complete plans and sections of every floor of such intended building, which shall be drawn to a scale

of lin. to Sft., and shall show the position, form, and dimensions of the several parts of such building," and of all appurtenances; a description in writing of the materials of which it is intended to construct the building, and of the intended mode of drainage and water supply; and also a block plan, drawn to a scale of lin. to 24ft., showing the position of the buildings and appurtenances of properties adjoining. The report proceeds to comment on these rules. As regards the block plan it is evident a survey of the adjoining land, park, or adjoining properties would be required to be made and plotted in some cases, seeing there is no stated limitation of the properties adjoining. Even more exacting is the requirement for complete sets of plans and sections. All that is needed is that the position of the closets, drains, and other sanitary conveniences be shown. It is fairly said the requirements are inquisitorial; they would lead to disclosure of plans of those connected with the same business, as factories, and would deprive the architect of his copyright in his designs. Beyond this, perhaps, the greatest injustice would be that members of local boards and their surveyors, who may be practising architects, will have the advantage of studying the plans submitted, and thus profit by them often in a very unfair manner. Other points are raised upon which we need not dwell now.

As far as present administration is concerned, these regulations will create friction where generally applied. We believe that most of the unsatisfactory working of previous Acts might be traced to those who have to enforce the rules being themselves engaged as architects in a private capacity. As it has been suggested it is quite conceivable in such circumstances that, when a district surveyor is dealing with another architect, bye-laws may be comfortably arranged, because at that very moment the surveyor himself may be in the position of the said architect to some work of his own which he wishes also to be smoothly arranged with some other local surveyor. Hence the necessity, if public safety is to be insured in these matters, that the surveyor or inspector should be a man independent of private practice, and occupy a similar position to a School or a Board of Trade Inspector. A building code must be the result of experience, not of precipitate reform or radical change, and it must be based on piecemeal modification of existing rules.

THE SUBURBAN DWELLING.

THOSE who have taken the trouble to inspect some of the recently built houses of the middle class in the suburbs of London must have felt their labour, if unrequited, at least suggestive of many reflections on the subject. To the habitual house-hunter in search of a convenient residence, the paucity of ingenious and well-considered arrangements must have become tediously painful; but, to the architecturally-minded, the scarcity of clever planning to be found is even more disheartening. Between these two classes of persons, few trouble whether they get a house that is skilful in its appointments, economical in the distribution of its parts, well constructed or sanitariously perfect; while many, it is true, cannot select their ideal house. It is amazing, certainly, amid the diversity that exists, how few houses are to be found in the suburbs that really satisfy the householder. He has either to climb a flight of steps that would not do injustice to a foot-bridge over a level crossing; to enter a doorway that is barely wide enough to admit a sideboard; to push by the foot of his staircase every time he enters his back-parlour; to mount a staircase that is

dangerously steep or replete with foot-traps in the way of winders and odd steps; or it may be his rooms are either small, unnecessarily dark, or flooded with light; while there is no bath-room or convenience accessible from the principal floor. Of minor inconveniences, familiar only to materfamilias, it would be superfluous to speak, as every tenant in London has to put up with a great many. Lately, we have given examples in our own pages of a great many houses that aspire to something more than prosaic house-building, in which the skill of the architect has been called into requisition, combined with sound construction and modern sanitary appliances. In most of these cases it cannot be denied that the lease or freeholder has largely recouped himself for the additional thought and care he has purchased. In a few, however, we are reluctantly compelled to say he has lost. He has purchased artistic skill at the cost of convenience. It is painfully evident in some of these instances that the architect's plan is not invariably the best that can be obtained; that aptness for architectural effects has not kept pace with the convenient types of arrangement. While, in some cases, we are obliged to admit the reckless haste of plan "manufacture" has given the builder's plan, stereotyped as it is, a preference. The builder of a row of houses or a colony of detached villas selects what he considers a tenable model, and builds them wholesale; he makes his rooms spacious, even if he pinches his hall and stairs. His doorways are placed in set positions that experience has approved, and his offices are planned after all the conventional ideas of tenants have been consulted. He often gets his elevations drawn for him to suit his own whims, or they are allowed to follow his notions, and to conform to his idea of cheap construction and ornamentation. Though pretentious and vulgar they let well in spite of their architectural defects. At Finsbury-park, Holloway, Dalston, Chalk Farm, Hampstead, Kilburn, on the north; Norwood, Streatham, and Brixton, on the south; and Kensington, Hammersmith, and Battersea, on the west, we meet with houses and villas of this class by the hundred, of which the prevailing characteristics have much in common. We have inspected several of them, and we may here describe their general features. Let us enter one at Finsbury-park, which we may take as a sample. It forms one of a row, and is set back with the usual front garden from the road. Its exterior is of yellow stocks, with Bath stone used freely in the bay windows, in the entrance, jambs, and lintel, and in the window dressings. Neat at a little distance, it would disgust any man or woman of taste, much more an architect, when he approached it. Our readers can imagine better than we can describe the kind of flimsy ornament and nauseating carving it is covered with, common enough now in the suburbs. It is certainly not Queen Anne, nor Italian, nor Gothic, though if we were to describe its style we should call it a modern mixture, known to the speculative builder as an Italian Gothickesque, the main features of which are that the lintels of the bay and entrance are carried by diminutive circular shafts, with luxuriant carved capitals, and that the jambs of the first-floor windows have a repeat of the shaft at every angle, that a keystone crowns every arch, and that carved work has been lavished with no niggardly hand. The entrances, slightly recessed—a by no means bad plan—have the fancy-stock kind of door usual about these localities, with figured glass in the upper panels; passing through which we enter a passage scarcely 3ft. wide, bolt in front of us being the narrow ladder-like staircase, with the conventional break in the passage. Passing the stairs we descend three steps, for what reason the sequel will

perhaps explain. The kitchen is neatly fitted up with every requisite, a good kitchener, a spacious dresser, a capital side cupboard, passing through which is a small scullery with sink and copper, and beyond which is a garden and the usual out-offices. The appointments in every respect might captivate the most exacting and fastidious housewife. They are compact; she has a sink and tap for washing up and rinsing out, close to hand, and better than all there is no staircase to traverse every time the simplest culinary operation is to be performed. Entering the two reception-rooms we find them lofty, with folding doors between, a French casement back window leading to a small garden, the usual plaster cornices and centre flowers, vulgar in taste but withal attractive to the ordinary householder. There is a good pantry near the stairs, while under it is a stairway leading to a coal-cellar, which extends under the front passage with a shoot. Ascending the staircase and reaching the first landing, we enter a spacious room or nursery, over the kitchen and scullery, while on the landing is a w.c. We now become aware of the reason of the three steps in the passage just referred to, as we ascend five steps more before we land on the first floor. Here we see two good bedrooms, lofty and well-lighted in front, with two windows, while a side room is provided as a dressing or bath-room. Another short flight brings us to a second-floor room over the nursery, and a few steps more to two front attics. Thus there are seven bedrooms obtained, besides a dressing-room, by the mezzanine arrangement at the back. Unarchitectural and imperfect as it is to the educated taste, we leave the house with the idea that the requirements of modern comfort have been complied with. We have every requisite.

Let us turn now to a house built under an architect's supervision, and we may examine one of those at Haverstock-hill. It is built with some regard for antiquated domesticity. The walls are of red brick crowned by a deep eave, and surmounted by steep roofs, through which lofty brick chimney shafts pierce their way. Instead of large panes of sheet or plate-glass, we see small squares set in heavy-looking sashes, with thick old-fashioned bars. Gentlemen and ladies of the conventional taste might be shocked at this perversion of all that is light and elegant. Still, there is a strict avoidance of false ornament—no absurd carving, and everything appears to be what it is. We enter—a wide lobby intervenes between the outer and inner doors, and a square hall, with a plain antiquated staircase of dog-leg construction, with massive square newels and turned balusters, strikes us. From this hall three doorways open, one into a front room lighted by massive windows having an old-fashioned chimney-piece, and a door divided into four equal-lengthed panels, or with a couple of small ones between the lower and upper. We confess there is an awkward look about the door, but pass to another room of similar appearance, also without florid cornices or centre flowers, so common and looked-for a thing with those seeking "modern, and genteel or elegant villas." Re-entering the hall we are horrified to find the kitchen in the basement, where, too, is a "breakfast parlour"—that *sine quâ non* of the Londoner. The offices are crowded and dark, though snug and compact. Upstairs are three or four good bedrooms, a bath-room, and w.c., while above we have four more dormitories partly in the roof. Compared with the builder's model it is all that the seeker after the architectesque can desire, but its rental places it beyond the ordinary-built house, and its plan cannot be pronounced economical. We feel that we have lost something in the plan for the em-

pressement of the artist. Let us next take a semi-detached pair of houses. There are two obvious arrangements that suggest themselves as types—one in which the entrances and kitchen offices form lateral and projecting wings, and another, in which they are grouped, and thrown out as a central adjunct. Of the two the first is the most economical; hence its large adoption in London and elsewhere. It is, *par excellence*, the builder's favourite. But the second is less adjunctive, and therefore isolative; the entrances are desirably separated, and insure privacy, and the back gardens are more enclosed. At Turnham-green we see two marked examples of this last type. In one instance (see p. 36, Vol. XXXII.), the entrance breaks awkwardly into the two ground-floor reception-rooms by a lobby, the doorway being in the side wall, and not fronting the road. A slight projection laterally is obtained for the kitchen, which partly intrudes into the back room, while a scullery and pantry are thrown out at the back. Economy of area has here been carried to an inconvenient extreme, and a cramped inner lobby and offices are the result. Upstairs three bedrooms have been obtained over the principal rooms, and a small spare, or crib-room, and bath-room over the offices, while above are two dormitories in the roof. Another model on the same estate (illustrated on p. 192) is better planned, though the area covered is rather greater; while a more recent plan, lately illustrated by us (p. 456 of the present volume), exhibits to a still greater extent the principle of condensation, the lobby-entrance being in a line with the front, while the kitchen and offices are managed with better effect. In all these instances the kitchen is on the ground floor, and there is no basement—a most advantageous omission. The entrance-lobby and hall are spacious and compact, and another point to notice is that the area above the hall on the first floor has been well utilised by a bath-room and w.-c., while four excellent bedrooms are obtained, besides three in the roof. There is little necessary to make this plan perfect.

Comparing generally the builder's with the architect's plans, it may be observed that the former exercises a keen economy in the distribution of his apartments, while the architect aims more at exterior grouping. The builder takes a convenient model, and crudely works it out; the architect does not take one, but makes one fit his own notions and artistic idiosyncracies. If these methods were a little oftener combined better results would accrue, and it could not be said, as it now is, that the architect's plan is expensive, and not abreast of present ideas. The builder, too, is paid for labour and materials, and not for planning; but the architect is employed and paid to prepare plans only, and we submit that it would come with more dignity from the architect to make himself perfect, and master of the art of domestic planning and design. There are several little points by which a well-studied plan can be tested. One is the saving of passage and wall length, so that every room should have no more isolated walling than necessary. Economy of wall is in the separation of apartments, not in separation of passages—that is to say, no more wall length should be used than absolutely required between a room and a passage, and passages are invariably wasteful. Another point is the concentration of the offices. Few architects' plans are happy in the skilful contrivance of office space. How often do we see, by an unskilful and loose arrangement of doors, the kitchen is not shut off from the apartments as it might have been, and the dinner has to be brought across the hall in the front of visitors. In small middle-class houses we are prepared to admit greater skill is

needed than when the architect is not straitened for space and means; but a little forethought will often show how the neatest arrangement in this respect can be obtained. To be obliged to traverse a long passage with a hot joint or vegetables is one of the clumsiest things the service of a domestic requires, and no modern civilised art should tolerate it. Service doors and lifts might be more common than they are. Again, a good plan should show a careful utilisation of closet space. A recess for a sideboard can often be made serviceable on both sides of a wall; so, also, to contrive a china closet and pantry between the kitchen and dining-room helps not only to expedite the preparation of meals, but to deaden sound and to save the breakage of crockery. Again, the coal cellar should be near the kitchen, and facilities for the storage of fuel should never be left to chance. The sins of omission and commission in this one thing in the London suburban house are countless. Imagine the barbarous custom of having to traverse the main passages and hall, and often the kitchen, to fill the coal-cellar, with all its attendant inconveniences, or the still greater evil of bringing the refuse and ashes through the house from the ash-bin. Yet the suburban dwelling tolerates these shortcomings, and architects do not give them a thought. If the Englishman is driven to adopt the Parisian flat system of dwelling it will be more to avoid the domestic waste of the self-contained dwelling-house plan than from a rational conviction of its capabilities.

CEMENT TESTING.

THE various means of testing Portland cement have been examined by Mr. H. Reid, C.E., whose recent treatise on the "Science and Art of Portland Cement," we noticed last week. We may here profitably refer more in detail to this part of Mr. Reid's book. Mr. Mann's gravimeter—a test of specific gravity—is noticed. It consists of a pipette of glass, with a graduated stem and stop-cock, containing, when filled, a volume of liquid equal to that held by another vase-shaped vessel, minus the quantity displaced by 1,000 grains of the densest substance intended to be examined. The cement is introduced into the last-mentioned vessel, which is placed under the pipette and filled, the pipette being filled to a certain mark with paraffin, spirits of wine, or other liquid, which does not act on the cement. The height of the column of liquid remaining in the pipette determines the specific gravity. The denser the substance the less liquid is displaced in the smaller vessel. The average of results taken by this instrument upon the weights of cement of various manufacturers gives only 84lb. per cubic foot—very light cement, as Mr. Reid says, compared with the weight of the London and Stettin cements, the average of which is stated at 135½lb. per bushel. The author, while he points out the use of Mr. Mann's gravimeter in conjunction with other tests, quotes the results of experiments recorded in the "Thonindustrie Zeitung" upon various cements, which rather tend to shake one's confidence in the new test for specific gravity. Liebig's graduated glass tube test and Nicholson's portable balance are both described for the same purpose; but the author seems to place more reliance in the old bushel gauge than the specific gravity test. From the German experiments the general inference was that "the specific gravity neither indicates the quality of Portland cement, nor whether one and the same cement is lightly or heavily burnt." The writer next compares the experiments made by Mr. Grant, Mr. Colson, and Mr. Mann, all of which, we are told, fail to establish an accurate dependence on obtain-

ing tensile value from specific gravity. Mr. Mann's tests are considered most satisfactory. Taking an average weight of 108½lb. per bushel he reached an average breaking result of 889lb. per 2.25 square inches. Mr. Grant, with an average weight of 118lb., obtained 728½lb. tensile strength on the same surface of 2¼in. Taking Mr. Grant's first ten tests, and comparing them with Mr. Mann's, it is shown that the average of the first ten was 110½lb. per bushel, and the breakings 655½lb. per 2.25in., or—

Mr. Grant.		Mr. Colson.		Mr. Mann.	
Average weight per bushel.	Average bkg. wt. on 2.25in.	Average weight per bushel.	Average brk. wt. on 2.25in.	Average weight per bushel.	Average brk. wt. on 2.25in.
110½lb.	655½lb.	116½lb.	713.7lb.	108½lb.	889lb.

The tests of Mr. Mann's, made in 1877, are said to eclipse those of Mr. Colson and Mr. Grant in previous years. The author observes that less dependence is now placed on the maker's name than formerly, when over-confiding architects and engineers thought the name had a magic influence. Mr. Deacon's mode of testing at Liverpool is alluded to, and a paper read by that gentleman is quoted. Mr. Reid, animadverting on Mr. Deacon's statement that there is always a tendency to use too large a proportion of the cheaper material, clay, says:—"The too free use of clay is due to another cause, for it is really much the dearest of the raw material used; and by a careless or ignorant maker adopted to avoid the dangers incidental to an over-limed cement. This practice, before the institution of testing, was almost general, and cement thus made would withstand the water and a low tensile test, but failed if anything in excess of 100lb. per square inch was required from it. The colour or rather discolouration (for good Portland cement is of a uniform grey colour) is not easily detected, unless when broken after the sample has been immersed some time in water, but an air sample exemplifies all the intensity of spuriousness."

The Liverpool Corporation test is given *in extenso*, and the following requirements are of interest:—"1st. Samples of the cement being sifted through a number 50 gauge wire-sieve must not leave a residue of more than 10 per cent. 2nd. Samples of pure cement will be gauged with water, and placed in the brass moulds used by the Corporation within twenty-four hours; the casts thus made will be immersed in still water, in which they will remain until the expiration of the seven days from the date of moulding, when they will be taken out of the water and tested, to ascertain their tensile strength, which must not be less than 800lb. on the area of 2¼ square inches. 3rd. The slow-setting cement, when gauged neat in the mould, must not become firm in less than three hours; the quick-setting must assume a firm condition within ½ an hour. The test for firmness will be that of resistance to the finger-nail." These tests are applied after each delivery. Mr. Reid shows the erratic ideas on the subject of tests rife among the profession; that some agreement between makers and consumers is called for, so that the vexed questions of form of mould, machinery, age of briquette, and mixtures, should be placed on an established basis. In Germany some such agreement is being arranged. Summing up the points which primarily indicate the quality of Portland cement, the author shows:—1st. That the clinker of the true quality should be a dark greenish mass, homogenous, and slightly vitrified. 2nd. A clinker of metallic hardness, with a black lustre, is the result of an excess of carbonate of lime, caused by wasteful application of

fuel, and its cost of grinding is high. 3rd. The true normal clinker exhibits, when drawn from the kiln, a rough lava-like texture, having a tinge of green or bronze glitter when exposed to light. Generally, the conclusions are, that a clinker of a brown colour, dusting freely, indicates an abnormal or dangerous cement, and weak in indurating power; the blackish clinker producing a bluish-grey powder is unfit for use until matured by exposure; while the third or true clinker of greenish tinge, of light grey powder, can be used at once. Experiments have proved also that the constructive value of cement when mixed with sand depends on its being finely ground.

AMENDMENTS OF THE BUILDING ACTS.

WHILE the Local Government Board, with the assistance of the Royal Institute of British Architects, are engaged in preparing a General Building Act for the whole country, the Metropolitan Board of Works deem it expedient to promote certain amendments of the Acts relating to buildings in the metropolis. A bill for this purpose was prepared last session, but did not become law. At a recent meeting of the Board it was decided to bring forward this bill again next session, and so highly did the Board regard the extreme importance of early legislation on these matters, that they pronounced it undesirable to introduce into the bill further amendments of the law, as had been suggested at the last previous meeting of the Board, and the bill was referred to the Parliamentary Committee to be finally settled and deposited.

A copy of the bill of last session is now before us, and assuming the new bill to be in the same terms, we shall proceed to make some cursory remarks thereon.

The short title is to be "The Metropolis Management Amendment Act, 1877," and the full title runs thus:—"A Bill to amend the Metropolis Management Act, 1855, the Metropolitan Building Act, 1855, and the Acts amending the same respectively with respect to houses and buildings." The concluding phrase seems to require the word "other," though one hardly sees the necessity of commingling genus and species in the expression "houses and buildings." In the clauses of the Building Act of 1855 the word "building" alone is invariably used, except when houses are specially intended. The Metropolis Management Act, 1855, has the expression "house or other building." And it will certainly prove unfortunate if the proposed Amendment Act should narrow, even by implication, the word "building," so as not to include "house." At the outset we point to this apparently trivial matter since the phrase "house or building" continually recurs throughout the bill, and needlessly increases the length of the clauses.

In the first two paragraphs of the preamble this peculiarity is seen, and the word "street" is unaccountably omitted. It may tend to clearness if we quote the clauses in full, italicising words which seem to require striking out, and placing suggested additions in brackets. Here is the first clause of the preamble:—

"Whereas the provisions of the several Acts now in force within the metropolis are insufficient for duly regulating the erection and extension of *houses and buildings in close proximity* [near] to [streets], roads, passages, and ways, and it is expedient that for such purpose further and better provisions should be made." It is all the more difficult to see why "street" is left out of this and several other clauses, since it is very properly inserted in Section 7. Acts of Parliament are not of the most amusing kind of literature; but on reading the above paragraph we are irresistibly reminded of Dean Alford's story of the reporter who paraphrased "drew nigh to the place" by "arrived in close proximity to the scene of action." We quote from memory, but the moral is the same.

With the emendations which we suggest the second clause of the preamble is as follows:—"And whereas it is expedient to make provisions with respect to the making, filling up, and

preparation [preparing] of the foundations and sites of *houses and buildings* to be erected within the metropolis, and with respect to the [nature and] quality of the *substances* [materials] to be used in the construction of such *houses and buildings*, with a view to the stability of the same, the prevention of fires, and for purposes [the preservation] of health."

Part I. of the bill deals with the width of streets, and for this purpose Section 3, which is an interpretation clause, provides that, "The term, 'house or building,' shall mean a house or building, the inclosing walls of which *have not been* [shall not have been] carried higher than the footings previously to the 1st day of January, 1877."

The same section further provides that, "The term, 'the centre of the roadway' shall mean the centre of the space open for [public] traffic—that is to say, the *roadway* [public carriage-way], and the [public] footway or *foot-path*, footways or *footpaths* (if any) adjacent [and appurtenant] thereto." It will be seen that this clause is somewhat ambiguous, owing to the word "roadway" being used in two senses.

A better arrangement would be to let "roadway" be the major or generic term, and "carriage-way" and "footway" the minor or specific terms throughout the bill. If these small points be not made quite clear, the result will be much trouble and annoyance in the administration and observance of the Act. We shall return to the subject again. W. G.

THE MAIN DRAINAGE OF OXFORD.

WE have received an illustrated paper, prepared by Mr. W. H. White, Assoc. Inst. C.E., before the Ashmolean Society, upon the above subject, in which the author details the difficulties encountered in draining this very low and stream-intersected locality. The separate system has been adopted so far as the exclusion from the sewers of the rainfall on the streets and roads and front part of roofs is concerned. It is estimated that about 100 acres will contribute surface water to the sewers. But we desire to advert more particularly to the constructions that have been adopted in the main drainage. It may be mentioned that the existing sewers have been chiefly used to carry the surface drainage; that $7\frac{1}{4}$ miles of brick sewers and 25 miles of stoneware pipes have been laid, of which the former are egg-shaped, of the usual proportions, the upper, or crown arch, being double the radius of the invert. The dimensions of the former range from 4ft. 6in. by 3ft. to 2ft. by 1ft. 8in., while the pipe sewers vary from 18in. to 9in. diameter. The outfall sewer, and five other main sewers, intercept and collect the street discharges. There are several river crossings under the Isis and Cherwell, &c., and at these the construction is peculiar, and has been adapted to meet the exigencies of each case. In two cases inverted siphons, with vertical brick shafts at each side of river, have been provided. The shafts are connected by a straight line of cast-iron pipes surrounded by concrete. In the Hincksey sewer the pipes are circular, with a square mass of concrete about 1ft. at the sides, top, and bottom. At another crossing, to obtain headway, the main sewer has an egg-shaped invert covered by a flat segmental crown. Under the Cherwell the section is still more flattened to obtain the necessary capacity, the tubes being only 1ft. 10in. high by 3ft. 9in. wide, with segments top and bottom. Another form shown in the sections for the canal crossing is an egg-shaped invert of brick covered with cast-iron segment plates, with ribs at intervals and flange joints. All are embedded in concrete. Sluice gates are provided for flushing the siphons. The manholes devised are ingeniously constructed. They are placed at the summits, and at all junctions and change of gradient. The covers have open boxes with centre grating, and wrought-iron boxes to catch the road detritus, &c. The sewers and pipes are laid in straight lines between the manholes and lamp-holes, and bell-mouth junctions are formed to assist the meeting of currents. Where the branch-pipe sewers fall into mains below them in level an arrangement is made by which the sewage discharges through a downward branch at a descending angle of about 45° , while the straight line is continued at the real gradient,

joining the manhole at a higher level. By this means the line of sight is preserved at the same time. The stoneware pipes are jointed in some cases with Stanford's patent, which allows for settlement and prevents leakage. To keep out the subsoil water the sewers were rendered in cement between the rings of brickwork and on the outside. Thus the outfall had two skins $\frac{1}{2}$ in. thick, one between the concrete backing and the outside ring, and another between the rings. Great care was taken to insure a proper union of the lower and arch skins. The cement was gauged 2 parts cement to 1 of sand, and was laid on in three coats, finishing in neat cement. A tunnel under the old castle tower was driven below the river, and some difficulties were experienced in construction. We understand that some 370 acres have been obtained in the parish of Littlemore for irrigation, the pumping works of which are in progress. Three-fourths of Oxford are said to be already connected with the new sewers. We congratulate the city on the attainment at last of so desirable an object, which has been mainly accomplished by the persistent efforts of the Thames Conservancy Board.

LEAVES FROM MY SKETCH-BOOK.*

SOME very pleasing reminiscences of Continental travel, intended apparently as a kind of suggestive *souvenir* for the artist, has been published by Mr. John Murray, entitled "Leaves from My Sketch-Book," by Mr. E. W. Cooke, R.A. The second series is now before us, and contains a collection of about 30 lithographic sketches by the author, accompanied by short descriptions of some well-known places in Italy and along the Nile. Among them we note "Venice from Porto Franco," a pleasing study, in the background of which we catch the Doge's palace and the Campanile of St. Mark; a sketch of that busy thoroughfare, the Riva dei Schiavoni, taken from Petrarch's house, and embracing some well-known objects, and that imposing water-girt structure, the Church of Sta. Maria della Salute; also the Sanita, Naples; the Grotto di Pozzuoli, or tunnel of Posillipo—a grotto 750 yards in length by 22ft. wide, and of a varying height of from 25ft. to 69ft. The latter was thought, in Petrarch's time, to be the magical work of the poet Virgil. Some very pleasing subjects, illustrative of Venetian scenery and features, are given; thus we note "Evening in the Lagoons," a view taken at sunset, with the Veronese mountains in the background, and only wanting the rich variety of colour to make it perfect. The Triangular Forum, Pompeii, one of the earliest exhumed portions of Pompeii, is shown. Two of its sides have the remains of columns. This forum is situated on the highest point of the city. The temple of Pæstum is another classic spot delineated. Of sketches from the Nile we have several—one depicting the very picturesque boats on that river laden with sugar-cane, putting one very much in mind of a Thames barge. In another sketch we have the "Effects of a Hurricane" in the valley of the Nile, accompanied by a graphic description by an eye-witness. The ranges of hills and lofty cliffs on the right bank are given, and various sketches of Nile scenery and its accessories; also some striking effects on the left bank highly interesting to the painter of landscape. We may especially note the view of Roâineh, on the right bank, remarkable for beauty of outline, and as a truthful rendering of precipitous headlands. The cliffs of Gebel Abofoyda, the ruin of Karnak, the temple of Medeenet Háboo at the foot of the Theban hills, rock-tombs at Silsilis on the left side of Nile, temple of Kom Ombo on the right bank, and the little temple known as "Pharaoh's Bed," at Philæ. The sketches are all drawn on stone by the author, and thereby lose nothing by reproduction. Some of them are marvellously soft and transparent, and, as the autographs of so eminent a master of scenery and marine landscape as Mr. Cooke, will, we are sure, be valued by all students and artists. The letterpress adds much to its value. The book is well got up in sketch-book form, suitable for presentation

* Leaves from My Sketch-Book. By E. W. COOKE, R.A., F.R.S. With letterpress. Second Series. London: John Murray.

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ILLUSTRATIONS.

TYPICAL DETAILS OF THE ARCHITECTURE OF CORNWALL—
HOUSE AT ECCLESBOURNE—HOUSES AT HAMPSTEAD—ST.
NICHOLAS CHURCH, FOWEY—"BUILDING NEWS" CLUB
DESIGNS FOR ORIEL WINDOW.

OUR LITHOGRAPHIC ILLUSTRATIONS.

DOUBLE HOUSE, ARKWRIGHT-ROAD,
HAMPSTEAD.

This pair of houses are nearly finished. They are faced with dark-red brick, shippers, and stone dressings, and are covered with green slates. The houses were built from the designs and under the supervision of Mr. Theodore K. Green, M.I.B.A.

ECCLESBOURNE, STOKE BISHOP,
GLOUCESTERSHIRE.

This house, one of three, varying in design, is now in course of erection on the Stoke estate, near Clifton. The materials employed are local stone in rubble, laid in thin courses up to the first-floor level—the upper portion being principally half-timber work and weather tiling; the chimney stacks are of red brick, and the roof of Bridgwater tiles. The general accommodation is shown by the plans illustrated—a billiard-room, however, being provided in the basement in addition to the usual offices. There are also five bedrooms on the second floor. The works are being executed by Messrs. Stephens and Bastow, contractors, of Bristol, at a cost of £3,000, from the designs and under the superintendence of Mr. Henry Shaw, architect, of 25, New Broad-street, E.C.

FOWEY AND OTHER CORNISH CHURCHES.

WE reproduce some of Mr. J. P. St. Aubyn's illustrations of his paper on Cornish Churches, read before the Architectural Association on Friday evening. A west elevation of the fine tower of Fowey parish church forms the subject of one illustration, while a double page is devoted to representations of typical forms of roof construction, arcades, and mouldings employed throughout Cornwall, and indeed the whole peninsula forming the south-western extremity of England. The shallowness of the mouldings and bluntness of the arrises are very characteristic of granite-tooling in Cornwall. We refer our readers to the report of Mr. St. Aubyn's lecture on page 548.

"BUILDING NEWS" DESIGNING CLUB.

WE illustrate this week two of the best designs received in the oriel window competition of our club—those by "Début" and "Josephus Orange Blossom." These and the other designs sent in were critically reviewed on page 495 a fortnight since.

The bronze statues of the poet, Campbell, and the African missionary traveller, Dr. Livingstone, will be on view at Messrs. Cox and Son's bronze foundry, Thames Ditton, Surrey, on Thursday next. They are from models by Mr. J. Mossman, of Glasgow, in which city they are to be erected.

The committee of the School of Art at Manchester are to hold next spring an exhibition of pictures, sculpture, and all forms of art workmanship in aid of the building fund for a new School of Art. A large selection will be contributed from South Kensington, and the committee have already received promises of loans from private collections.

SCHOOLS OF ART.

BRISTOL.—The annual distribution of prizes to the students of the Bristol School of Art took place on Monday evening. The report stated that there had been a marked increase in the number of students attending the classes, the returns of the school showing 349 for the current year, against 290 in the year which went before it. The prize and certificate results of the second-grade examination are as follows:—Last year 125 students worked 168 exercises in the various subjects of the second-grade art examination in a satisfactory manner, 48 exercises gaining the mark excellent; 40 students received prizes, and 18 full certificates. This year 111 students worked 163 exercises satisfactorily, 77 exercises gaining the mark excellent, 60 students being rewarded with prizes, five of these being awarded prizes of the third or highest local grade for extraordinary success in the second grade, having passed in the four subjects of the grade at one examination. This is the first year that the Science and Art Department at Kensington has noticed, in a special manner, such work. 23 gained full certificates, or highest honour of the grade. In the third-grade school work last year there were 17 prizes, this year only nine. The Science and Art Department decided last year to hold examinations in various subjects of the third grade. These examinations were previously held only at South Kensington. Five candidates presented themselves for examination in perspective of the third grade, which includes oblique perspective and perspective of shadows and reflections. The five candidates passed, three out of the five receiving the mark "excellent," which entitled them to prizes of the third grade. This examination is the highest held by the Government. The total number of prizes of the third grade awarded to the students of the school is therefore nine for work done in the school during the year, five for extraordinary success in second grade, three for perspective of the third grade, 17 total; same as last year. One student received a Queen's prize at the national competition, and two received free studentships.

CITY AND SPITALFIELDS SCHOOL OF ART.—On Tuesday evening the annual distribution of prizes to the successful students of the City and Spitalfields School of Art was made in the large hall, Skinner-street. The school, which was one of the earliest established in the country, now numbers more than 200 pupils, of whom 111 have entered during the past year. Mr. J. C. Horsley, R.A., who distributed this year's prizes, drew a cheering contrast between the state of art education 30 years ago and what it is now. They might hope the next 30 years would be more fruitful still. He wished to remind them that no true artist ever lost his sense of being still a student, and illustrated this by Landseer's language, when for the second time he declined the presidency of the Royal Academy, saying, "No, I wish to die as I have lived, a student with my brush in my hand." Let them never forget that the real and vital part of their studies was their elementary training. Students in their schools were now often fathers of families, with family anxieties, while in his young days they got through in jackets. With this increase in the average age of pupils there should be growing thoughtfulness, care, and conscientiousness in their work. Nothing would make up for the want of elementary grinding. All great painters gave their works fair play, as we could see from the high finish of the masterpieces of Sir Joshua Reynolds and Landseer. Yet the latter, in pencil, painted a friend's dog, with a rabbit in his mouth, in a couple of hours and twenty minutes. Let them, however, combine with due attention to the technicalities of art an earnest study of nature, like Turner, who died in a poor Chelsea lodging hired for the study of Thames sunsets.

GUILDFORD.—The eighth annual distribution of Queen's prizes, certificates, and local prizes, in connection with the Science and Art Classes, were distributed on Monday evening by Mr. Denzil Onslow, M.P., at the Eastern Hall, Guildford. Three second and one third-grade Queen's prizes and twenty-three second certificates were awarded for free-hand perspective and model drawings, and nine local

prizes. An address on "Art" was afterwards delivered by Mr. Buckmaster, of South Kensington Museum.

NEWCASTLE-ON-TYNE.—The annual meeting of the Newcastle School of Art was held last week. The report of Mr. Way, the headmaster, stated that the number of pupils who received instruction during the year had been 324, being a decrease of 80 since last year. 15 third-grade prizes of books were awarded to students whose works were submitted for inspection; 8 second-grade prizes were awarded at the May examinations; 1 bronze medal was awarded in the national competition; 1 Queen's prize for science, building construction; 3 pupils passed successfully the third-grade examination in drawing from the antique and painting a group of still life; 4 free studentships were granted to the school; 285 students sent 3,076 works to the annual inspection at South Kensington, 260 of which were in the advanced stage; 105 pupils presented themselves at the annual examinations in freehand model drawing, practical geometry, and perspective, 51 of whom were successful in passing one or more exercises; 13 works from the advanced stages of drawing from the antique, drawing from life, design, and painting groups of still life were exhibited at the exhibition of national competition drawings; 16 pupils were successful in taking prizes in the local competition, amounting in all to £30.

COMPETITIONS.

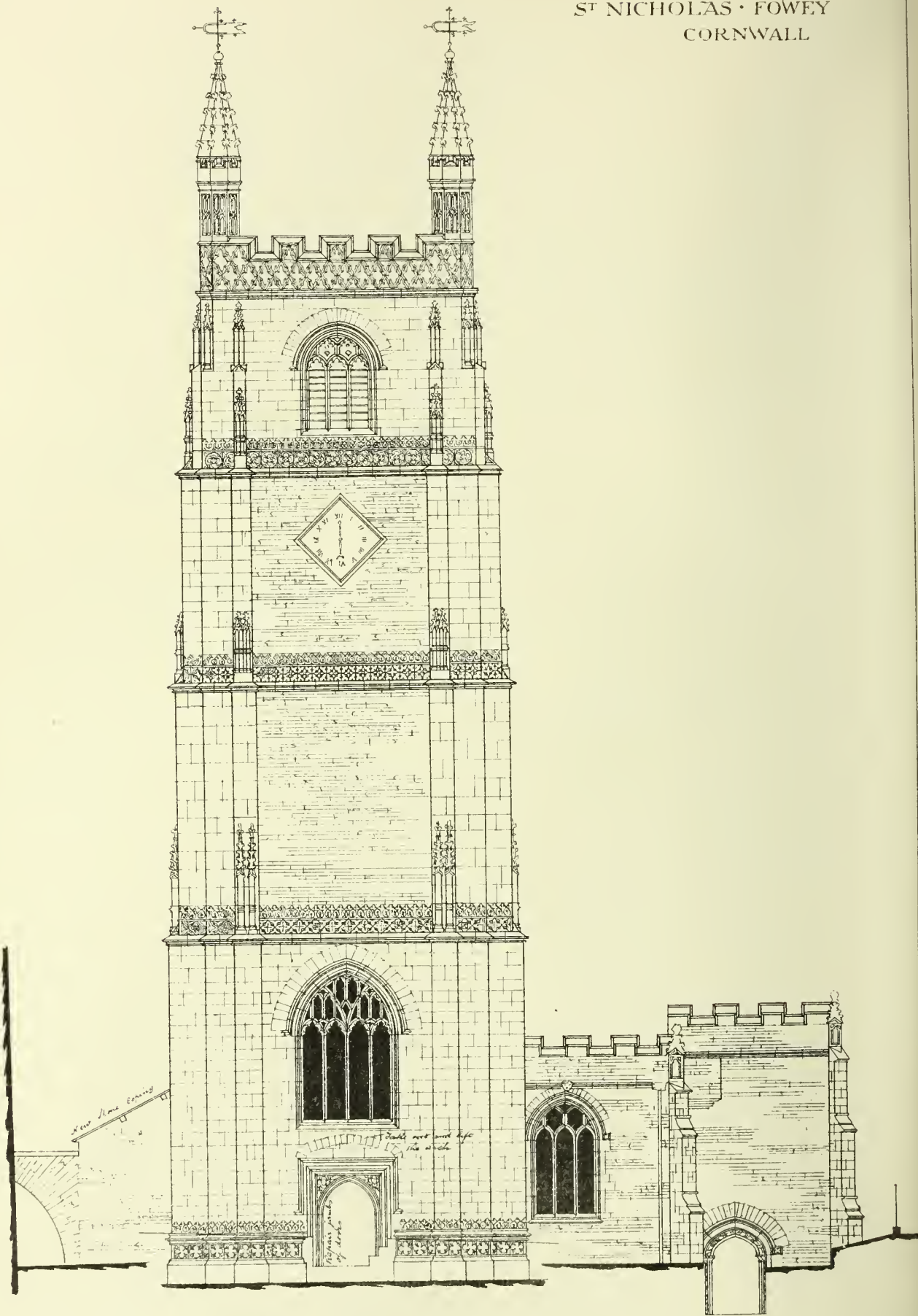
CHIPPENHAM, WILTS.—In September last the drinking fountain committee of the borough of Chippenham advertised for designs for a granite drinking fountain, to be erected in the centre of the Market-place at a cost of £200, and a premium of £5 5s. was offered. The numerous designs which were sent in, in response to this invitation, were exhibited last week at the Town Hall, Chippenham, and the committee have selected the design submitted by Mr. W. Galsworthy Davie, architect, of King William-street, Strand. The design is described as a handsome structure, over 18ft. high, with a large circular basin, formed of two kinds of granite, and in addition to being a fountain strictly speaking, it will provide drinking places for man, horses, cattle, and dogs. The work is to be proceeded with without delay.

ECCLES.—The Local Board having invited plans for the laying out of the site of the proposed new cemetery, and for the erection of three mortuary chapels and gateway, &c., eight plans have been submitted for the grounds and seven for the mortuary chapels. The site is 40 acres in extent, and the stipulated prices for the three chapels were—Church of England £1,200, Dissenters £1,000, Roman Catholics, £800, and of the gatehouse £700—altogether, with ground, about £5,000. The plan of ground selected is by Mr. John Frith, of Reddish. A premium of £10 was given to Mr. J. J. Bradshaw, Bolton, and a second premium of £5 to Mr. H. J. Hove, of Eccles. The decision as to chapels is not final, the choice lying between "Catacomb" and "As You Like It" for adoption. The premium of £5 is given to Messrs. Rawson and Jackson, of Manchester.

MAIDENHEAD.—In response to the invitation issued a short time since to architects, by the town council of Maidenhead, for designs in competition for the new hospital for infectious diseases, a large number of plans (upwards of 80) were received, and from these the council have selected those bearing the motto "Ad Rem" for the first premium, and for the second those marked "Serio." The new building is to be erected at a cost of £800, and is to accommodate eight patients, four of either sex, with the necessary offices. The premiums were £10 for the best plans, and £5 for the second best. An assurance was given with the instructions issued by the sanitary authority that the author of the selected plans would be engaged to carry out the work. This promise probably accounts for so large a number of competitors.

The Local Board of Briton Ferry are considering as to how best to drain and sewer the district, and as a preliminary, drainage levels are being taken by Mr. R. Shopland, C.E., of Swinton.

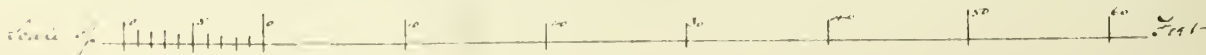
ST NICHOLAS · FOWEY
CORNWALL



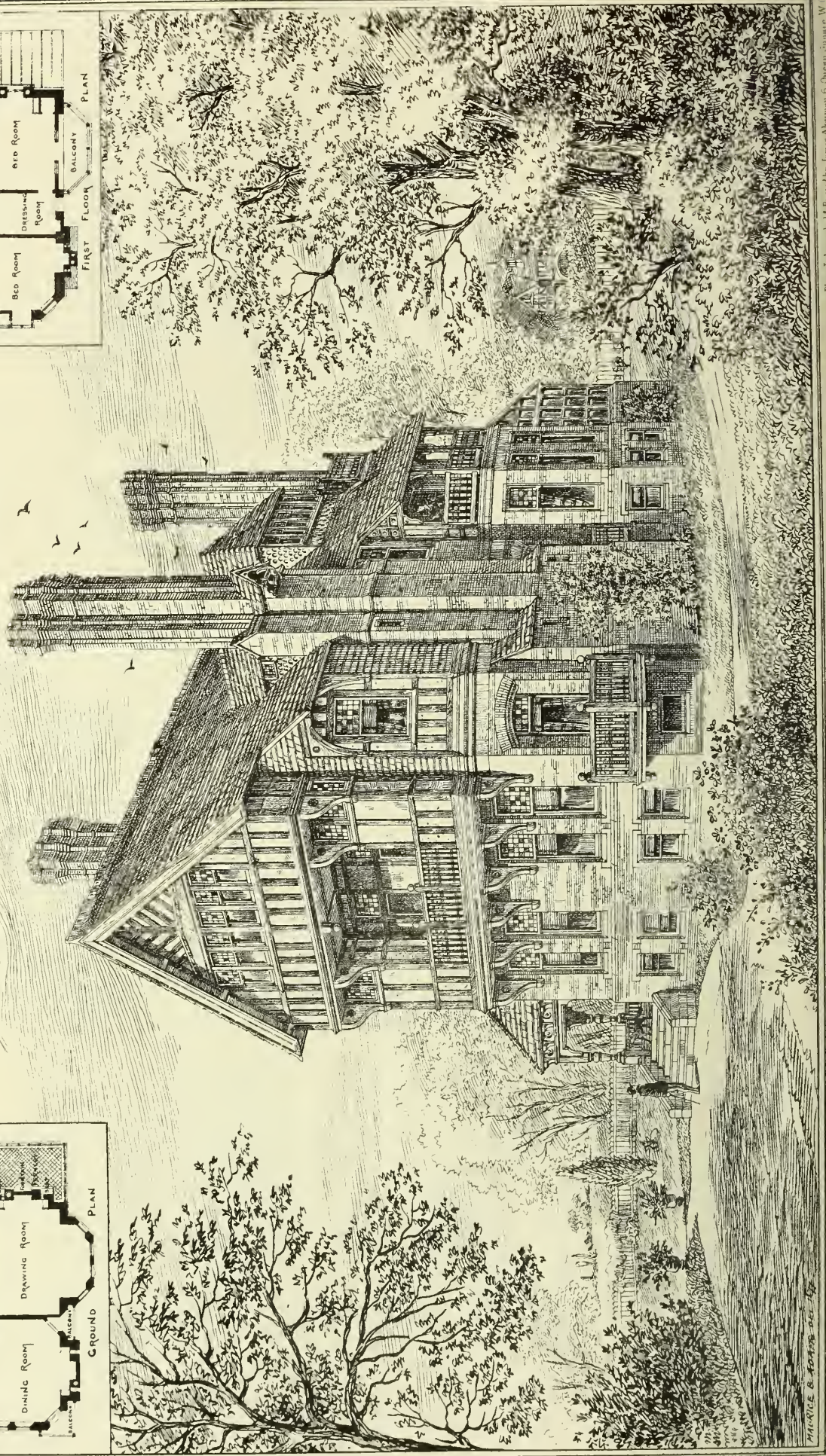
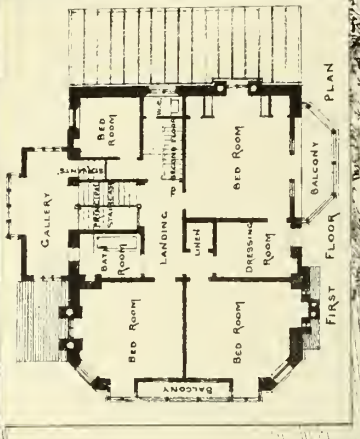
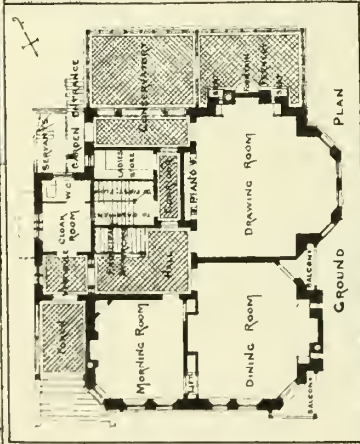
West Elevation

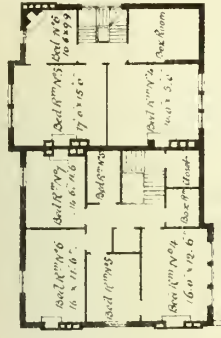
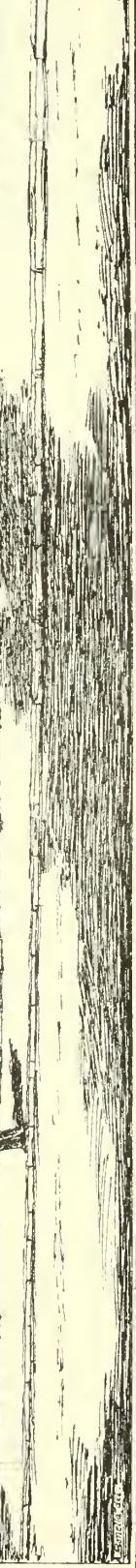
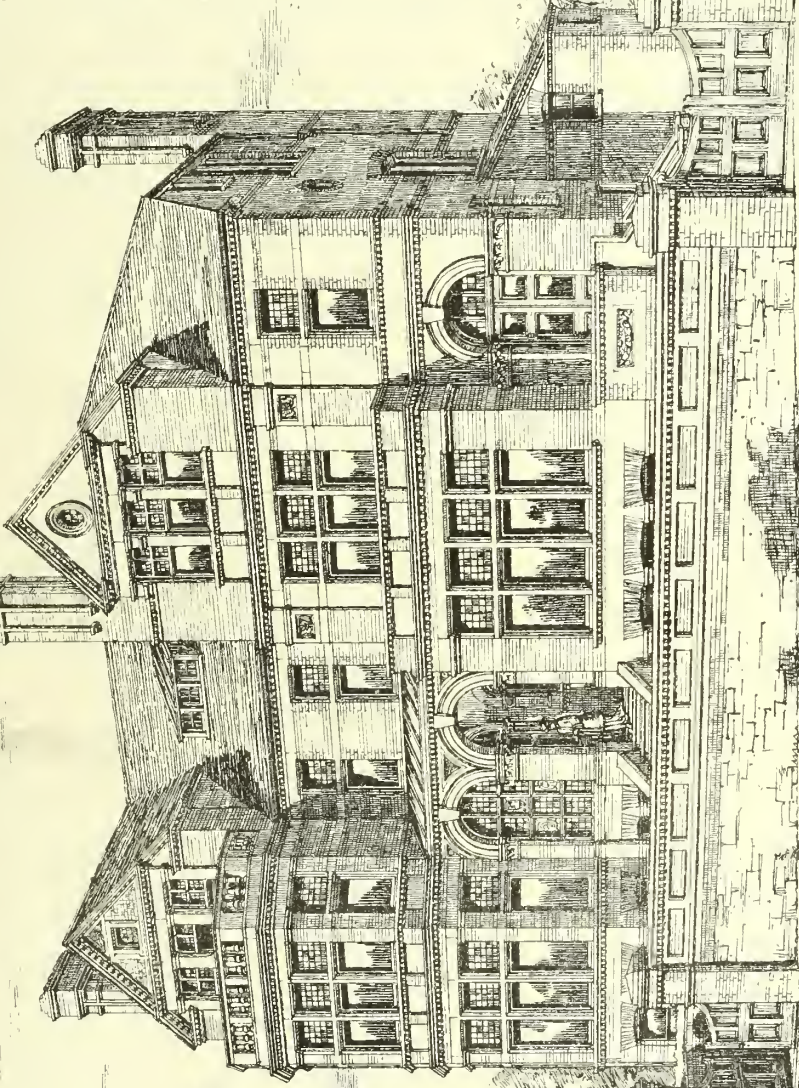
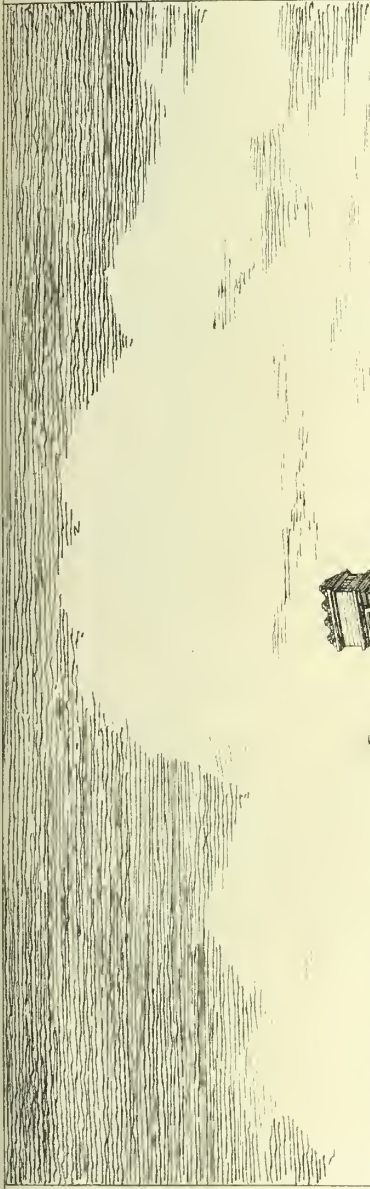
DRAWN BY

J.P. Allcock

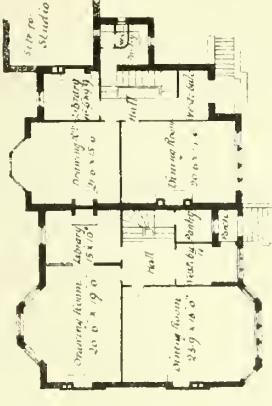


THE BUILDING NEWS, NOV 30, 1877.

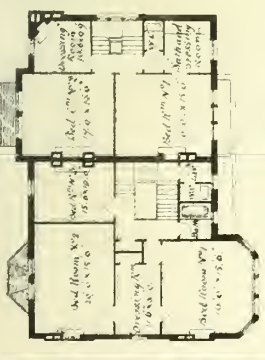




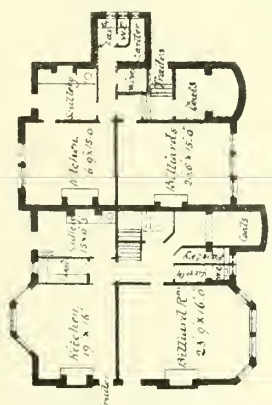
SECOND FLOOR PLAN



BASEMENT PLAN



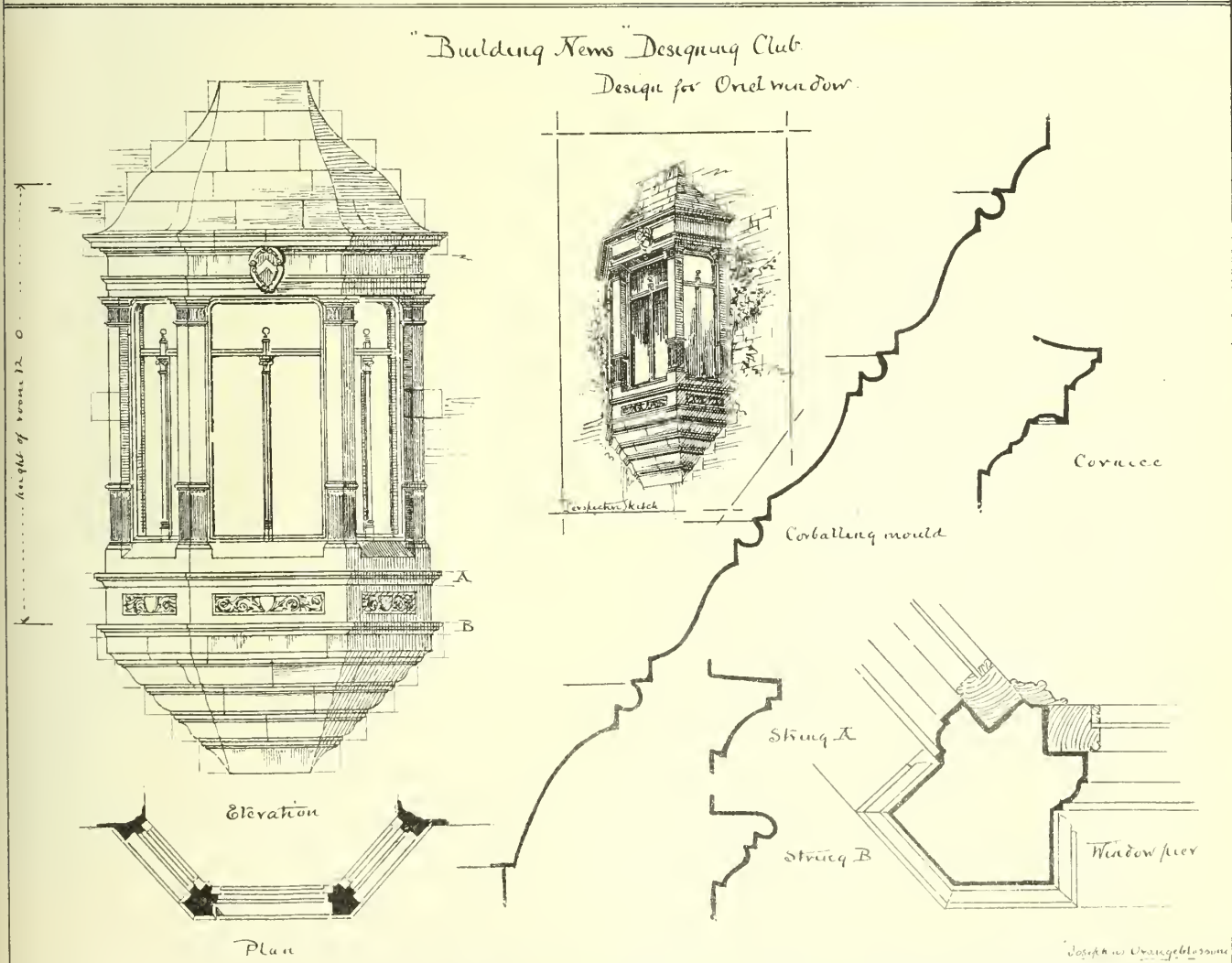
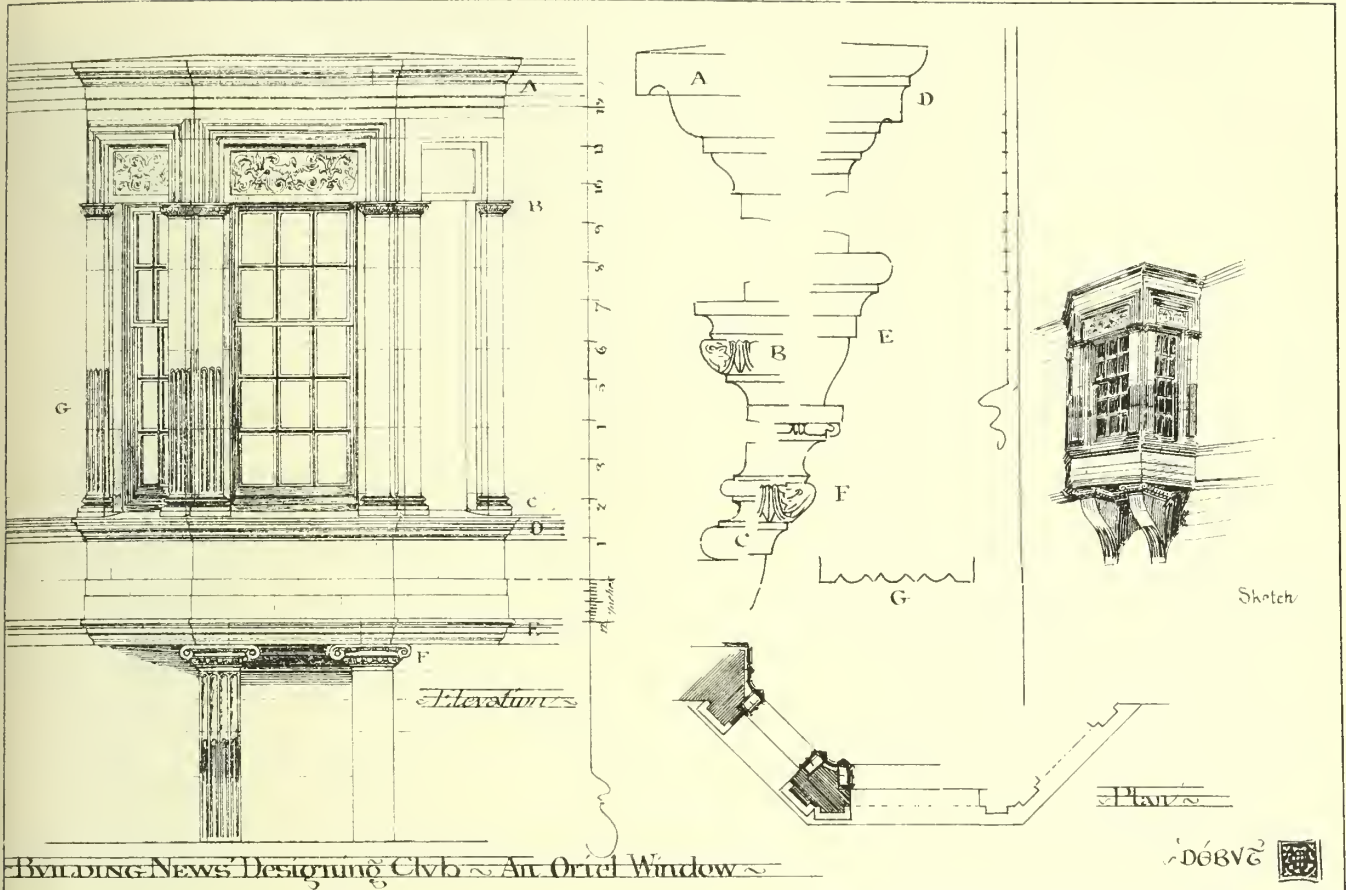
FIRST FLOOR PLAN



BASEMENT PLAN

DOUBLE HOUSE ARKWRIGHT ROAD, HAMPSTEAD.
 THEODORE K. GREEN, ARCHITECT.

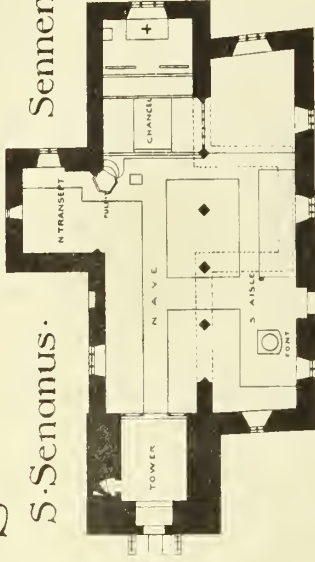
Photo Photographed & Printed by James A. Sherman, 6, Queen Square, W. C.





Usual manner of framing ROOFS.

S. Senanus.



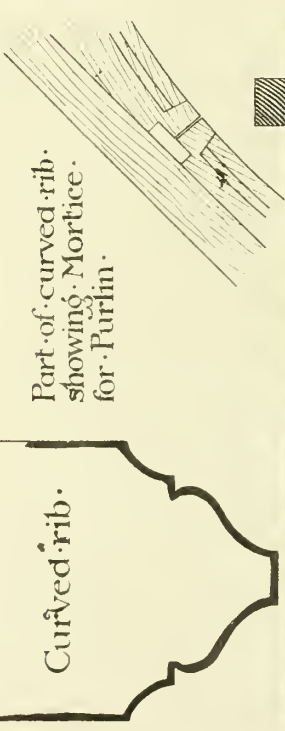
Typical Ground-plan.

Section.

Common Ribs.

Cross.

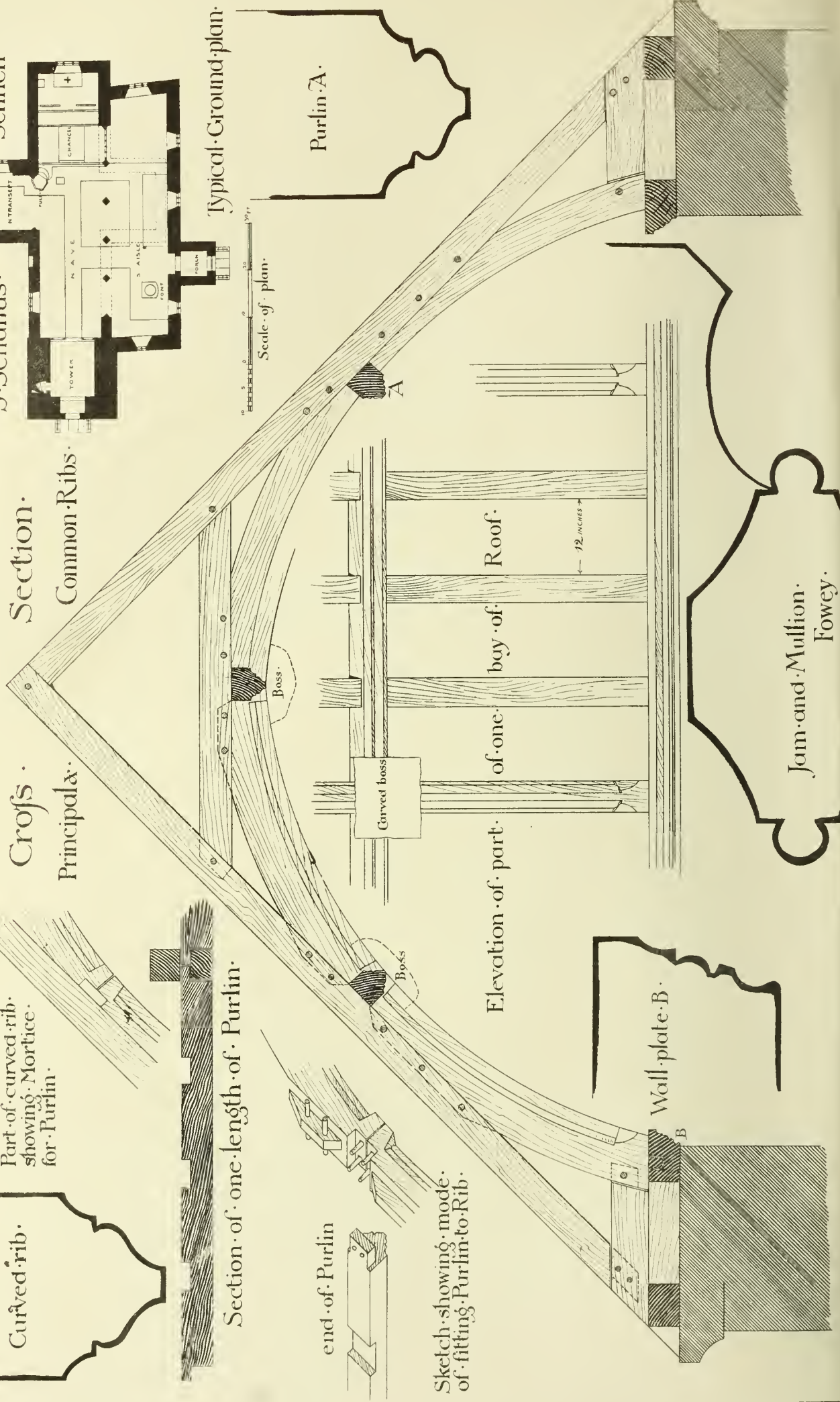
Principal.



Section of one length of Purlin.

end of Purlin

Sketch showing mode of fitting Purlin to Rib.



Purlin A.

Scale of plan.

A

Boss

Carved boss

Elevation of part

of one

bay of

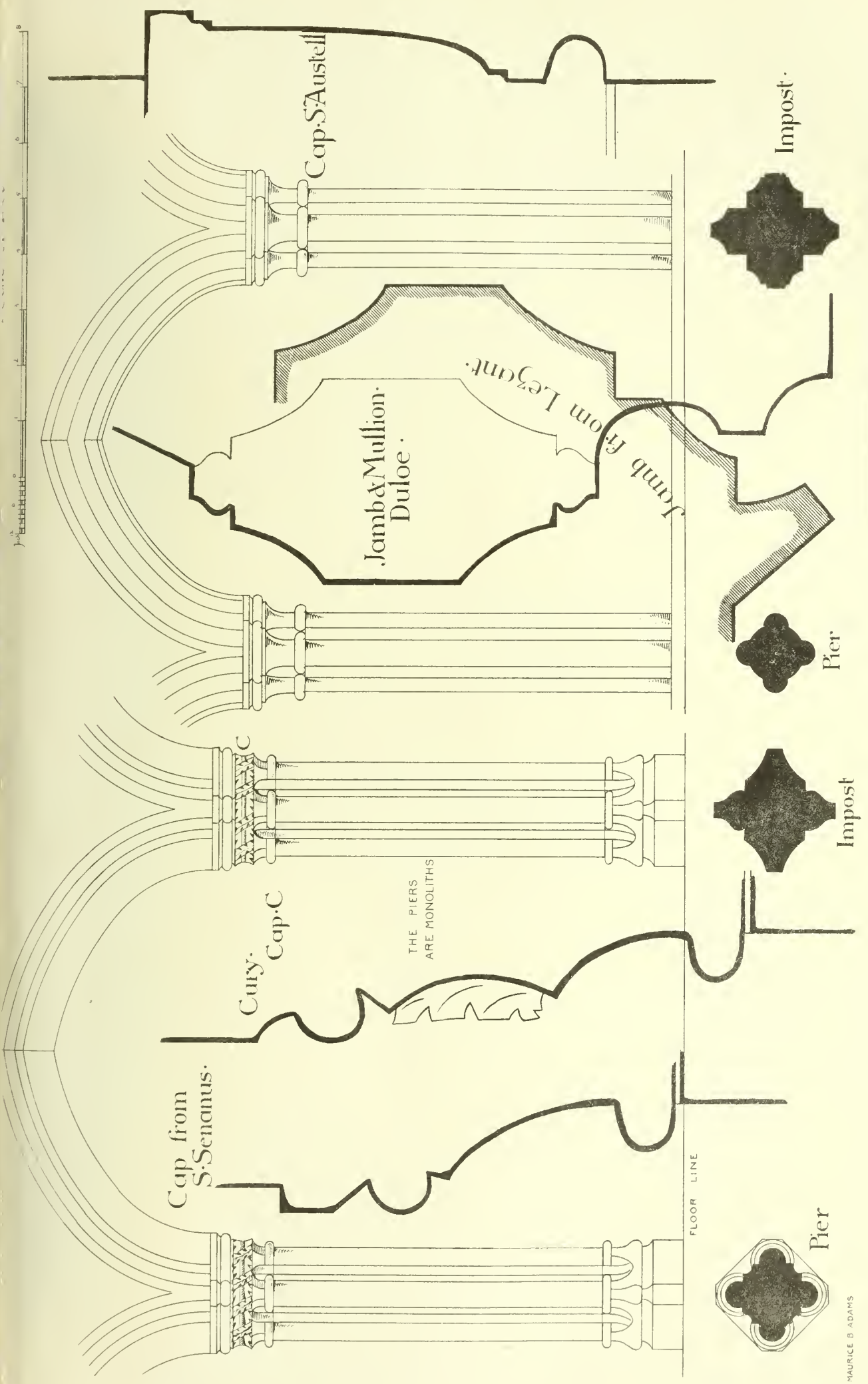
Roof

12 INCHES

Wall-plate B

B

Jam and Mullion Fowcy



Cap from S. Senanus.

Cury.
Cap C

Jamb & Mullion.
Duloe.

Jamb from Legant.

Cap S Austell

THE PIERS
ARE MONOLITHS

FLOOR LINE

Pier

Impost

Pier

Impost

MAURICE B ADAMS

TYPICAL DETAILS OF THE ARCHITECTURE OF CORNWALL ILLUSTRATING "NOTES ON CORNISH CHURCHES" BY J.P. SAUBN

Photo Lithographed & Printed by James Alcorn & Co. Queen Square W.C.

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XIX.

A Small Railway Station.

WE have received several designs for this subject—a few commendable in particular points, but none possessing the architectural treatment we looked for. As an architectural thesis, indeed, the subject was a crucial one, and required more than ordinary effort in its accomplishment. Generally relegated to the engineer, or rather to his architectural assistant, the railway station may be classed among the *crucis* of design. In making our selection it must not be supposed that the designs we place first are ideal ones, nor that we give decided preference to any of them. The plan with motto “Pret” has the merit of compactness; it gives the general entrance, the waiting-room, and booking-office a central position, with wide doorways and space for weighing machine, trucks, &c., the widest part being on the exit, and the narrower on the ticket-office and platform side. The difference in width is caused by the ticket-office and refreshment-bar protruding into the space on the railway side. The ladies’ and gentlemen’s waiting-rooms open from the general waiting-room, and are placed on the outer or front side, the refreshment-bar being on the platform, with two doorways. A station-master’s and porters’ room occupy the space at one end, and above is the residence of the former, containing a living-room and two small bedrooms and scullery. The conveniences are placed at the extreme ends on the outside. In front elevation we have a suitable Gothic treatment in brick and stone, treated with wide mullioned lights, and bay windows to the waiting-rooms, while a news-agent’s stall projects between the main entrances, like another bay. On the platform side a verandah is formed, that side of the roof being extended over it with iron pillars. “Joseph Orange-blossom” fails mainly in not making evident the main function of a railway-station—namely, the entrance and booking-office. This is placed at one end, and has a very insignificant doorway compared to the recessed porch entrances to the waiting-rooms and luncheon-bar, the latter of which is made the central apartment, its outer angles being canted to obtain a doorway. The canting of the corners of waiting-rooms on each side, one for ladies and the other for gentlemen, with the semi-octagon-ended luncheon-bar, make triangular recesses or porches, which are arched over on line of front of station. These are more ingenious than roomy. It would have been better to have made one good general waiting-room, and another for ladies, instead of the three shown. The author manages to get his accommodation in a building 85ft. 3in. by 21ft., with a verandah along the platform and ends projecting over 16ft. of the platform, which is 20ft. wide. We object to the urinal recess in the back wall of third-class waiting-room, and it is questionable to show all the conveniences ranged along the back of station, with small windows. What of the elevation to this front? Towards the railway we have a free kind of Gothic, with a deep verandah, and a clock-turret at one end. No line of section is indicated on plan, and the action of roof overlooking office is incorrect.

“Student” is compact; it places the booking-office and general waiting-room in the centre, retired from the platform, and the refreshment-room and waiting-rooms on either side as advancing wings; between these, and topped by them, is a glass roof or verandah. The waiting-rooms, the ladies’ being the most retired, are judiciously planned as regards the conveniences, though it would have been better if a doorway had been shown between the ladies’ and the central waiting-room or booking-office. The latter forms a semicircular enclosure in the centre, with the main entrances from platform on each side of it. This portion is not pronounced enough externally. The general waiting-room is 30ft. by 20ft., and is provided with seats. On the left, with doorway from platform, is a porter’s room, with up-board and sink. In front is a projecting refreshment-room, with kitchen or retiring-room behind. The conveniences form a separate adjunct on the outside. In elevation we have a feeble attempt at Renaissance, with

rococo pediments over the windows and centre. The verandah is commonplace, and, by the way, the line of supports is placed in front of the doors to refreshment and waiting-rooms, instead of being placed outside of them. At present the roof covers only half of the thresholds.

“Noah” sends a more practicable plan, though of a somewhat hackneyed type. The booking-office and general waiting-room is made the central feature. On one side is a ticket-office and refreshment-room leading out of the latter, and a 2-storied residence of station-master; while on the other is a ladies’ room and first and second-class waiting-room, both leading from the booking-office. These side adjuncts are gabled on the platform and rear front, and the platform is partly covered with a glass roof on iron columns. This front, however, is not shown. Externally the style is of Queen Anne character. The master’s house is awkwardly managed, and the porter’s room and coal-stores, &c., form an unnecessarily long wing on the other side. Drawing wants care, and the detail is poor. “B” in a circle is too school-like, and its windows too small and ecclesiastical-looking. These are treated as square-headed mullion windows. A very straggling plan accompanies the design; the passage or entrance is in centre, the ticket-office being on one side. Ladies would have to walk to one end to their waiting-room, which is 18ft. by 15ft., and forms a gabled end, while next to it the gentlemen have a smaller room. On the other side is a luncheon-bar, a private room, and at end a general waiting-room, 25ft. by 15ft., beyond which a low range contains a porters’ room, urinal, and coal-store. Summing up the defects, the plan wants concentration, the general waiting-room should have been incorporated with the booking-office or entrance; there is too much space wasted in this department. The platform is covered by an iron roof in four bays.

Were it not for the very confused arrangement of “Cave Canem” we should have given it a better place, as it is carefully drawn. The booking-office is placed centrally, with two entrances from platform, and a small ladies’ waiting-room, &c., between. The refreshment-bar is small, on one side, with kitchen behind, and on the outside of that is a gentlemen’s waiting-room, while behind, accessible from end, is a urinal. On the other side of booking-office is the station-master’s house, partly of two stories, with a porters’ room and parcel-office at the extreme end. The ticket enclosure is placed within the booking-office. One great defect is the necessity of passing through the latter to get from one side to the other of station—a usual but bad arrangement, as it destroys the room as a general waiting-room, and two fireplaces opposite the entrances would create disagreeable draughts. In elevation there is too much of a jumble, the style is Early Gothic, with narrow pointed lights and transoms. We like the treatment of the booking-office, which has an arched dormer with clock, and is characteristic. On the whole the composition has an appearance fitting it rather for a school and master’s house than a station. “Jag”—plan certainly has the merit of a pronounced entrance and exit passage, with a side booking-office, the former carried up as a central clock tower. A spacious covered platform is also got in front, which is a good feature; the luncheon-bar forms a projecting wing on one side, and a gentlemen’s first-class waiting-room on the other. But the fault of the plan is the number of waiting-rooms; there are a gentlemen’s first-class, a ladies’ ditto, and a general waiting-room. There is a combined arrangement of conveniences, a porters’ room, a station-master’s, left-luggage, and booking-clerks’ rooms, with an attendants’ room, kitchen, &c., all well arranged. Externally the treatment is Jacobean, but scarcely suitable. “St. Lucy” sends a design resembling more a village school than a railway station. The plan is compact and economical. The booking-office is made a passage-room, but the doors are too narrow, and not made a feature of. A refreshment-room forms a gabled wing on one side, outside which is a low-walled enclosure in the usual form, all the conveniences badly planned. On the other side we have ladies’ and gentlemen’s

rooms and a porters’ room. The elevation, in a simple Gothic brick style, lacks character, though it betrays nothing *outré*.

“X,” in a circle, sends a clever idea, showing a station across the railway, with waiting-rooms, &c., on each side facing up and down platforms. The booking-office entrance faces main road, and crosses the railway on girder. The arrangements of offices, waiting-rooms, and conveniences are tolerably perfect, and a waiting-shed is provided on each platform, but the plan evidently does not fulfil our conditions of ordinary station wants. The design is half-timbered, but a little too rusticated in appearance. A cost of £1,449 is given. “Tempus Fugit” (late to hand) has some well-considered points, but the booking-office is too large, and the waiting-rooms are not well located. Style too fussy, and porch fragile-looking.

There are some other designs we may briefly enumerate in the order of their merit, but of a more commonplace order. “Marmion” sends a long, one-storied station, of very ordinary design, with a station-master’s residence at one end. The booking-office is large, with portico at back entrance. This and the luncheon-bar separate the first and second class waiting-rooms. The platform is covered with a flat-roofed verandah, with fringed border. There is nothing original in the elevation, and it has too much the semblance of a copy. Cost, at 6d., is put at £1,260. Design, “L in a G,” is more economical. It consists of a general waiting-room and booking-office, combined with three doorways 30ft. by 22ft., a luncheon-bar leading out of same and a refreshment-room on one side, with a ladies’ and parcels rooms on the other. A lamp and porters’ room are placed at the end, and at the other the conveniences. Elevation is too much like an engine-house; the isolated chimney-stack of booking-office in the centre is almost ludicrous. Cost, at 6d., £1,415 14s., the material being yellow stocks and red brick facing, with Bath stone dressings. “Naiveté,” Derby, has gone out of his way by showing a plan for a triangular site for a junction, the ladies’ waiting-room being placed at the acute angle. A booking-hall forms a centre passage through, with the office and master’s room on one side, and a gentlemen’s waiting-room on the other. The conveniences are compactly arranged back to back between the waiting-rooms, and the platform is covered with a glass roof in bays, details of which are shown. “Non quo sed quomodo” sends a plan that is wasteful. Three rooms are spoilt by the inner corridors to the first-class waiting-rooms at each end. There is no passage-way through the station, a gate being provided. The projecting gable of general waiting-room is a useless feature. Elevation puts us in mind of a school-house or Gothic lodge. “Medicus” has a too pretentious plan, though he takes care to provide a telegraph office and a parcels room. A central waiting or booking office is shown. The conveniences are not well arranged sanitarily. Elevation is poor. Why the useless parapets to hide roof? “Magnet”—try again. You have sent us a cottage—not a station. Surely, “Magnet” could not have seen the requirements of an English railway station! No entrance or passage is shown, and alas for corpulent people when they pass through such narrow doorways! There was no necessity to show the railway sleepers.

A Graveyard Monument.

This subject has been very inadequately responded to. “Fleur-de-lis” sends the best conception. It is an upright composition, on a square base of five steps, supporting a columnar substructure square on plan, with four angle columns crowned by pediments. From the centre, or intersection of pediments, rises another pedestal, which supports a plain cross, the faces of which are enriched with mosaic inlay. The design is in a severe Greek spirit, the ornamentation being obtained simply by incised work in the square angle *antæ*, pediments, and superstructure, with panels introduced to give variety. A looping of festoons is shown at the base of cross. The inscription is intended to be placed round the steps of base. The design is simple, dignified, and characteristic. “Début” is another clever and simply expressed idea, but flat instead of upright. It consists of a flat weathered “desk”

stone, with plain cross worked along the ridges, reposing upon a square pedestal for inscriptions at the head, and two square pillars at the foot, these resting on a flat stone base, with deep bevelled plinth. In the space under the foot of slab a wreath is shown. The monument is of grey granite, with red shafts. A French feeling pervades the design. "R. J." sends an obelisk, springing from a square base, with pediments at its summit. Below this there is an arcade of two panels to each face for the inscriptions. The pilasters are circular, are of three-quarter projection, and rest on a base of three steps. Such a plain feature as an obelisk demanded a simpler base, and the Roman detail looks out of character. "Medicus" is a square monument, composed of a stylobate, a pilastered superstructure crowned by four pediments. Panels for inscription occupy the spaces between the pilasters. The mouldings of the capitals are clumsy, and the members are certainly not Tuscan, though they are apparently intended to be of that order. Such a composition has rather a meaningless intention; it may mean a huge pedestal for a statue, a sentry-box, a drinking-fountain. As it is, it has an incomplete effect, and is exceedingly heavy.

Christmas Decorations.

Only two sketches have come to hand for this very reasonable subject, and we regret that the modes of decoration shown are not of that generally applicable character they might have been. It is not always possible for those who decorate parish churches to have time to prepare flexible laths for the hollows of the different arches and the angles of the pillars, nor can they afford the time or means to cover the spandrels and wall spaces with artificial emblems in frames of wire or canvas-painted decorations. But they can get a quantity of evergreen rope made by the indefatigable ladies of the parish—that is, sprigs of holly or other evergreen twisted round with wire till a sufficient quantity be made to form festoons and other pendent decorations from the arches, walls, and roofs. This sort of decoration is easily manufactured, can be applied readily in various ways without injuring the walls, and its very simplicity and facility render it, in our eyes, far more tasteful than the very artificial-looking and expensive appliances that have lately become fashionable. "Début" shows an arch, with laths of holly introduced into the hollows and over the labels; the pillars treated with slips between the shafts, banded by ornamental strings, and the spandrels decorated with figures of angels, with emblems of Peace and the Nativity painted on canvas stretched on light frames. A temporary chancel-screen of light lattice painted—the laths being placed square, with their intersections tied with knots of foliage, and a plain inscription along the top, "Holy, holy, holy," &c.—is shown. Along the top festoons are hung from the uprights, which run through and carry candlesticks. "Bee," in circle, shows an unusually lofty arch, with evergreen inserted in the arch members and twisted round the piers, the laths being held by galvanised bands covered with foliage. The chancel screen, shown to correspond with an existing stone screen, is a mistake architecturally, and the banners and coved top are too far-fetched for a wood erection of the kind.

LIST OF SUBJECTS.—NO. XX.

A. A cemetery chapel; cost not to exceed £1,500; plan and elevations, and sketch or section.

B. Treatment of wall decoration for a dining-room, showing door and buffet; 12ft. long, 9ft. high; scale, 1in. to the foot.

C. A pair of wrought foliated hinges for the principal door to a church; $\frac{1}{4}$ full size, and details.

DRAWINGS RECEIVED.—"Excelsior," Tom Pinch.

The memorial stone of a new bridge over the Kelvin at the junction of the Glasgow and Partick turnpike roads, was laid on Saturday afternoon. The bridge crosses the Kelvin by an iron span, and an arch of ashlar masonry carries the roadway over the mill-lane. The building is designed by Messrs. Bell and Miller. Mr. Hugh Kennedy is contractor, the ironwork being supplied by Messrs. Hannah, Donald, and Co. The cost of the bridge and alteration of the roadway will be about £19,000.

ARCHITECTURAL ASSOCIATION.

AN ordinary meeting of the Association was held on Friday evening, the President, Mr. Bowes A. Paice, in the chair. The following were elected as members:—Messrs. W. G. Penty, Maurice B. Teulon, Wilson F. Grieves, A. F. Wills, J. M. Currey, A. S. Haynes, J. H. Wilson, E. Milner Allen, H. Dobie, J. Adkins, W. H. Hodges, C. Tait, F. T. H. Chambers, H. W. Twyman, R. Néjedly, jun., E. Mills, C. M. Burgoyne, T. C. Dalziel, F. W. Kite, J. Brown, A. W. Johnston, H. B. Flood, Harris Worthington, A. L. Lovegrove, C. W. Goodchap, T. B. Whinney, F. Stocker, C. A. Poland, and E. W. Charlton; fifteen other names were proposed for election next week.

NOTES ON CORNISH CHURCHES.

Mr. J. PIERS ST. AUBYN read a paper on the churches of Cornwall, illustrating his subject by a very numerous collection of working drawings, showing plans, elevations, and details of typical or peculiar modes of construction; some of these illustrations are reproduced in our lithographic pages.

The examples that the lecturer had examined range from the Norman period in the church of St. Germans to so recent a date as 1664, in the later works at Morwenstow church. The Norman works in Cornwall are not numerous, though there are some fine examples, the most notable being the west front and a small portion of the interior of St. Germans,* and the south doors of Kilkhampton and Morwenstow. At Tintagel there are considerable remains of Norman work, and there are also examples of small Norman doors at Cury and Myloe. At St. Germans, North Petherwin, and at St. Breward portions of Norman arcades remain, massive in proportion, but built up of small stones; and here it may be remarked that granite, although a very abundant material and at hand, was not used in church-building till the sixteenth century, probably because of the difficulty of working so hard a material with the tools and mechanical appliances then available. The building stones used to as late a period as the Second Pointed or Decorated are the slate stones and "elvans," both very good and workable, and abundant throughout the county. The elvans vary in every degree of texture and colour, from almost black to a light grey. Caen stone and Beer stone from Devonshire are also frequently used for windows and ornamental details, and in the Lizard district serpentine rock has been largely used. Early English or First Pointed work is very rare in Cornwall; one of the very few examples is the fragments of a lancet window in what is now the breakfast-room at St. Michael's Mount, brought to light a few years ago; a few single lancets are occasionally met with. The transepts of the churches which still either wholly or in part retain their original cross shape appear to have arches of this date. They are very simple and rude, being nothing more than depressed lancets, with slightly chamfered vousoirs, and a slight impost moulding. The north arcade of St. Minver, and the arches of the chancel aisles of St. Austell, are possibly of this period. The Decorated or Middle Pointed work is more abundant, and of great interest. Windows, as at St. Germans and at St. Colomb, have a character of their own, and a mode of treatment not met with in other districts. The arcades vary in treatment from the early and simple example at Fowey to the more elaborate specimens at St. Enodock and St. Columb Major. The only example of a Decorated tower that the author had noticed was that of St. Noot. It has massive buttresses and windows of simple tracery, and either had or was intended to have a spire, the springing of which is very apparent. Lostwithiel is a notable specimen of an open spire † of this date, and the plain steeple of St. Hilary is also of this period. We now come to the Perpendicular or Third Pointed period, to which the greater number of the Cornish churches belong, though mostly grafted on buildings

of much earlier date and of cross form, and so similar are they in plan, elevation, and details, that this may be fairly considered the typical Cornish church—the characteristics being the nearly equal length, height, and width of the nave and chancel, with the aisles; the almost universal absence of a chancel arch; the long, slender, and monolithic pier-shafts, sometimes merely octagonal, but mostly moulded; the depressed arches of the centres and small span; and the low-pitched roofs, seldom exceeding 45°, and often less, and cradle or waggon-shaped; and the depressed windows and arches, and plain three-light tracery often without cusping. In this period granite was largely employed, either native or imported from Lundy Island. The pillars supporting the arcades are generally monoliths. [We reproduce elevations of a bay of arcades at Sennen and St. Austell.] Clerestories are very unusual, but they occur at Fowey, Lostwithiel, and North Peterwin. The nave and aisles were formerly parted from the eastern part of the church by handsome and elaborately-carved oak screens, few of which remain, but those stumps that have been spared indicate their position and give an idea of the beauty of the destroyed superstructure so ruthlessly removed. The stone stairs to the rood-lofts in most cases remain. The chancel fittings have in almost all cases disappeared. In the Collegiate Church of St. Buryan only had the author seen a few fragments of the stalls and Miserere. But much of the benching remains and in some cases in good condition; in a large proportion of churches, however, it has been destroyed, to be replaced by the meanest of deal framing in the shape of "square," high pews. The roofs, screens, and benches appear to be of the end of the sixteenth century, or early seventeenth century. The latter are elaborately carved, generally with a running border of fern-leaf and foliage, and when not panelled the centre of the bench-end is covered with emblems, arms, crests, initial letters, and monograms. The benching at Morwenstow is dated 1595. The roofs of the Late Perpendicular period are of square pitch, and constructed in cradle or waggon form, divided into panels by moulded ribs and side-pieces, or purlins. The intersections are covered by large carved bosses of foliage. The wall plates, ribs, and purlins are very frequently enriched by a running pattern of fern-leaves but ordinarily they are merely moulded. They were never ceiled with plaster, but in some instances, over the altars, were under-boarded and illuminated with gold and colour. These roofs, although containing a large quantity of timber, and possessing much beauty, are not particularly strong in construction [as will be seen from the typical example illustrated.] The component parts are numerous and small; they are without longitudinal ties, and depend for stability on the soundness of the tenons and mortices. If from any case these failed the construction soon fell into ruin, as has been the case in too many instances. The details, plans and diagrams would show the mode of fifteenth century roof-construction in Cornwall. All the timbers are of oak; the slate laths are nailed immediately on the backs of the rafters. On these laths hang the small slates, locally called scantles; they are bedded in mortar, unless the timbers are under-boarded, the slating is exposed to view from the inside. The plastered ceilings taking the curve of the ribs, now so common in Cornwall, are quite modern additions, and intended to exclude the draught which followed dilapidation. It is plain that as soon as the failure or decay of the mortice and tenons, and the oak-pins which secure them, commenced, the timber subsided, and had a tendency to thrust the wall plates outward, and to drag the slender arcing with them. To this cause the leaning position of so many of the arcades may be traced. It is a singular fact that the carpenter of the fifteenth century, when he came to a knot in his wood, did not attempt to reduce it, but went round the knot piece and allowed it to break the continuity of the moulding. Nearly all the Cornish churches were originally cross-shaped. Some still remain so—notably the interesting one of Tintagel, where a Late Perpendicular tower is the only addition to the original planning. These churches were altered to aisled structures thus

* A perspective view of the west front of St. German's Minster appeared in the BUILDING NEWS on July 10th, 1874 (Vol. XXXV.)

† Illustrated in the BUILDING NEWS, October 27th, 1876 (Vol. XXXI.)

The limbs of the cross have been removed, or sometimes only the south one, a side arcade taking the place of the side walls, and new side walls, extending the whole length of the church, becoming the new boundary to aisle. This is very apparent in the case of Sennen church near Land's End [see litho page]. The churches of St. Mary (now the Cathedral), Truro, and St. Mary, Launceston, deserve particular attention from their unusual richness of detail. The latter is cut in granite, and very perfect; the former in Pentuan stone, and much decayed. The towers of Cornish churches, particularly the late ones, are characteristic. They are mostly of granite, except where this material was very distant, massive in design and construction. When buttressed these are slender, and obviously not intended for support, but more frequently the tower angles are plain. Sometimes the pinnacles are square, but often octagonal, rising considerably above the battlements. The tower of Fowey Church [as will be seen from our page illustration] is a fine example, 100ft. high to the top of battlements; it is highly embellished with well cut ornaments in Pentuan stone. That of St. Austell is elaborate; and that of Probus fine and lofty; and in the north-east of the county there are many fine towers. That of Maker is of granite, and has walls 5ft. 6in. thick. The spires do not number more than twenty. Lostwithiel, however, deserves attention from its peculiarity of design and construction. The singular example, ornamented with grotesque carving of archaic type in Fowey Church, was illustrated in the BUILDING NEWS on November 24, 1876. The fonts are of almost every variety of shape and description of stone; indeed, occasionally the workman seems to have taken an odd bit of stone and fashioned a bowl out of it, without troubling as to the outline of the blocks. Some are of very great antiquity (mostly earlier than the Third Pointed period), and possess much interest.* Granite is not a usual material. Pulpits of early date are uncommon; the only stone example is that at Eglosayle, and the wooden ones are not worthy of notice. A few fragments of wall painting of interest have occasionally been found beneath successive coats of whitewash, as at St. Thomas, Launceston, Calstock, and Lanivet. He had not found a single ancient encaustic tile within the county. Of metal work a few good monumental brasses remain at St. Columb Major, and at Stratton and elsewhere; but the damp climate, added to neglect, has left very few examples of iron work. Owing to the neglect of Cornish church furniture, painted glass is not common, but a notable instance exists at St. Neot's, where every window is filled with it, and there are a few fragments scattered here and there in the tracery of windows. Mr. St. Aubyn added that he had now, he feared, but imperfectly laid before the members some of the facts relating to the Cornish churches, in which he naturally took a very great interest. He hoped he need hardly add that it had been his aim, in his treatment of them, to preserve their ancient features, and to be as conservative as the exigencies of the several cases admitted of. He regretted he had never been able to replace one of the oak cradle roofs, on account of their great expense, and the difficulty of finding oak for the purpose within a limited time, and because, too, workmen in sufficient number and skill would not be forthcoming to carry the work into execution without importing men from a distance at a cost which cannot be met by the funds usually raised for the repairs of a Cornish church. From what had been stated the members would see the close resemblance one church has to another, and how this family likeness extended, not only over the whole of Cornwall, but far east into the adjoining county. It would seem as if one design was used throughout the district, giving the modern architect a lesson to be not too anxious to build his fame on the variety of his designs, but rather to follow the example of the men who built these Cornish churches.

Mr. PORTER proposed a vote of thanks to the lecturer, and said he had visited most of the churches described, and was struck by the

soundness of their construction. Granite was the principal building material, although Beer stone was not altogether ignored. The softer stone was only used for fonts and internal features, from which modern architects might take a lesson. It would be well if they could have granite dressings instead of Bath stone, for which many seem to have a passion. The arcade shafts, again, were usually monoliths. He asked if anything was about to be done to St. Mary's, Truro, to make it more like a cathedral? The present time would give a good opportunity for restoring the church, and especially for replacing the "piping" tower and spire by a more worthy one.

Mr. ST. AUBYN said before there was any idea of having a bishop of Truro a subscription was started for restoring St. Mary's, but the money was now held over towards a new cathedral. The Bishop of Truro was most anxious to have a worthy cathedral but as nothing less than £30,000 would suffice for such a purpose, and the sum raised is about £3,000, they must wait. He did not know who would build the new edifice; he did not think he should.

Mr. PRATT seconded the vote of thanks, remarking that there was a unique interest attaching to these Cornish churches. At St. Columb he had noticed that there was no west entrance through the tower; was this because of the exposed situation of the church? There was a singular four-light window at Fowey, of which Mr. St. Aubyn had shown a drawing. The window was much out of proportion to the others in the church, and would have been taken for a fourteenth-century one but that it had no cusping in the tracery. In the Decorated south doorway the wallflower ornament was introduced into the moulding, the only instance he had seen in the county. The external panelled carving at St. Mary's, Truro, and St. Mary's, Launceston, was very remarkable; there was a general resemblance in the work, which appeared of the same date, the chief difference being in the character of the stone used. He should like to know if the north and south towers, flanking the west front of St. Germans, were of the same date? If so, why was the formersquare, and the latter octagonal?

A MEMBER asked if any ancient screens yet existed in Cornish churches?

Mr. ST. AUBYN said that screens were formerly carried across all three aisles, but had invariably been destroyed, although strips yet remained. They were of the same date as the well-known Norfolk ones, but heavier both in tracery and mouldings. At St. Buryan part of the screen and some of the Miserere stalls exist. At Morwenstow the late Mr. Hawker fitted up one—of the Wardour-street class. Although the latter church was close to the slate quarries, it was roofed with ancient oak shingles. In many cases there was no direct west entrance to a church through the tower, but doorways existed in the north and south sides, making a kind of porch of the tower. The date of the carved work in the south aisle of St. Mary's, Truro, seemed to be Henry VII.'s reign, as his arms were displayed in the roof; that at Launceston was somewhat later, and ruder on account of the difficulty of cutting granite.

The PRESIDENT then put the vote of thanks to Mr. St. Aubyn for his paper, and the numerous series of drawings he had displayed, and this was carried by acclamation.

At the meeting of the Association to be held on Friday next, December 7th, Mr. J. J. Stevenson will read his paper on "Gothic Architecture."

ARCHÆOLOGICAL.

ARCHÆOLOGICAL DISCOVERIES IN COLORADO.—Some interesting discoveries in Colorado were recently made by the Geographical and Geological Survey of the Territories conducted, by Dr. Hayden. It would seem that the fertile valley of the Animas was densely inhabited and highly cultivated by an enlightened race of people centuries ago. The ruins of the houses, corals, towns, fortifications, ditches, pottery-ware, drawings, non-interpretible writings, &c., show that many arts were cultivated by these prehistoric people which are now entirely lost. Their houses were built of almost every kind of stone, from small boulders

to the finest sandstone. The finest of these ruins, and the nearest perfect, are situated about thirty-five miles below Animas City, in a large valley fifteen miles long by seven wide, on the west side of the river. This valley has been covered with buildings of every size, the two largest being 300 by 6,000ft., and about 300ft. apart. They are built of small blocks of sandstone, laid in adobe mud, the outside walls being four feet and the inside walls from a foot and a half to three feet thick. In the lower story are found port-holes a foot square. There are rooms now left, and walls for about four stories high are still standing. About the second story, on the west side, there was once a balcony along the entire length of the building. No signs of a door are visible in the outer walls, and the ingress must have been from the top, in the inside there being passages from room to room. Most of them are small, from eight by ten to twelve by fourteen feet, the doors being two by four feet. The arches over the doors and port-holes are made of small cedar poles two inches wide, placed across, on which the masonry is placed. The sleepers supporting the floors are of cedar, about eight inches thick, and from twenty to fifty feet long, and about three feet apart. A layer of small round poles was placed across the sleepers, then a layer of thinly split cedar sticks, then about three inches of earth, then a layer of cedar bark, then another layer of dirt, then a carpet of some kind of coarse grass. The rooms that have been protected from exposure are whitewashed, and the walls are ornamented with drawings and writings. In one of these rooms the impression of a hand dipped in whitewash, on a joist, is as plain as if it had been done only yesterday. In another room there are drawings of tarantulas, centipedes, horses, and men. In some of the rooms have been found human bones, bones of sheep, corn-cobs, goods, raw-hides, and all colours and varieties of pottery-ware. These two large buildings are exactly the same in every respect. Portions of the buildings plainly show that they were destroyed by fire, the timbers being burned off and the roofs caved in, leaving the lower rooms entirely protected. The rock that these buildings were built of must have been brought a long way, as nothing to compare with it can be found within a radius of twenty miles. All the timber used is cedar, and has been brought at least twenty-five miles. Old ditches and roads are to be seen in every direction. The Navajo Indians say, in regard to these ruins, that their forefathers came there five old men's age ago (500 years), and that these ruins were here, and the same then as now, and there is no record whatever of their origin.

A private chapel has just been completed at Newsham Hall, near Darlington, for Mr. W. T. Hustler, from the designs and under the superintendence of Mr. E. Lofthouse, architect, Middlesborough.

The Princess Mary of Teck, on Saturday, opened the new West Herts Infirmary, at Hemel Hempstead. The new building adjoins the old one, and is in the plainest form of Italian. It is divided into three blocks, the administrative department and out-relief offices being located in the centre, and the in-patients' wards from the wings. The building is ventilated on the Banner principle, and special care has also been given to the drainage. Messrs. Coe and Robinson are the architects of the new structure, the cost of which is about £13,000.

An inquiry was held before Mr. Robert Morgan, C.E., one of the inspectors of the Local Government Board, at Southampton Guildhall, on Friday, respecting an application from the town council of that borough for sanction to the borrowing of £87,000 for works of sewage and water supply and local improvements.

The first shelter for cabmen erected in Bradford was fixed last week. The structure is designed in plain Gothic by Messrs. T. H. and F. Healey, architects, Bradford, and will cost about £50.

The restoration of Tewkesbury Abbey has made such rapid progress that on Sunday week the restored choir was opened for divine service, it being the intention to use it for that purpose, with temporary seats and fittings for the congregation, while the nave is in the hands of the workmen. The work of restoration in the choir is now complete, with the exception of the mosaic floor and the stalls. It has been carried on, under the superintendence of Sir Gilbert Scott, by Mr. Thomas Collins, of Tewkesbury.

* The singular example in Fowey Church, which is ornamented with grotesque carving, was illustrated in the BUILDING NEWS on Nov. 24th, 1876.

Building Intelligence.

COLLINGBOURNE DUCIS.—St. Andrew's parish church—a well-proportioned edifice of the Late Norman period, with aisles and chancel of later date, and a good Perpendicular tower—was reopened on Tuesday week, after restoration of the nave from the designs of Mr. Blomfield. The stonework of the windows, pillars, and arches has been carefully restored. The chancel arch has been rebuilt, and the nave roof raised so as to correspond in pitch with the chancel, which was rebuilt in 1856, from the designs of Mr. Street, R.A. The works have been executed by Mr. John Woolbridge, of Hungerford, at a cost of about £7,300.

EVERTON.—The new church of St. Cuthbert, Everton, was consecrated last week. The building, which has cost £8,200, is in the Early Decorated, style and consists of nave 97ft. by 24ft. 7in.; chancel, 25ft. by 22ft. 7in.; north and south aisle, 83ft. by 13ft. 8in.; organ chamber and choristers' vestry at south-east, 23ft. by 14ft. 8in.; vestry at north-east, 18ft. 3in. by 14ft. 8in.; a tower at south-west angle and entrance porch at north-west. There is accommodation, without galleries, for 750 adults. A Sunday school is formed under the east-end, which will accommodate 300 children. The walls are of the local red sandstone, lined internally with brick, and plastered and faced externally with Burnley parpoints. Messrs. T. D. Barry and Son were the architects, and Mr. C. W. Mullin, of Kirkdale, the contractor.

GLASGOW.—The Marquis of Bute has offered to build at his own expense and present to the Glasgow University the grand hall, according to designs prepared by Sir Gilbert Scott, R.A. The hall is intended to run north and south across the quadrangle, and the architectural style will be Scottish Baronial, to harmonise with the rest of the University. The cost of this addition was estimated originally at £57,000, but the present scheme will, it is said, probably necessitate the expenditure of about £60,000.

GLASGOW.—The memorial stone of Galloway U.P. Church was laid on Saturday, on a site in Whitevale-street, adjacent to the North British Railway. The style chosen by Mr. Petrie, the architect, is Early Decorated Gothic. A conspicuous feature of the exterior will be a massive square tower at the south-east corner, nearly 100ft. in height, flanked by angle buttresses, and surmounted by a cornice with griffins as projecting gargoyles. In the centre of the Whitevale-street, or east front, will be a projecting gable, forming the chief entrance, and above will be a large traceried window. The nave roof will be supported by an arcade of columns with moulded caps and bases, and will be panelled with rib mouldings. The church will be seated for 950 persons, of which 600 will be provided for in the area. Behind the church will be a hall for 300 persons, and a session-house seated for 100, vestry, lavatories, &c. The outlay will be about £4,500.

KNIGHTON.—The parish church of St. Edward, Knighton, was reopened last week after restoration. The building committee two years since, in dealing with the old building, which consisted of a western tower and a plain parallelogram under one roof, determined to retain the tower and to build a new nave and aisle. This has been done from the designs of Mr. S. P. Smith, of Shrewsbury, at a cost of £3,023. The new nave and aisle, out to out, measure 67½ft. east to west, by 53½ft. north to south, the central height being 41ft., giving accommodation to from 400 to 420 worshippers. The tower has been repaired, a new porch added, and a baptistery formed. The style of the work is Early English. Mr. Williams, of Knighton, was the contractor. The restoration of the choir and chancel is to be at once proceeded with.

LEICESTERSHIRE CLUB HOUSE, LEICESTER.—This building was opened on the 14th inst., when a grand banquet was given. The style of architecture is Flemish, and the height of the building to the ridge is 58ft., to the parapet 46ft. The edifice is built of red brick, with Ancaster stone dressings, and forms an ornament to that portion of the town where it

is erected. On the basement are ten rooms, including the kitchen, which is 27ft. by 20ft. The architects are Messrs. Goddard and Paget, of Leicester; the clerk of the works, Mr. W. Clifton; whilst the builder is Mr. J. H. Herbert, of Leicester, whose contract was for £8,400, but that sum does not include extras. The probable cost of the club altogether, inclusive of its fittings, will amount to nearly £12,000.

LONDON SCHOOL BOARD.—At the meeting of this board, held on Wednesday, the tender of Messrs. Kirk and Randall, of Warren-lane Works, Woolwich, amounting to £6,937, was accepted for the erection of a school for 600 children, on a site in Calvert-road, Deptford. This school has been planned as a one-story building, with the main school-rooms 22ft. wide. The site contains an area of 32,620 square feet, and a provision of £643 has been made in the tender for the necessary boundary walls and gates. It was also decided to alter a mission-hall adjoining the Northey-street School, Limehouse, which has been recently acquired, so as to provide 200 school-places for infants, and for this work the offer of the executors of the late Mr. T. Ennor, of Commercial-road, E., to carry out the work on their contract schedule of prices for the adjacent school buildings, was accepted.

LOUGHBOROUGH.—On Tuesday week the foundation stone of the new church of Holy Trinity, Loughborough, was laid. Mr. Blomfield, of London, is the architect of the building, which will cost £4,530. The style of the church will be Early English. The height of the walls will be 24ft., while from the ground line to the top of the turret the distance will be 84ft. From east to west the ground line will be 186ft., and from north to south 60ft. The walls will consist of granite, with Bath stone dressings. Accommodation will be provided for 500 worshippers. The builder is Mr. C. Cliphsham, of Norwell, near Newark.

MANCHESTER.—The foundation stone of a Wesleyan school-chapel in Raby-street, Moss-side, was laid on the 24th inst. The building is designed as follows:—On the ground floor a porch with double entrance, spacious vestibule, and inner vestibule, connected by means of an arcade with the schoolroom, 60ft. by 35ft., open to the roof, and furnished with an arched recess at one end, containing a platform, and a small gallery at the other. In the rear are three class-rooms, passages, hoist, yard, conveniences, and heating apparatus, cellar, and adjacent to the entrance are four class-rooms, and a staircase to the secretary's room, gallery, &c. All internal woodwork is to be of pitch-pine, stained and varnished; walling externally to consist of white-headers, relieved by stock bricks and stonework. Haden's system of warming is that adopted. The contract has been undertaken at a cost of about £3,500, by Mr. W. W. Harrison, of Greenheys, from the designs of Mr. John Lowe, F.R.I.B.A., Manchester.

METROPOLITAN BOARD OF WORKS.—On Friday tenders were opened for the construction of 2,400ft. of sewer near New-road, Hammersmith. Eleven were received, ranging from £3,976 to £6,360, and after a discussion in committee, that of Messrs. Nowell and Robson, amounting to £4,685, was accepted by 13 votes to 9; 4 tenders were lower than that accepted. A month since the Floating Swimming Baths Company applied for permission to convert their swimming bath, moored off the Victoria Embankment, opposite the foot of Northumberland Avenue, into a public gymnasium during the winter months. The works committee then recommended the board to refuse this, and determine the agreement with the company. The recommendation was referred back, however, for further consideration, and on Friday the committee recommended that, having regard to the public benefits resulting from the company's operations, the application for permission be granted. The following applications for sanction to borrow were granted:—St. Luke's vestry, £500 towards improvement in Bath-street; Lewisham district, £900 sewage works at Pengo and Beckenham, and £3,700 for laying out and draining grounds, &c., and erecting lodges at the Sydenham recreation ground, and Bethnal-green vestry £20,000 for granite paving works. An advance

of £20,000 was, subject to the approval of the Local Government Board, and the Treasury being obtained, granted to Camberwell vestry towards the cost of erecting a new workhouse. An intimation was received from the City Commissioners of Sewers, stating that the improvement in front of the church of All Hallows, Upper Thames-street, has been completed. Mr. F. H. Fowler moved that so much of the resolutions of the board of the 14th inst. as approve the recommendation of the works committee for obtaining a new supply of water for potable, fire-extinguishing, and other purposes, and direct that a bill be introduced next session for carrying the same into effect, be rescinded. This was seconded by Mr. Munro, but after a long discussion the board upheld its original proposal in its entirety by the narrow majority of three, the numbers being 20 and 23. Mr. Dixon, C.E., was granted permission to erect a second wooden model of Cleopatra's Needle on the Victoria Embankment, either opposite Northumberland-avenue or elsewhere; the "dummy" to be erected subject to the supervision of the Board's architect (Mr. G. Vulliamy) and engineer (Sir Joseph Bazalgette).

THRASSINGTON.—The parish church of Thrassington, which has undergone thorough restoration, was reopened on Thursday week. A year or two ago Messrs. Goddard and Paget, architects, of Leicester, were requested to make a report upon the condition of the edifice, and the north aisle was found to be so ruinous as to be beyond restoration. This had to be removed, and a new aisle, the same width as the south aisle, erected. The modern west gallery, pews, and pulpit, have also been removed, and replaced by simple seats of stained pitch-pine, a pulpit of the same material with stone base, and choir stalls in the chancel. A window, priest's door, and leper window in the chancel, which were formerly built up, have been reopened. Three new windows have been inserted in the south aisle. The font has been carefully restored. The whole of the roofs were very decayed, and have been taken off. The nave and aisles are covered with open timbered roofs, and the chancel has a wagon roof. The stonework of the tower was very much decayed, and has been thoroughly restored. The whole of the works have been carried out by Mr. G. Hayes, builder, of Melton Mowbray, at a cost of £1,800, under the superintendence of Messrs. Goddard and Paget.

TRETOWER.—The new church of St. John the Evangelist, Tretower, was consecrated on Wednesday week. The building is a simple building of 13th century character. The plan is rectangular, comprising a nave 46ft. long and 21ft. wide; chancel 25ft. long, and 18ft. wide, with a vestry and organ chamber on the north side of chancel, and a south porch near the west end of nave. Externally the character of the building is very simple. A bell turret of somewhat unusual design stands over the chancel arch with pointed openings for two bells. The walls are built of the local stone on irregular coursed work; all dressings are of Bath stone, the walls inside are plastered, the roofs are covered with Broseley plain red tiles. The architect is Mr. J. L. Pearson, Harley-street.

Consequent on acquiring the gas commissioners' undertaking, the Haverfordwest Town Council met on Friday night to appoint officers. All were re-elected with the exception of Mr. James Thomas, the borough surveyor, whose duties are in future to be discharged by Mr. Gibbons, the gas manager. A reduction of £10 was made in the clerk to the gas commissioners' salary.

St. Luke's Church, Old-street, London, was reopened on Wednesday week, after restoration, at a cost of nearly £6,000, under the superintendence of Mr. Blomfield, architect, the general contractors being Messrs. Morland and Nixon, the decorative work being performed by Messrs. Heaton, Butler, and Bayne. The church, which is chiefly remarkable for its extraordinary fluted obelisk spire, dates from 1733, and was built by James, a pupil of Wren. The walls have been underpinned, and the interior decorated, while the high pews have been replaced by substantial benches of oak.

Heating apparatus on the continuous-flow hot-water system and ventilators have been placed in St. Mary's Church, Clontarf, by Messrs. Hodge and Sons, of Westmorland-street, Dublin, and were used for the first time on Sunday.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. Price 2d. weekly; annual subscription, post free, 15s. The number published November 30 contains articles on Infant Mortality in Birmingham, The Water Supply of London, Sympathy-of Sort, Sanitary Engineering, An Alleged New Cause of Small-Pox, Vaccination in San Francisco, A Washable Respirator, Intermittent Filtration, On the Cure of the Eyes, The Australian Health Society, Dr. Barton Sanderson on the Attributes of the Germinal Particles of Bacteria, Dr. Richardson on Total Abstinence, Public Health Reports, Legal Intelligence, Water Supply, Intercommunication, Public Health Patents, The Editor's Table, Gleanings, &c.—31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.
TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.
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RECEIVED.—F. and G. D.—J. H.—H. and Co.—C. Bros.—J. G. H.—D. C.—J. B. R.—W. P.—G. R.—W. E. W.—M. and Co.—D. P. F.—T. B.—S. T. W.—L. and N.—S.—T. S.—Liverpool Architectural Society.
GEO. PERKINS. (Thanks, no.)—STUDENT. (We intend to commence another series shortly on "Measurements and Valuation.")

Correspondence.

ENGLISH AND FOREIGN WORKMEN.

To the Editor of the BUILDING NEWS.

SIR,—While agreeing with "E. C. R." in the value he attaches to the establishment of technical colleges, and which you, sir, advocated only a few weeks ago in an article on "Technical Education," allow me to differ from him in thinking that free trade is the cause of the decline of British workmanship from an art point of view. The removal of restrictions ought rather to have helped on the artistic skill and progressiveness of our workmen. Has not ability and natural talent flourished more under the free-trade system in every department, and why should art be an exception? Again, I must differ from him in thinking the "tyranny of the trades' unions" has extinguished the individual efforts of the workman, by placing all on a level as regards uniformity of wage, number of hours, &c. It is true piecework is not approved; but I ask if piecework was the system under which our greatest architectural works were carried on? Has it not been rather the obstacle to artistic work? Has it not favoured scamping more than any other thing, and encouraged the under-cutting and all the worst features of the contract system? Those who are just now reviving the architecture of the past two hundred years must admit that the solidity, truthfulness, and honesty of the workmanship and art displayed—all, in fact, that we most admire in such work—were the results of a system totally different to the present mode of doing work. Piece and contract work was a thing unknown, and the artisan took pleasure and pains in carrying out the intention of the designer. What do we find now to be the case? Sir Edmund Beckett has very truly remarked, on

this point of the controversy, that workmen now are slovenly and indifferent, lazy or careless; but he forgot to state under which system this lack of art or individual interest took place. It seems to me, in the recent controversy in the *Times* and other papers, this point has been strangely overlooked, though every architect who has superintended his own work will have remarked on the present scamping system the contract or piece-work plan brings about. Our rubbishy houses and modern furniture of a certain class are the products of men who perform their labour, not as thinking men, but as machines set to perform a piece of work in a certain time and at a fixed price. There can be no interest felt in the work, for the workman knows it is the result of a cut-down on the part of his employer, who wants to make a certain profit. As both have to get a profit the work is neglected; one tries to make a bargain of the other—in short, mark, the work done is the minimum amount of material or labour that can be expended, not the maximum. Herein, then, I conceive, the secret lies of "C. B. A.'s" lamentations and Sir Edmund Beckett's complaints.

If we study the work done since measuring became an independent business—that is to say, since lump-sum contracts arose about the beginning of the present century—we shall have no difficulty in arriving at the conclusion that from that time a gradual decline is noticeable in British workmanship. Our great buildings, it is true, may be noted as exceptions, for they have been the work of men not restricted to "piece-work," or not so under-cut by it as in the smaller works, and their contractors were men who had a reputation that they could not afford to lose. But workmen themselves, if asked, will honestly admit that the "contract system" has done incalculable harm. Apprenticeship now is very different; the high-pressure master has no time to devote to his younger men, and every inducement is held out to scamp. The "jerry" builder is the natural offshoot of the system. Now, what trade-unionism has done is to protect the interests of labour by controlling the wages, the hours of work, &c., so as to determine a standard. I must confess I see in a trade union the object of any other professional society—namely, a centralising, controlling influence. If we regard trade-unionism as the aggregated experience of the trade, we must look upon it as performing a similar function for its members as a fly-wheel does to the machine—namely, a regulator of the motion, a check on exuberant irregularities, and so on. But it is evident "E. C. R." and a great many others look upon it as the disorganiser of the class, a promoter of strikes and discontent. If it fulfils its legitimate function it will simply content itself with the regulation of the profits of trade. The common accusation that the unions impede the skilful and best workmen, and reduce them to a level of the unskilful, is not founded on justice, for a skilful hand must necessarily do his work better if not faster. Those who have attempted to fasten this objection on the unionists confound skill with time.—I am, &c., G. H. G.

THE ARCHITECTURAL STUDENT.

SIR,—The remarks in your article on "The Architectural Student" (p. 506) are in the main just, but call for remark in a few instances. It appears to me that the librarian and his assistant have as much as they can do to supply the members of the Architectural Association, in the protracted half hour preceding the ordinary meetings, and the reference to the library in the annual report bears out this statement. With regard to the magnificent library at South Kensington, I believe there is scarcely an open evening throughout the year on which it is not crowded, and in nearly every instance a fair proportion of the readers are architectural students. There may be many like myself who do not need to go to these libraries on account of having sufficient ones of their own. From a few volumes of the BUILDING NEWS alone the student may gain nearly all the information which is necessary to him.

With regard to the Association classes, and those of the BUILDING NEWS, study is impos-

sible without inclination, and how few are likely to be inclined for study after seven or eight hours spent in the office, followed by an hour or a half occupied in getting home, and a good evening meal on the top of it all! The Saturday afternoon is a farce, as it frequently means only two or three hours less than on other days, taking into account the time given for dinner, and for a good part of the year is quite useless for purposes of country sketching, &c.

Let us turn to the classes at King's College, and others. At the one named all the classes but one meet in the afternoons—that for surveying on Saturdays from 10 to 3. What architect is there in London who would take a pupil that could give scarcely half his time to office work? Then, again, all the pupils and assistants of my own acquaintance have taken to the profession as a means of subsistence. The premium at starting is frequently a severe pull upon the purses of their parents; are they likely to pay in addition seven guineas per annum for the lectures at King's College, twelve guineas for drawing classes, and nine guineas for the surveying, at the same place? University College falls under the same objections as to time and fees. Why the Royal Academy of Arts should be included in the "Architectural Association Handbook" I can't imagine, for although the instruction is gratuitous, one must first "have acquired a reasonable degree of proficiency" (to my mind an unreasonable degree), and if the drawings and certificates are approved the student must bind himself for seven years! If such a course of study were necessary, complaints as to the profession being overstocked would soon come to an end, and instead of architects deploring the scarcity of clients, these latter would have to beg, and to wait before their wants could be attended to.—I am, &c.,

27th November, 1877.

C. P. E.

MIDDLE CLASS DWELLINGS.

SIR,—I am much obliged for your notice of my paper on "Middle-class Houses in Paris and Central London." Permit me, however, to explain what was doubtless left obscure during the lecture—namely, the reference to Pierre le Muet's designs for houses in 1663. You imply that the typical Paris house of to-day, and the typical London house erected after the Great Fire, both descend from the same stock, a hôtel, the plan of which I exhibited last Monday. But if you will look again in Pierre le Muet's book you will also find the London house of to-day—the houses of two rooms over two rooms—such as are being erected in the heart of town now. In the middle of the 17th century many of the shops and houses of central Paris were planned in exactly the same way as those to be seen at the present hour in Warwick-street and Beak-street. The march of progress has caused them to give place to the broad fronted *maison-à-loyer* of our time.—I am, &c.,

WILLIAM H. WHITE.

THE ROYAL TOMB, KING'S LANGLEY.

SIR,—I was surprised and grieved to find that the tomb of Prince Edmund had been taken down and removed from the chancel of the above church, the intention being to show better a modern miserable reredos, for which sort of thing (the reredos) there seems to be now a sort of craze. I say, Sir, it was a sacrilegious, wanton, and unjustifiable act. Not done, too, by ignorant country churchwardens, who are usually credited with such evil doings, but by the parson and diocesan architect, the latter a member of the R.I.B.A., &c. With so much fine talk at the present time about the value of, and need of, conserving national antiquities, such a thing as this should be impossible. A diocesan architect ought to be the last person to so commit himself. Here is defacement of a beautiful architectural ornament, interference with the royal remains, and destruction of the historical integrity of an ancient work, and by those who should have been its most jealous protectors. Whatever may be said by way of excuse—for even in such flagrant culpability as this I suppose some excuse will be offered—the fact is

certain that for five hundred years the royal tomb has stood in the chancel of King's Langley, respected by one generation after another, in spite of political and religious changes by which the country has been convulsed. Not until now—the blatant, pretentious nineteenth century—has the royal tomb been broken into, or the sacred remains of the dead disturbed. And for what? Vanity and five per cent.! These, Sir, are the cursed influences likely to rob us of every bit of antiquity in the land.—I am, &c., M.

BUILDINGS IN THE WEST OF BRIGHTON.

SIR,—In reference to your article on the above subject, will you pardon me if I remind you that all the buildings referred to are not in Brighton, but in the town of Hove, the annual rateable value of which is now upwards of £150,000, and which bids fair in 10 years' time to be equal to that of Brighton.—I am, &c., E. B. ELLICE-CLARK.

CHIPS.

A ratepayers' meeting was held at Weston-super-Mare on Wednesday week to consider the scheme for the proposed purchase of the waterworks by the town commissioners, when it was unanimously approved of, and resolutions were agreed to, giving formal consent to the promotion of the necessary bill in Parliament next session.

A new sluice and other works of drainage have been constructed for the Middle Level Commissioners, at Wiggenhall St. Mary, Isle of Ely, by Mr. W. Webster, contractor.

At a public meeting held at Kircudbright, on Friday se'night, it was decided to request the town council to provide a public hall for their meetings and the use of the community.

The memorial stone of a new public hall which has been erected in the village of Kippen, N.B., was laid on Saturday afternoon. The building is simple in form, and is designed in the Early English style, with plain lancet windows, open timber roof, and stained and varnished woodwork. The hall accommodates 300 persons, and the cost was £1,500. The architect was Mr. David Robertson, Edinburgh.

A new board school, situated between Boundary-lane and Albany-road, Camberwell, was opened on Monday evening. The building, which, with the playgrounds, occupies a superficial area of 22,000ft., is three-storied, and is in the Queen Anne style, containing, on the ground floor, a large school and "babies" room for the infants; on the first floor, double school-room and two class-rooms for the girls; and on the second floor a like accommodation for the boys, each department having separate entrances. The total cost of the site was £5,444 13s. 7d., and that of the building £8,230 15s. 9d., making a total of £13,675 9s. 4d., or equal to £16 17s. 7d. per head. The accommodation is for 271 boys, 271 girls, and 268 infants, or a total of 810 children, but the building is designed with a view to future enlargement.

It is stated that the efforts which have been made to secure to the people of London the ground round St. Paul's Cathedral have been successful, and that an agreement will shortly be entered into between the Dean and Chapter and the Corporation for this purpose. The contemplated improvements include lowering the palings, remodelling the ground, planting trees, and making the necessary pathways.

Professor Goldwin Smith, before distributing the prizes to the scholars of the Oxford School of Art on Friday last, delivered an address, remarking that it would appear to be bad policy on the part of the Government to stint the Science and Art Schools, as it was in the product of finished skill and cultivated taste that England should strive to retain a supremacy. The declining character of English goods has much to do with their exclusion from foreign markets, and if South Kensington could do anything to remedy that, it would be desirable.

It is announced that the Queen has presented to the town of Heywood 20 acres of land for the purposes of a public park. The money has been set apart by the Queen out of a sum exceeding £10,000 which fell to her as Duchess of Lancaster, through the death, without heirs, of Mr. C. M. Newhouse, of Heywood.

A bill is to be promoted next session by the Great Eastern Railway Company for an extension northwards through the county of Lincoln. It will be 130 miles in length, and be constructed, if sanctioned, between Somersham, Hunts, and Askern, in West Riding, Yorks, passing through the city of Lincoln. There will be a spur to Rotherham.

Board schools have just been completed for the Bridgend School Board by Mr. William David, contractor, at a total cost of about £2,500, from the designs of Mr. Harris, architect.

At a public meeting held at Winchester Guildhall, on Friday, it was resolved to rebuild Morden College, which has become unfit for habitation. Several plans were exhibited, and it was decided to erect on a site in the Cathedral-close a building worthy of the city and county.

Intercommunication.

QUESTIONS.

[5203.]—Darkening Pitch Pine.—I shall be grateful for any hints as to the best way to treat this wood, which is used for both the floors and the joinery of the better rooms in a house I am building for my own occupation. First, as to the floors. What I should have liked, but could not afford (even if it were obtainable), was an oak floor, with the rich brown colour which comes only with age and plentiful beeswax. Handsome as pitch pine is, and delightful as its hardness promises to be, its natural colour seems to me too light for a floor. Can it be made to approximate artificially to the colour of old oak, and in a satisfactory and durable way? If not, how is it best treated? I have often seen deal floors stained and varnished, and looking pretty well in quiet corners, but very bad when exposed to traffic, the varnish being scratched and even the stain partly rubbed off. Would pitch pine, by reason of its hardness, give any better result with stain and varnish? Or may I conclude that varnish is inadmissible, and that the floor should be either oiled or beeswaxed, whatever be the preliminary process of darkening? Further, will a stained and beeswaxed floor give a better result than a stained and varnished floor? As regards staining, I notice that it inverts, so to say, the grain of the wood, darkening the soft parts, which were light before, and affecting but little the colour of the hard parts, which though nominally darker than the rest, come out after staining as the lightest. With any wood of distinct and handsome grain, this seems to me a pity, and inclines me against the use of stain. My builder prepared me many samples, which were treated in different ways, and one amongst them was done with "oil stain," but I think with indifferent effect. One was treated with some preparation of asphaltic (?) or creosote, and the colour is admirable—a dark rich brown—but a disagreeable smell clings to it, even after varnishing. Some were treated with lime, and then oiled, and with one of these the result was excellent. The true graining of the wood was preserved, and even increased, and the whole greatly darkened, while the semi-orange shade which is sometimes disagreeably apparent in pitch pine was got rid of entirely. The general shade was by no means that of old oak, but still dark enough for the purpose. But, unfortunately, the result was not uniform. Other pieces darkened much less, in spite of many rubbings with boiled linseed oil. Is there any way of applying the lime which shall make the result certain? Is the process injurious to the wood? If not, is it better to lime and oil simply, or to lime and oil, and then polish with beeswax and turpentine? If the latter, is there any particular way in which the polishing should be done? Any hints how to make a really handsome floor with pitch pine would, doubtless, be acceptable to others besides myself, for every one complains of the ordinary deal floor. Few can afford oak, but the increased cost of pitch pine, as compared with deal, is so slight, that in the better sort of houses its use might well be the rule instead of the exception. With regard to joinery, any builder is willing to treat window frames and architraves with lime, but objects to treating the doors so, on the ground that the lime "raises the grain," and so neutralises the excellent finish of the surfaces. Any water-stain, he says, will do the same. He also states that any such application will lead to shrinkage and ill-fitting of the framework. Are these objections insuperable? Whether they be so or not, what is the best way to treat the pitch-pine doors?—PITCH PINE.

[5204.]—Competitions.—Suppose a competitor has his drawings returned without thanks, carriage to pay, and so forth; upon opening the same he finds them minus the specification and estimate, general plan of the buildings showing drains, &c., after waiting nearly twelve months without receiving any tidings or explanation whatever. In such a case can any compensation be claimed if lost? An answer from some of your correspondents will oblige.—AN INQUIRER.

[5205.]—Tar Paving.—Will any reader who is experienced in the laying of tar paving kindly give me a few plain practical directions as to description and proportion of materials best to be used, as well as method of preparing and laying the same?—ESTATE CLERK OF WORKS.

[5206.]—Cisterns.—I am wanting to collect water from a well to a cistern to be placed a short distance off. This cistern being kept underground, can any of your readers inform me of the best and most substantial material to use for it?—E. G. W.

[5207.]—Re-Gilding Picture Frames.—The writer has a number of picture-frames, the corners and some other protuberant parts of which are getting bare of gilding. Will some one kindly inform me, through your columns, how I can touch them up, and with what materials? Would "Bessemer's gold paint" do? I may say the said articles are in otherwise good condition, and would not require to be wholly re-gilt for some time to come.—IGNOTUS.

[5208.]—All Souls Church, Harlesdon, N.W.—I should much like to know how two bells can be swung in each of the turret spires to the above church in an octagon chamber only 4ft. 6in. internal diameter? The arrangement shown for ringing

chamber in a kind of cellar passage is very ingenious and a good idea.—ENQUIRER.

[5209.]—Ceilings.—In a house undergoing alterations the ceilings to most of the rooms are cracked and broken, the plaster "shellings" off, and presents a very untidy appearance. What is the cause of this, and the best and cheapest mode of making good the same? The ceilings were in this condition before alterations were commenced.—JOAN.

[5210.]—Main Sewers.—The Local Government Board have recently issued instructions to surveyors how to prepare plans for loads for sewerage, &c., works. They therein state that duplicate sewers are not required, and point out their defects; yet in the BUILDING NEWS of last week, at Dorchester, the inspector criticised the provision made to admit rainfall into the sewers. Under these circumstances what are the surveyors or local boards to do in such cases as when the whole district they have under their control is thickly built upon, and all paved? If the rainfall is not to be connected with the sewers, either the sewer proper or a duplicate sewer, is it to be allowed to remain on the surface until it evaporates, or what? Will some of your correspondents enlighten the profession on this matter?—C. E.

[5211.]—In Breaking-out Openings for Bay Windows.—How am I to calculate the strength of beam to carry the walling above such opening, and the best way of specifying the same?—JOAN.

[5212.]—New Hotel Dieu, Paris.—Where can a good description of the arrangements, said to be excellent, of the building generally be found? Has the BUILDING NEWS given one?—J. J.

[5213.]—Architects' Pupils.—What system is adopted in France and Germany for the training of the above? Will a travelled architect kindly give his opinion as to the superiority of the Continental or our own system of pupilage?—J. J.

[5214.]—Tilting Fillet.—Attachment of Girders.—Will any of my fellow-readers be kind enough to answer the following questions?—(1) Show by means of sketches what would be the result of laying slates without any tilting fillet at eaves, and how a fascia-board can be utilised in place of a tilting fillet. (2) How to show the rolled-iron cross-girders of a floor running into the main girders, over the head of a cast-iron column. Draw a section through main girder, showing in elevation the head of the column, the mode of attaching the cross girders, and the main girders bolted to the column. [A sketch sent us of the place shows main girders 12in. x 6in., and cross girders 10in. x 4in., and the head of column, 12in. x 7in.]—STUDENT.

REPLIES.

[5164 and 5202.]—Surveyors' Charges.—Appointment of Surveyor.—When a person appoints an agent—e.g., a broker or an architect—the law infers, if there is nothing to show to the contrary, that the broker or architect is empowered to do as brokers or architects usually do. Unless an architect is instructed to the contrary, he is empowered to appoint a quantity surveyor, and if no contract is accepted, the client is bound to pay the reasonable fees of the surveyor.—L.

[5179.]—Binding "Building News" Plates.—The size of the books when bound up were that of one page, to correspond with volumes of printed matter. The illustrations occupying more than one page were folded, narrow strips of paper were stitched in with the leaves, of sufficient quantity or thickness to correspond with the folds of larger leaves, thus keeping the back edge of book the same thickness. Whether these are the "guards" "A. C." means, I am not aware. The thickness of my books, including cloth-covered boards to backs, are Vol. "Domestic," 2½in.; "Ecclesiastical," &c., 3½in.; "Public Buildings and Miscellaneous Sketches," 3in. I may add, that having taken out all the plates and advertisement pages, I had the printed matter bound up in yearly volumes, instead of half-yearly, as published; these are about 2½in. thick, half-bound cloth, and cardboard backs. In arranging the plates, I took care to have all illustrations relating to one building put together—for instance, all the designs for the Edinburgh Cathedral, though not published consecutively as to date, nor by the same authors.—TEO.

[5181.]—Clearing Pieces.—Your correspondent, "S. A.," having received no answer to his question—What are clearing pieces? I venture to give him my unauthorised opinion of what is meant by the term, although I wish him to understand that I am subject to correction. In fixing framed soffit, shutters, &c., to windows, with raised or projecting moulds, you must of necessity hang the shutters low enough to clear moulds of soffit, and in so doing you have a space left between top rail of shutter and soffit, when the shutters are folded back in position during the day, so to finish and fill up same you have a beaked piece (hence the name) to fix to rail of soffits leaving the proper margin.—J. W.

[5181.]—Clearing Pieces.—I take these to be what are technically called freeing leads—small beaded or moulded pieces planted on plancers and soffits to caso shutters in opening.—MICHAEL MAWNEY.

[5182.]—Joists Laid Rounding.—If "S. A." would select his timbers with a natural chamber he would find it answer all his purposes. If, however,

the joists are already laid, let him upright a piece running at right-angles to his floor, and either with wedges or jacks give the required curve, which can be retained by bridging.—MICHAEL HAWNEY.

[5193.]—Concrete.—1. 1½ in. thick for first story and 9 in. for upper. There is some patent apparatus for building in concrete, but if the outline of the walling be constructed in stout planking, say 1½ in. thick, and connected with moveable keys, so as to admit shifting or rising every 18 in. in height, it will answer fully as well, the only care being to see that they are sufficiently stiffened to prevent the concrete from buckling them. 2. Slaty material is not as suitable for concrete as clean stone chippings to pass through a 2 in. ring, mixed with clean gravel and sharp sand. The concrete, when placed in moulds for walls, can be packed with clean spawls or refuse brick, but not to exceed two-thirds of wall's thickness. 3. To a cubic yard of concrete it would be well to have 4 cubic feet by measure of Portland cement. The cost would depend materially on the price of brickwork in the locality against the materials required for concreting. 4. I would prefer finishing the walls in a fine coat of cement, finished with a hand float, and it can have as finished a surface as required (lime plastering will not adhere to cement). The walls need not be battened.—MICHAEL HAWNEY.

[5195.]—Block and Start Quoins.—Block and start quoins are usually constructed in brickwork, but the same term applies to stone. They are the ordinary hammer-dressed quoin, the head of one breaking joint on the tail of the other, and a chisel draft worked on arras to plumb by.—MICHAEL HAWNEY.

[5201.]—Surveyors' Valuation.—"W." is informed that a surveyor can, without holding an appraiser's license, legally value, for the owner's information, property proposed to be taken, under compulsory powers, by a railway company. His valuation report need not be stamped. The license and stamp are only necessary when the appraisal or valuation is binding on any party or parties by force of law, or by contract.—L.

CHIPS.

The parish church of Spilby is about to be restored at a cost of £3,800, from designs by Mr. W. Smith, architect, of London.

All Saints Church, Alrewas, was opened on Wednesday week, after restoration of the chancel, under the superintendence of Mr. Basil Champneys.

St. Mary's, Bridgewater, is about to be restored at an outlay of £1,500.

Various alterations, including the tying-in of the front wall of the auxiliary buildings, are about to be carried out at the Rotunda Lying-in Hospital, Dublin, from the plans and specifications of Mr. F. A. Butler, architect.

The annual meeting of the Motherwell Building and Investment Society was held on Monday, when a report was presented showing that in spite of the commercial dulness of the past year, the society had prospered. Since the commencement of the society shares had been taken out to the extent of £20,675. The amount of loans on heritable security was now £4,600, and the balance of profit for the five years £578, yielding 5 per cent. compound interest per annum, and a bonus of 8½ per cent. on paid-up capital to all shareholders.

The improvement of the harbour at Boulogne is about to be taken up by the French Government, who propose to create a harbour that will admit vessels at all states of the tide. Massive walls will enclose the basin, which will be protected from the drifting sands by a jetty of wood, in addition to the present piers, 700 and 519 metres in length respectively. The scheme is to be carried out by the plans of M. Stœcklin, engineer-in-chief, and is estimated to involve an outlay of about seventeen million francs, or rather less than £650,000.

Mr. Joseph Edmund Greatorex, borough engineer of Portsmouth, died somewhat suddenly on Monday afternoon. He had held the appointment since November 5th, 1866, having been for 14 years previously borough engineer of Coventry, which city was drained under his supervision. During Mr. Greatorex's residence at Portsmouth, says a local journal, the sub-idiary drainage has been carried out, many roads and streets have been put in repair, and other works of importance devised and executed, and his unexpected demise has deprived the borough of a conscientious, painstaking, and experienced officer.

In the City of Providence, R.I., 220 street lamps, within a district over nine miles in length, are now lighted and extinguished in less than fifteen seconds by electricity, and the system is controlled by one man. After a trial of several months the practicability of the plan is assured, and if the whole of the 2,500 lamps in the city were lighted in this way, it is estimated that a net saving in expenditure for gas and labour would amount to about 25,000 dols. per annum.

Two board schools are about being erected at Llanelly, Carmarthenshire; also a school-church for the Baptist denomination, from plans prepared by Mr. J. B. Morgan, architect, Llanelly.

Our Office Table.

THE use of the various asphaltés as road pavements in London is—as we long ago predicted—being gradually abandoned. The tradespeople in Cranbourne-street, Leicester-square, who were among the first to lay it down, long ago begged that it might be taken up, carriage people finding it so slippery for their horses that they refused to go there. At last it is being taken up, and the old-fashioned granite is being substituted. Generally, however, it is the asphalté-wood paving which is preferred. For instance, only a few months ago a considerable portion of Holborn was blocked while the Val de Travers asphalté was being laid down. Since then the asphalté-wood system (which consists of a foundation of concrete, then a layer of asphalté, and then wood blocks) has been tried in Oxford-street with such success that last year's asphalté in Holborn is already being taken up and the other kind of roadway substituted. The process of laying either system is exceedingly unpleasant. The smoke and stench from the melted asphalté is suffocating, and a little while ago a householder successfully prosecuted some contractors engaged in this kind of work, the court holding that a nuisance had been proved.

THE Fine Arts Department in the city of Paris has under consideration a plan for adorning the promenades and open spaces, down to the smallest squares, in a way similar to what has been done in parts of the Park Monceau. The idea is to place, at certain distances, busts of all the historians who have left studies of the manners and customs of the capital in the great avenues, such as the Champs-Élysées, the Avenue du Bois de Boulogne, &c. In the squares will be erected statues of notable personages, provosts of the guilds, judges, soldiers, &c., of all periods who have in any way done credit to Paris. Finally, in the large spaces, such as the Bois de Boulogne, the Buttes-Chaumont, and Montsouris, groups will reproduce historical events which have occurred in the city from the most distant times to our days.

On Monday a deputation—appointed by a conference of municipal corporations, held at Westminster Palace in July last, for the purpose of obtaining grants of loans to municipal galleries and museums—waited upon the trustees of the National Gallery to ask for loans of pictures and drawings from the National Gallery, and generally to have the benefit of their co-operation. The deputation was introduced by the Mayor of Birmingham, who said that they represented 60 municipal bodies. Their first object was to obtain grants of money, and their second was to get loans, not in money, from the trustees of the British Museum and of the National Gallery. In answer, Mr. Russell, a trustee, said that the views of the deputation would be laid before the board, whose decision would be sent in writing.

THE conviction of Dr. Baxter Langley and others has, according to the *Leeds Mercury*, caused a great deal of excitement amongst the promoters of land societies in Sheffield. Considerable attention is being attracted to them, and the result is a more or less complete exposure of the system on which some of these societies are formed. The principle in starting such societies appears to be for two or three persons to select a plot of land, and to enter into a preliminary arrangement with the owners for its purchase for a certain sum. There are several instances of men who occupy respectable positions in life being subsidised to act as trustees, treasurer, and committee, and then on their names being announced steps are taken to form the society. The price at which the land is offered to the members is in some cases about double the amount agreed upon between the seller and the original negotiators. The first lots are sometimes taken up by men who have neither the means nor the inclination to follow up the purchase; and, as a rule, not more than half or three-quarters of the lots are taken up by bona fide members. What may be described as the bogus members decline to sign the trust deed. The real members, of course, sign it, and then they become severally

and individually responsible for the whole of the liabilities of the society. Until the recent conviction, and the discussion which has resulted therefrom, many of the members in Sheffield were unaware that they had incurred this responsibility; but in some cases it has been ascertained that societies which ought to have expired are still running, the members having to pay until all the liabilities are discharged. Even if members sell their plots they cannot divest themselves of their original responsibility.

THE Northfleet Brick Company is being formed with a capital of £10,000, in 1,000 shares of £10 each, for the purpose of acquiring and working a valuable leasehold property, situate at Northfleet, Kent, which contains brick earth of a superior quality and sufficient quantity for the manufacture of ten million bricks per annum, for the next ten or twelve years (with the option of taking some 80 acres additional land adjoining). The present demand for bricks is so great that purchasers have to wait for months before their orders can be executed; for the prices now ruling being at least 50 per cent. higher than those of, say, five years back, with very little prospect of a decline. It is estimated, after careful calculation, that the maximum cost of manufacturing and loading the bricks into barges will be 18s. per 1,000, and the minimum average selling price for the last five years has been, say, 25s. per 1,000, showing a profit to the company of at least £3,000 upon an annual manufacture of only ten millions of bricks. A special feature of the company is that the directors have determined to give a priority to orders for the supply of bricks emanating from members over those from non-members, and in executing orders emanating from members a priority will be given to those holding the greater number of shares. Members will also be entitled to a deduction of 1s. per thousand from current prices off all bricks purchased during the first five years after registration of the company.

THE forty-eighth election of pensioners on the funds of the Builders' Benevolent Institution was held on Thursday at Willis's Rooms, St. James's, the president, Mr. William Higgs, in the chair. There were three candidates, all of whom were elected—an event without precedent in the history of the institution, which has now been established 30 years. Including the three pensioners just elected there are now 46 recipients of the funds of the charity, 23 men and 23 women, the men receiving £30 per annum and the women £24. The names of the new pensioners are John Morris (who was a member of the committee of the institution twelve years, and also a subscriber), Mrs. Rebecca Brown (widow of Mr. John Thomas Brown, a subscriber to the institution), and Mrs. Mary Ann Ebbs (widow of Mr. John Ebbs, a subscriber to the institution from its foundation for twenty-four years).

If we are to judge by the length of time during which some of our tram-lines have been under repair, we should expect that considerable improvements have been made. In the South London tramways the metals in several places have been replaced by new and wider ones, but still fixed to longitudinal sleepers in the same objectionable manner we have before pointed out—namely, laying them on sleepers of the same width, without any footplates or flanges to break the straight jointing of the granite pitching. We shall be surprised if the same process of relaying has not to be performed again in a twelvemonth. Why are companies so slow to take advantage of improvements? Why has not the Liverpool plan been applied, of having a uniform bearing of Portland cement concrete for the whole road? There the sleepers rest on the concrete bed, the rail is of steel, weighs 60 lb. to the yard, is trough-shaped, and is firmly bolted to the concrete foundation. But, in some instances, experience teaches very slowly.

SLATES — SLATES — SLATES. — Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.
SCAFFOLD POLES, 22ft., 2s. 6d. each; 24ft., 2s. per foot; 35ft., 2s. 4d. per foot.
DEALS—BATTENS—FLOORING. — Send for price list. R. MAY & SON, Timber and Slate Merchants, Acorn Wharf, Old Kent-road, London, S.E.

STATUES, MEMORIALS, &c.

STATUE OF KING ROBERT THE BRUCE.—A monumental statue of the Bruce was unveiled at Stirling on Saturday afternoon. The work was intrusted to Mr. Andrew Currie, the Border sculptor. The statue, which is of stone, is 11ft. in height, and the king is represented as clad in complete chain and plate armour. Over the shoulders is flung a royal robe, and a plumed helmet, clasped by a crown of gold, decorates the head. The king looks towards Bannockburn, the line of the eye resting on the Borestone. Behind the statue is a Scottish shield, on which rests the crossier of St. Fillan, borne by the Abbot of Inchaffray as he signalled the troops to an act of devotion before the battle of Bannockburn began. Against the shield lies the king's battle-axe, with which he felled the adventurous Bohun. Shield and battle-axe are surrounded by plants of the Scottish thistle—the national emblem. The stone from which the statue was cut weighed seven tons, and the pedestal, which is 10ft. high and 6ft. square, is formed of 11 blocks. On the centre block, which is 4ft. in height, there is a Scottish lion in bas-relief, without support or motto.

STAINED GLASS.

HOLY TRINITY, SMETHWICK.—A window in the nave has been erected to the memory of the late W. Marshall, of Captbarn, by Messrs. Camm Bros., of 41, Frederick-street, Birmingham. The subject is taken from a favourite portion of Scripture—the conversation with the woman of Samaria: "If thou badst asked me I would have given thee that living water."—John, c. iv.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. "Architectural Notes on St. Alban's Abbey," by James Neale, F.S.A., Associate; 8 p.m.
WEDNESDAY.—British Archaeological Association. Papers by J. D. Leader, on "The Exploration of the Roman Station at Templeborough, near Rotherham," and by Dr. Stevens, on "The Recently-Discovered Roman Villa at Preston, near Brighton;" 8 p.m.
FRIDAY.—Architectural Association. Paper by J. J. Stevenson, on "Gothic Architecture;" 7.30 p.m.

Trade News.

WAGES MOVEMENT.

BOLTON.—The Bolton Trades' Council had before them at their last meeting an appeal for support from the Brickmakers' Society, Bolton, who have been on strike for some weeks in opposition to a reduction of wages in one branch of the trade. It was unanimously resolved to grant the request, and to recommend the case as deserving the support of the trades' councils of the United Kingdom.

DUMBARTON.—The carpenters' strike, after lasting for fully three months, is in a fair way of settlement. The carpenters were asked to begin work on the "piece" principle, but this they refused to do, and struck work. Lately negotiations, at the request of the workmen, were entered into with a view to a settlement. The men expressed themselves as willing to resume work if a fair scale of prices was drawn up, and the masters stated their willingness to endeavour to have this done. A scale of prices was submitted to the men, and after consideration a number of them have gone to work with the view of testing the scale.

LONDON.—There is no change in the position of affairs with regard to the masons' strike, except that more men are arriving from Germany, and the position of the masters seems to improve. The men, however, seem as confident as ever, and have issued a manifesto appealing to their fellows throughout the country for help. The rate of strike pay is well maintained, and altogether—more is the pity—the strike seems likely to last indefinitely.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the **MANAGER, Clynderwen, R.S.O., Carmarthenshire.**—ADVT.]

Holloway's Pills purify the blood, and by this operation prevent the depressing effects of cold, damp, and foggy weather. They rouse the nervous system to a healthy standard, and give a wholesome tone to every organ of the body. Holloway's Pills present the surest means of checking all chest complaints.

TENDERS.

DEPTFORD.—For the erection of a school to provide seat accommodation for 600 children, on the site in Calvert-road, Deptford, the accommodation on the 9ft. and 8ft. basis being for 638 children. Mr. E. C. Rohins, architect to the board:—

Wall Bros.	£7,949
Hook and Oldrey	7,860
Johnson, F.	7,650
Downs, W.	7,630
Wood, F. and F. J.	7,552
Thompson, J.	7,490
Pritchard, G. S.	7,418
Jerrard, S. J.	7,289
Atherton and Latta	7,284
Nightingale, B. E.	7,081
Tongue, W.	6,973
Kirk and Randall (accepted)	6,937
[Cost of site (area, 32,620 square feet), £2,975 11s.; school buildings, including teachers' rooms, closets, and schoolkeeper's rooms, £5,984; tar pavement and playground, £310; boundary walls and gates, £643; cost per head of school buildings only (calculated on seat accommodation), £9 19s. 5d.; total cost per head of buildings, including boundary walls, and tar pavement, £11 11s. 2d.]	

FAVERSHAM.—For the erection of cottages at the School Farm, for the trustees of the Grammar School:—

Davis, A.	£298 0 0
Johnson, G.	315 0 0
Ratcliffe, J. J. (accepted)	295 15 0
Whiting, R. M. and H.	343 0 0

FOLKESTONE.—For converting and finishing 2 carcasses into show-rooms and warehouses for Mr. John Banks. Mr. Burgess J. Reeve, architect:—

Payne	£1,180 0 0
Prehhlle	1,140 0 0
Brooks	1,098 0 0
Slade	1,050 0 0
Butler	989 0 0
Holdom (accepted)	960 10 0

FOLKESTONE.—For pulling down and erecting new front to the Victoria Inn for Messrs A. Langton and Co. Mr. Burgess J. Reeve, architect:—

Major and Sons	£612 16 0
Amer, A.	629 0 0
Beckey, W.	612 0 0

HAMMERSMITH.—For the construction of 2,400ft. of brick and concrete sewers for the covering and diversion of a portion of Stamford Brook sewer, near New-road, Hammersmith, for the Metropolitan Board of Works. Sir Joseph M. Bazalgette, C.E., engineer:—

Downs and Co.	£6,360 0 0
Pearson	6,340 0 0
Young, H., and Co.	5,200 0 0
Wehster	4,867 0 0
Mowlem and Co.	4,850 0 0
Williams, Sons, and Wallington	4,750 0 0
Nowell and Rohson (accepted)	4,685 0 0
Youngs, Geo.	4,450 0 0
Batch	4,400 0 0
Dove Bros.	4,333 15 9
Dunmore	3,975 0 0

MAIDENHEAD.—For block of four cottages for J. J. Britton, Esq. Mr. E. J. Shrewsbury, A.R.I.B.A., architect:—

Woodbridge (accepted)	£735
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MAIDENHEAD.—For granaries, &c., for Messrs. Gibson and Co. Mr. E. J. Shrewsbury, A.R.I.B.A., architect:—

Woodbridge (accepted)	£400
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NOTTINGHAM.—For additional warehouse, &c., to brass works, Hyson Green, for Messrs. Smith Bros. and Co. Mr. A. H. Goodall, architect:—

Munks and Richer	£1,200 0 0
Ward	1,083 0 0
Underwood	1,079 18 6
Willmot and Wray	1,014 0 0
Mosley	1,005 6 0
Wheatley and Maule	1,005 0 0
Vickers	990 0 0
Bailey	963 10 0
Scott, Henry	948 0 0
Fisher, Hutchinson, and Ashling	944 0 0
Scott, Thomas	942 10 0
Roberts and Perkins	934 0 0
Attenharrow, John	929 15 0
Slim	925 0 0
Clark, A. B.	924 0 0
Slack, Drewry, and Sykes	920 0 0
Jelley	900 0 0
Doughty	898 0 0
Bradley and Barker	895 0 0
Tutin	885 0 0
Ellis, R. and W.	875 0 0
Middleton (accepted)	850 0 0

PADDINGTON.—For alterations and additions to the Stafford Hotel. Messrs. Bird and Walters, architects; quantities supplied:—

Newman and Mann	£3,220
Temple and Foster	3,185
Lawrance, E.	3,150
Brass	3,149
Williams and Son	3,078
Mark	2,980
McLachlan and Sons	2,869
Hockly	2,830
Marr	2,816
Nightingale	2,774
Langridge and Sons	2,694
Anley (accepted)	2,670

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VERITY BROTHERS' PATENT VENTILATOR OR AIR PROPELLER for the introduction of cold or warm air into dwellings, &c.

The machine may be seen in action at their Show-rooms, 127, Regent-street, London, W.
 The apparatus consists of a drum, with a double set of fans, which are worked by a fly-wheel placed in the centre, and on the same axle as fans. The motive for this fly-wheel is arrived at by a small jet of water being directed on to it, causing both the wheel and fans to revolve with great velocity; the air passing through machine at a rate equal to 2,500ft. per minute, if desired, according to size of apparatus.
 N.B.—The above machine may be used either as an exhaustor or injector as may be preferred, or both objects combined.

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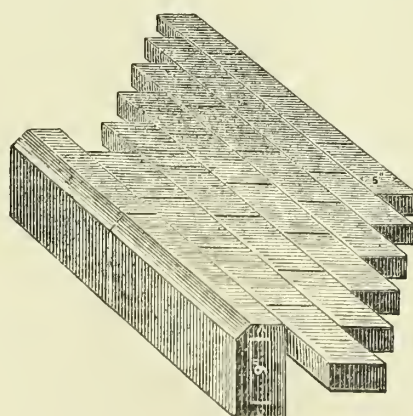
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THE BUILDING NEWS.

LONDON, FRIDAY, DEC. 7, 1877.

COMPETITION DESIGNS FOR INFECTIOUS HOSPITAL, MAIDENHEAD.

THE Town Council of Maidenhead must consider themselves fortunate in obtaining such a numerous response to their almost offensively small premiums for designs for their infectious diseases' hospital; though we cannot say they have made the best of their bargain. We find that as many as 86 designs have been submitted—some of considerable merit—but the bulk of them displaying a large amount of misdirected labour, and an utter disregard to the cost. The conditions issued to competitors were of a very general kind, and did not inform the competitors of the actual wants of the Sanitary Board. They only gave the shape and size of the land—a parallelogram, with a frontage of 328ft. to one road, and 238ft to the other; that the hospital had to accommodate 8 patients—four of each sex—with the “necessary offices;” the cost not to exceed £800. So inadequate, indeed, were the particulars furnished, that a second and amended set were furnished, giving the scale required, the materials to be used, the nature of subsoil and drainage, &c. To this cause we must assign, therefore, the different scales used by some, and especially the adoption of two-story buildings by many of the authors. It is to be regretted the Council did not make their views clear upon this and other points, as they would have saved an immense deal of thought and labour on the part of the competitors, who can now, with some justice, complain that certain conditions were not made known to them. Already we hear of much dissatisfaction on this score, and that the stipulated cost has been exceeded. We have published the mottoes of the two premiated designs, and it appears that the committee reduced the total number of plans to 29 in the first instance, and a further winnowing reduced the number to five for the final examination, and award of the Council. Last Friday week this duty was performed, with what result will be seen in the context; we fear, however, from what we have heard, the selection has not been so judicious or “above-board” as it might have been. We find that the committee selected five, in the following order:—“Fidelis,” “Serio,” “Ad Rem,” “Light and Air,” and “Economy.” After a long discussion this order, for doubtful reasons, was altered; “Ad Rem” was proposed by a member, and seconded by the Mayor, as the first in order of merit, and after a good deal of talk, “Serio” was placed next, though its merits, and those of “Light and Air,” “Through Ventilation,” “Fidelis,” and “Economy,” were warmly commended. The following are the list and names of the authors:—“Ad Rem” (1st premium), Mr. E. J. Shrewsbury, of Maidenhead; “Serio” (2nd premium), Mr. Ernest Turner, 44, Bedford-row, London; “Economy,” Mr. H. W. Beale, 21, Queen-street, W.; “Light and Air,” Mr. Joseph Brownlow, Liverpool; “Fidelis,” Messrs. Thicke and Pilleau, Great Queen-street, Westminster; “Thorough Ventilation,” Messrs. H. Cooper and Son, Maidenhead.

Let us here take the plans in this order, and examine them; and we may mention that the two-story buildings were eliminated in the final selection. “Ad Rem,” by Mr. Shrewsbury, has a parallelogram-shaped plan, with the wards at each end slightly advancing, a central entrance and longitudinal corridor giving access to the wards at ends; a kitchen on one side of entrance, and matron's bedroom on the other; while behind there are two end

convalescent wards, with adjacent w.c.'s, scullery, and bath room. The wards are 18ft. by 13ft., with three beds in each, besides the convalescent wards behind them, 13ft. by 9ft., for one bed each. We observe that there is only one end window to each ward, and consequently no cross ventilation; the beds are ranged along the side wall, and the author gives to each bed 78 square feet of floor, or 858 cubic feet; in the small, or special wards, 113 square feet are provided, or 1,243 cubic feet, though we are at a loss to know why the larger wards have less space given to the beds than the single-bed wards. For infectious wards, 1,000ft. or 1,200ft. cubic space is not too much per bed, though the author says in his description, that the dimensions are in accordance with Dr. Swete's opinion, and that the minimum standard is 800 cubic feet for country hospitals, and 72ft. floor space for each patient. The average given by the author, 954 cubic feet, includes both his large and small wards, and is, therefore, not a fair one. Another point we notice is that the w.c.'s are not close to the large wards, but near the smaller ones, and the corridor has to be crossed to reach them; there are no nurses' rooms near wards, no wash-house for foul linen, and the pantry, to our mind, so near a w.c. is not desirable. Earth closets are recommended very justly in these questionable positions, and mansard traps with air pipes. The vertical plan of ventilation is also shown, and the calorifer or Galton stove is suggested. In external design there is little to commend; there is an impoverished look about the Gothic and the small dormer over front kitchen is inadequate. The roof treatment and proposed means of extension are open to objection, both on the plea of ventilation and roofing. Stock bricks for the walling, with red dressings and tiled roof, are shown. The estimate is summed out at 7d. per foot, which, at 28,271ft., the total cubic capacity stated, equals £829 11s. A mortuary is shown as an adjunct at one end—this is certainly an excrescence. The design with motto, “Serio,” by Mr. Ernest Turner, of Bedford-row, while avoiding all the objections we entertain towards “Ad Rem,” exhibits a more satisfactory solution of the problem. The wards at end are more isolated, three parts of their enclosing walls are free; they are lighted, both at the ends and sides, between the beds. The earth closets and lavatories form adjuncts at the rear ends, with isolating lobbies, and sufficient space is given for four beds to each; nurses and assistants' rooms adjoin the wards, and have inspection windows, and the administrative department, containing a bath-room, kitchen, laundry, and cellar, is central, the latter apartments being thrown out behind. Matron's and nurses' stores are located also in a central position in front, with dormitories over for laundry woman. Two entrances, one on each side of centre, are shown, and the whole plan exhibits a careful study of the requirements necessary for pathological treatment. The author shows how 12 beds can be obtained either by front or back extension of wards, or 16 beds by both these means. A floor space of 100ft., or a cubic space of 1,290 feet per bed, is given, each ward being 22ft. by 18ft.—not too much, in our opinion, for infectious cases—while the windows have casements to fall inwards at the top, thereby deflecting the currents upwards, and preventing draughts—a plan which has been adopted in large hospitals with marked advantage. Vertical inlets or tubes for fresh-air admission and foul-air extraction, combined with ventilating stoves, are proposed. Earth closets in country hospitals with no drainage system are strongly to be preferred; these, we find, have been recommended, and the slops got rid of by a process of filtration through

agricultural pipes, laid just below the soil, in connection with a flush or precipitating tank. There is one omission, that of a convalescent ward, should such be found desirable. A disinfecting chest is recommended, and the foul linen can be taken from the wards by separate doors at the ends—a very desirable point. Externally we have a pleasing brick treatment, with gabled front. The author, in his description, calls attention to the gravel on the site, and suggests that cement concrete would be a very desirable material for the walls—a suggestion we think well worthy the attention of the Board, as no material would offer greater sanitary advantages than concrete. On the whole we consider “Serio” to be an economical plan. Its administration has been studied in reference to the requirements and saving of labour in a small hospital; the kitchen offices are concentrated, and not too far from wards, and the sanitary arrangements are more perfect than many others. “Through Ventilation,” by Messrs. H. Cooper & Son, is another clever plan, being a simple T-shaped arrangement; the administrative entrance block being the upright part of that letter, and the wards the horizontal cross part. But the leading point of the plan is the isolation of the two blocks by a wide passage or covered way, the matron or nurse being located at the end of the administrative block near the wards—rather too far, perhaps, from her work. The advantage of this passage of disconnection is that the foul linen can be taken direct out of wards, through passage, to the wash-house, which is at one end of the infectious block. Convalescent wards are provided between the main ones, the earth closets and bath-rooms are at the ends, and the arrangements are fairly complete. There is a verandah entrance at the north end of the administrative offices, a surgery on one side. The plan certainly indicates a knowledge of hospital requirements, and we must unhesitatingly give it a preference to the Council's choice. The elevation is of simple but common-sense character, the windows are plain, and there is some effect in the plain walling and channelled tiled roof of the blocks. We find hollow walls have been provided, which we think almost a necessity if brick is chosen as a material. We next come to “Economy,” by Mr. H. W. Beale, a very compact plan, with semi-detached wards at ends, having good cross ventilation, and central administrative offices which extend backwards. The wards are each 35ft. by 13ft. 6in., the beds being placed along one wall; they are entered from the centre lobby or entrance. We find the author has fitted the nurses' room with a cooking range, so as to answer the purpose of a kitchen. The w.c.'s are arranged at the angles between wards and central offices, and there is a large yard behind both the male and female wards. There is considerable compactness and economy in the arrangement, and the lengthwise disposition of the wards gives all the advantages of the pavilion system. “Light and Air” possesses some good points; a similar arrangement of wards to the latter has been adopted, but the offices want concentration. Mr. Brownlow, of Liverpool, is the author. “Fidelis,” by Messrs. Thicke and Pilleau, show wards for two beds each at ends, with single wards arranged between, the dimensions of each being 11ft. by 9ft., but the bed in corner is not desirable, and necessitates increased labour. There is a centre entrance, with kitchen behind; the communication between the offices and wards can hardly be pronounced economical, and the kitchen opposite entrance is scarcely desirable. The elevation is poor.

Let us now take some of the other designs. “Accomplish” shows the semi-

detached pavilion plan, with centre offices; the beds are ranged along one wall, with windows on each side, affording cross ventilation; the bath-rooms, lavatories, and w.c.'s are placed at extreme ends, and the kitchen and surgery in centre, behind the main cross corridor, are well located. The nurses' rooms, one on each side of centre entrance, with window overlooking ward, is a good feature, but we see no wash-house. "Choose well, your choice is brief yet endless," is the well-advised motto of a plan possessing some merit, but too costly. The wards are placed transversely with the front at ends, attached to the administrative part by corridors. Good cross ventilation is insured, and the type of arrangement is admirably suited for a large hospital of the class. The wash-house is detached; style is Gothic, and not worthy of the plan. "A. B. C." is a clever two-storied arrangement, the wards being placed side by side, the w.c.'s thrown out at the back as a projection in the centre, and with central stairs and communication. The drawback of this plan is that cross ventilation is not insured, though compactness is attained. The designs with motto "Health," by Mr. Galsworthy Davie, possess features that place them above the average architectural treatment, and if the plan had been less expensive, and its administration more simple, this design would have higher claims. The wards are planned on the separate principle—an excellent one for some cases, where separation is necessary. We see two wards made double-bedded rooms, and the others single. Of course the desirability of such a plan depends on the diseases likely to be treated as special cases. We like the octagon-ended wards of the one-story arrangement, and we prefer this to the alternative sent, showing two stories. The drawings are well got up and pleasingly tinted. An ingenious plan is that of "Pro Bono Publico." The wards end to end form a pavilion with a partially projecting nurses' room between, so that the nurse can have her eye upon the wards. Earth-closets, &c., are at the extreme ends; the beds are arranged two on each side. Perfectly isolated and at some distance is the office block, joined only by a covered way. For a small country hospital this isolation is hardly necessary, and is too costly in the administration. A space of 2,000 cubic feet is given to each patient. The elevations are commonplace, of the workhouse type. "Well Considered" is certainly a clever arrangement; the author puts his wards lengthwise, at the ends of each being a spacious verandah for convalescent patients, obtained between the angular buttress-like projections of the latrines. The offices are in the centre, and the nurses' rooms are well-placed to command the view of their respective wards at the angles, but the offices in rear are a long way from wards. The drawings are well studied, but embody a too costly scheme. "Vite" is another ingenious idea on the radiating principle, but poorly worked out. Under the motto "Westminster" is a two-story simple pavilion plan, showing semi-isolated wards placed lengthwise with bath-rooms, &c., at one end and attendants' room at the other, forming a slight projection J-shaped, and commanding the ward. The latter is fitted with range and boiler, and at the side is a staircase with matron's room behind. The arrangement has economy in its favour. A very thoughtful plan on the isolation principle is "Cross and Compasses" in circle. Its author has detached his wards, which form a simple parallelogram on plan from the kitchen and stores, but has well placed the matron and nurse between the wards, into which they have windows of inspection. The wards are 24ft. square, and the beds ranged two and two on opposite walls. A

covered way connects the kitchen offices. Design No. 2 shows the kitchen and matron's room in centre of the pavilion, with nurse and lavatories at ends. "Pour les Malades" has a well-conceived disposition on the pavilion plan, and entrance between the wards and offices, with special wards. The elevation is simple, and the plan economical. "Sanitas" shows detached blocks of cruciform arrangements, appropriated for men and women, the wards being placed endwise, with nurses and latrines arranged as projections. The nurses' and receiving rooms are well placed. "Efficiency and Economy" is an arrangement on the isolated plan, with three detached blocks, with the administrative building between the two wards. The expense of administration would be fatal to this plan. Mr. T. Ezard, of Camberwell, sends a compact scheme, but wanting in the convenient proximity of wards and offices. The author divides his accommodation into two bed-wards of two stories. Many other designs claim notice. "Romulus and Remus" is a costly long corridor arrangement, with indifferent elevation. "Light is Life" provides plenty of that element, but the plan necessitates costly administration; there are two stories over centre for matron; the elevation is too broken up. "Spes" is a clever side-by-side arrangement of wards, lacking cross-ventilation, with the administration at one end. There are two entrances, a convalescent room, and the elevation is neat and shown in a crude ink sketch. "Isolation" shows a complete but complex arrangement of administration; the wards are planned for two beds each, and there is no cross ventilation. "Red Cross," two large end wards and centre offices, the author detailing a mode of ventilation showing fresh-air inlets with foul-air pipes in ceiling, with dormer windows breaking into wards—an expensive treatment. Among other designs we may name "Santé," a two-storied, bright-coloured design, more like a villa; "Do as you would be done by;" "Hygeia," straggling plan, with picturesque exterior; "Square and Compasses," expensive single wards; "Chandos," an ill-studied plan, but with effective elevations, and possessing germs of success; "Veritas," more house than hospital like; "Try;" "Placetne," too like a semi-detached cottage; "Cornstalk," a plan of the conventional type; "Virgo," a right-angle arrangement, with end wards; "Nihil sine Labore," a radiate but costly plan; "Triangle in Circle," costly and scattered; "Fiat," "Nemo," "Endeavour," "Sick and ye visited Me," "Lycurgus," and "Hôtel Dieu."

From what we have said the plans fall into two general classes. We have the "isolation" and the semi-detached pavilion plan variously treated, and it is for the Council to determine which is most suitable to their wants. It may be considered as of primary importance that the staff should be small, and consist, at the utmost, of a matron (who would have a general control of the administration), a nurse or two (who would attend to the patients), and a general assistant or laundry-woman, who would also clean the wards. Sleeping accommodation would be required for the matron, nurses, and general servant. One of the obvious difficulties is to combine the sanitary wants of an isolated ward with the necessary administrative capabilities, to reduce the amount of labour to a minimum, and to bring the wards within easy reach of the nurses, the kitchen, and stores. Then the washing-room or laundry requires to be detached, or quite separated. It is evident that the isolation plan, while excellent in itself, does not admit of easy communication. On the other hand, the combined or semi-detached pavilion admits of all the advantages of the isolated system, with better and more economical administration.

From our comments it will be seen that we consider the committee have not selected the best design for execution; that "Serio" has higher claims, and that the committee might have included in their selection a few other designs possessing the requirement of an infectious hospital to a greater extent than the one accorded the highest honour. But, from what we have seen and heard, party interests run very high at Maider head, and despite some very excellent plans the Council have, it appears, made up their minds to sacrifice to personal motives their intelligence as a sanitary authority and the interest of the public. We understand that the letter accompanying the design awarded the second prize was not even opened at the last meeting. In this case we consider the Corporation should have been particularly anxious to avoid miscarriage of justice, as their premium were no bait, the requirements they published were inadequate, and competitor very justly thought that at least an honour decision would be their reward. We understand another meeting takes place this day (Friday).

REAL AND MANUFACTURED ORNAMENT.

THAT superfluity of ornament covers a multitude of defects may be accepted to be as trite a maxim as any dictum of the moralists. "Assume a virtue if you have it not," seems to be a modern precept of art among that large class of architects and artists who appeal to an impressionable public rather than to a cultured taste. There is a far too prevalent notion that art is merely skin-deep. It is a comfortable notion, exceedingly agreeable, and quite in unison with the commercial spirit. A house or a shop front, a piece of furniture or a book-cover commands, other things being equal, an appreciable increase of value in the market, if it have a little embellishment beyond its unadorned competitor. Speculative builders, furniture-makers, and manufacturers generally, find a little carving, colour, gilding, or embossing highly remunerative, and often that an inferior article pays better for the gilt. Utilitarian as the Englishman is, he is obliged to acknowledge the supremacy of that innate love of ornament that seems as keen a sense with the primitive savage as with civilised nations. Notwithstanding the fact, established by the philosopher, that in order of time decoration has preceded dress, and that the idea of adornment has predominated over that of use, we have yet in our advanced age to account for the continued power of the art that still administers as keen a pleasure to the civilised being of the present day as the tattooing with bright pigments does to the Orinoco Indian. It is only when we seek a little deeper that we discover the distinguishing test that separates the simple sense of children and savages from that of educated men. The ornamentist soon perceives the preference of the first for strong stimulants and bright colours, and of the latter for subdued tints, neutral colours, and avoidance of harsh contrasts. Watch the attention of the masses of our sightseers in street pageants and our picture galleries, and mark the admiration bestowed on brilliant costumes and tawdrily-coloured paintings. It is art instinct of a low type. Not so easy of discernment is the difference between the appreciation of bad and good architectural ornament. It is not a test of bright colour or strong contrast, but rather a discrimination between the kind and degree of ornament employed and a just or excessive use of it. It is a question of motive, quantity, as well as quality. The subordination of ornament to structure is a condition of its employment that is painfully disre-

rded. If we look at a piece of furniture say, a modern sideboard or pianoforte, we find in ordinary cases the carving either the wrong place or so diffused that we see entirely the meaning of the work. Its lines are so twisted and convoluted that we are forced to take cognisance of the ornament first, and afterwards of the use or purpose of the furniture. The evil has partly sprung from the use of manufactured and composition ornament, or the application of the "stuck-on" principle which has become so general in some classes of manufacture that the art workman uses it with as much complacency as the victualler adulterates food. Ornamentation may be broadly distinguished as structural, superficial, and poured ornament. The first belongs to the architect *par excellence* and its honesty and thoroughness are the first consideration. As Pugin remarked of architecture, there is a wide difference between decorative construction and constructed decoration. The latter is the system of the manufacturer of a meretricious art, the former that of the architect. It is necessary, also, to understand that there is a great difference between "ornamented" and "ornamental" construction. The former is the system which not long ago was seriously promulgated by a professor of art at the Architectural Association. It means simply this: To get an engineer to design a bridge or a structure of any sort, and then let the architect add ornament thereto in any way consistent with it. Now we believe this is a very common idea among some members of the profession. It is, at any rate, the idea most in favour with the manufacturing decorator. It is a facile, expeditious, and costless way of designing. It is the speculative builder's idea of architecture. Our American cousins carry this system to extremes. We lately had a thick folio sent us from a well-known Philadelphia firm under the ephemeristic title of a "Manual of Architectural Sheet Metal Work." Many of our readers will smile at the name, and will be curious to know its contents. Well, the work in short gave rules and tables to estimate and design every part of an architectural building from basement to roof—door and window dressings, cornices, pilasters, and every architectural ornament in sheet metal, manufactured to every conceivable style—by the K—Cornice and Ornament Co. Here the architect has at his hand a complete assortment of brackets, balconies, trusses, window architraves and cornices, mouldings, friezes, pediments, dormers, crown mouldings, crestings, &c., from which to pick and choose at his discretion. The book further gives him means and tables to estimate to a nicety every form and size of feature he may require, and supplies details, and a profusion of illustrated examples, to aid him. To give an example: An architect wants a main cornice; he selects a type, prepares an elevation and plan to scale, giving the heights and projections of the various members. Upon these the manufacturer identifies the different parts and ornaments, the brackets, modillions, and frieze pieces, and writes the names of the mouldings, numbering them for reference, the said numbers representing the profiles (stays as they are called in manufacturing parlance) kept in stock. Usually, however, the manufacturer supplies these drawings himself, and they are sent with a shipment of the goods. But there is another drawing prepared of a section of the cornice, and our readers will be interested to know that these cornices are supported by brackets or frames from the wall called "look-outs," and that the said section is, therefore, in American terminology, a "look-out section" or profile. In fact, a cornice of this sort bears considerable likeness to a wooden shop cornice

among ourselves. The look-outs or brackets are usually of wood, to which the galvanised iron mouldings are fixed, but large and fire-proof cornices are constructed upon bar-iron supports and braces, which give the general contour. The mouldings of sheet metal are attached by means of button-headed bolts, and modillions are attached by riveting. Anchors or ties passing through the wall, their ends bent down for a fastening, secure these metal supports and the centre cornice. Thus it is our Transatlantic brethren construct the ornamental features of many of their buildings, and thus it is the workman "puts up a cornice." Much is left to the discretion of the factory, and the forms and profiles are often varied to meet the mechanical requirements of the manufacturer. The architect often sends his elevations, or copies of them, to the factory, and the detail is entirely left to it. To select a few of the structures of recent erection of sheet metal work, we may name the New Court House, at Van Wert, Ohio (1875), entirely covered with metal ornament: in fact, we are informed the whole exterior finishing, from basement upwards, is of galvanised iron, with pressed zinc trimmings. Our readers will be amused to hear that these include string or belt courses, quoins at angles, window dressings, main cornices, balustrade, dormer windows, and mansard roofs. The walls are of pressed brick. We are told with amusing *naïveté* that the quoins are constructed "of cushion-pattern crimped iron, presenting a close appearance to cut stone," that the sheet-metal work is painted and sanded, and cannot be told from one of stone. We are further informed that the critic will find nothing lacking in stability, solidity, or durability, while the taxpayers of the country have an edifice of which they are justly proud. At Erie, Pennsylvania; Baltimore, New York, and many other towns the same species of ornament is used. We feel, however, that the sentiment above expressed will not be shared by our countrymen. We have here, at least, an instance of ornamented construction. At home we find numerous examples of this same kind of art—perhaps not so glaring and honestly-avowed, but still quite as pernicious. It is for architects to show the public the difference between good and false ornament, to show the dishonesty of cast cement and composition enrichments by contrast with well-conceived ornament. If we designed ornamentally—that is well, simply, and gracefully—we should soon give a tone to our work. The popular mind would immediately discern the difference between the real and counterfeit coin, much as it can now distinguish between gold and tinsel. Let it be once understood that all structural ornamentation is simply the correlative of building, or, in other words, the art of structural expression—that it really implies building in its right place in the same manner as we speak of good composition as writing with elegance, in which the rules of logic, syntax, and rhythm are observed, and we shall do much to dispel the false and popular notion that ornament is something added. It is this superfluous idea of ornament that has placed ornament in so low and false a position. Such a thing as manufactured ornament should be an impossibility. When we turn to the other kinds of ornament named—the superficial or surface, and the coloured—there is perhaps less evident connection between it and structure. We have no room here to lay down the limitations that should be imposed with regard to this species of ornamentation, though Ruskin's idea has always impressed us as embodying the correct principle—namely, that where the eye can rest there we may decorate. It would be almost supererogation to say that the violation of this principle is the general

cause of failure. Look at the speculative builder's gimerack embellishments; see where he places his carving, and incises his ornament, not on plain wall surfaces above the level of the eye, but on his window lintels, and round his arches—everywhere, in fact, but the right place. Paraphrasing a well-known motto, we may define true ornament to be form in its right place, while manufactured ornament is decoration out of place.

MECHANICS OF ROOFING.

IN the construction of roofs a great variety of mechanical problems have to be solved, the peculiarities of which depend on the particular arrangement of the several parts forming the truss. In all these problems it is essential to consider carefully how the pressures act at different points, and also the kind of force which each part will be required to resist. When these have been determined, their solution becomes an easy matter to any one who is familiar with the elementary mechanical principle known as the "triangle of forces." The following simple form of roof, which is a common one in practice, affords a good illustration of the application of this principle.

A sloping rafter, A B V, of a roof, whose vertex is at V, rests upon a wall at A, and on an intermediate support at B, being uniformly loaded throughout its length. It is required to find the relations between the several forces called into action.

In this case we shall consider that we have two distinct problems to solve, since we may treat the two portions, A B and B V, as separate structures, by supposing that the rafter is not continuous, but is divided into two parts at B, each of which rests on the top of the support at B.

In the first problem, which relates to the part B V only, we have the load, L, acting at M, the middle point; the re-action, T, at V, which acts horizontally, whether pressing against a wall or against a corresponding rafter on the opposite side of V; and for the third force the re-action at B, which must be in the direction of B N, meeting the directions of T and L, in the point, N; for when three forces are in equilibrium with each other, they must all meet in one point, by the principle of the "triangle of forces;" and they must also be proportional in effect to the sides of a triangle, which are parallel respectively to their several directions. If, then, we take N K to represent the load, L, we shall have B K representing the horizontal thrust, T at B, or the reaction at V, and B N the magnitude and direction of the reaction and pressure at B. The whole of the load, L, represented by K N, will act vertically on the support, B, but in consequence of the slope of the rafter, a horizontal thrust, T, is introduced at B, and the force, B N or S, will represent the resultant of T and L. If, then, a strut, B X (as in a curb-roof), is fixed at B, in the direction of the resultant, N B, produced, it will take all the load and thrust of the part of the roof from B to V, and there will be no pressure whatever on the upright support, B I. The force, S, will then be the compression down the strut, B X. The relative proportions of the forces, S and T, to the load, L, can thus be determined by drawing a simple geometrical figure; and also the exact direction in which the strut, B X, should be placed will be found at the same time. If θ is the angle of inclination, M B K of the rafter to the horizontal, and α that of S or B N to the vertical, we can calculate accurately by trigonometry the relations between θ , α , T, S, and L. For we have:—

$$\frac{L}{T} = \frac{K N}{K B} = \cot. \alpha = \frac{2 K M}{K B} = 2 \tan. \theta,$$

from which we obtain—

$$\tan. a = \frac{T}{L} = \frac{\cot. \theta}{2}, T = L \tan. a = \frac{L}{2 \tan. \theta}$$

$$\frac{S}{L} = \frac{1}{\cos. a} = \sec. a = \sqrt{1 + \tan. a^2}$$

$$= \frac{\sqrt{4 + \cot. \theta^2}}{2} = \frac{\sqrt{4 \tan. \theta^2 + 1}}{2 \tan. \theta};$$

$$\therefore \frac{S}{T} = \sqrt{4 \tan. \theta^2 + 1}.$$

From these relations we can form a table of the corresponding values of a, T and S for any given angle, θ , and given load, L. If we put L = 1, then the figures in the fourth and fifth columns of Table I. will represent the proportionate values of T and S.

TABLE I.

θ°	tan.	a°	T : L	S : L	S : T
14°	.25	63½	2.00	2.24	1.12
18½	.33	56°	1.50	1.80	1.20
26½	.50	45°	1.00	1.40	1.4
30½	.58	45	.87	1.30	1.5
37	.75	33½	.67	1.20	1.8
45	1.00	26½	.50	1.12	2.2
51	1.25	22°	.40	1.08	2.7
56	1.50	18½	.33	1.05	3.2
60	1.75	16	.29	1.04	3.6
63½	2.00	14	.25	1.03	4.1

From the above table we see that when K M is ¼ B K, or θ is 14°, the horizontal thrust, T, is equal to twice the load, L, upon the rafter. And when K M equals K B, or θ is 45°, the horizontal thrust is one-half of the load.

The second problem relates to the load on the beam, A B, which rests upon the two supports, A and B. In this case, the reaction, R, at B, must be perpendicular to the rafter, A B, since it rests on the top of the support at B. We have, then, as before, the load, W, acting vertically at C, the middle of the rafter; the reaction, R, acting at B, in the direction B D, at right angles to B A; and for the third force the reaction, R' at A, which must meet the other two forces in one point, D, in order that they may be in equilibrium. The line, A D, is, therefore, the direction of the reaction of the wall at A, and also of the thrust upon the wall at that point. Drawing C E parallel to B D, we have a triangle, C E D, whose sides are severally parallel to the three forces, R, R', and W, and, therefore (by the "triangle of forces"), these forces must be proportional to the sides of the triangle respectively. Taking C D to represent, on any scale, the given load, W, we can at once ascertain the relative values of R and R', by measuring the lengths of C E and D E on the same scale. The horizontal line, E F, will also represent the magnitude of the horizontal thrust at B and Attending to push out the two supports in opposite directions. If a strut, A Z, is placed at A in the direction of D A produced, it will take all the thrust, R', acting upon the support, A. The point, F, divides the line, C D, into two parts, C F and D F, which will represent the vertical pressures, Q and P, upon the supports at B and A. It is evident, from the geometry of the problem, that C F and D F can never be equal, except when A B is horizontal, and their difference increases with the increase of the angle of inclination of A B to the horizontal. The statement made by some writers that the pressure on the two supports is the same as in a horizontal beam, is, therefore, incorrect, and liable to lead into serious error when the angle of inclination is considerable.

As in the first problem, the relations between the angles and forces can be calculated by trigonometrical analysis. The angle, B D C, is equal to the angle, B A I,

or θ ; and the angle, E C D, is also equal to θ , since C E is parallel to B D. Let the angle, A D C, or Z A P, which the direction of R' makes with the vertical, be called ϕ ; then the angle, A D B, is $\phi + \theta$, and the angle, C E D, is $180^\circ - (\phi + \theta)$. Let P be the vertical pressure at A, Q the vertical pressure at B. We have then

$$\tan. (\phi + \theta) = \frac{A B}{B D} = \frac{2 B C}{B D} = 2 \tan. \theta,$$

from which we get—

$$\tan. \phi = \frac{\tan. \theta}{1 + 2 \tan. \theta^2}$$

And since the sides of a triangle are proportional to the sines of the opposite angles, we have—

$$\frac{R}{R'} = \frac{E C}{E D} = \frac{\sin. \phi}{\sin. \theta}, \frac{R'}{W} = \frac{E D}{D C} = \frac{\sin. \theta}{\sin. (\phi + \theta)}$$

$$\frac{R}{W} = \frac{E C}{D C} = \frac{\sin. \phi}{\sin. (\phi + \theta)};$$

$$\therefore R' = W \frac{\sin. \theta}{\sin. (\phi + \theta)}$$

$$\text{and } R = W \frac{\sin. \phi}{\sin. (\phi + \theta)}$$

Let H be the horizontal thrust at A and B, represented by the line E F; then

$$E F = H = R. \sin. \theta = R'. \sin. \phi$$

$$= W \frac{\sin. \theta \cdot \sin. \phi}{\sin. (\phi + \theta)} = \frac{W}{4} \sin. 2 \theta.$$

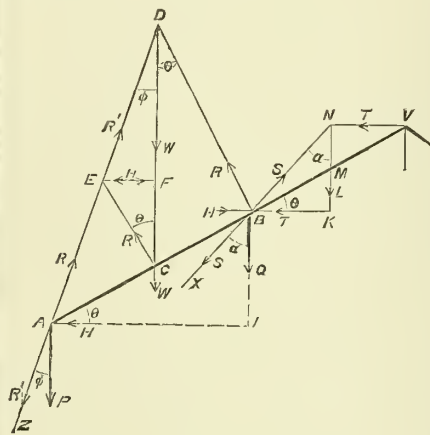
Also, since P and Q are represented by the lines D F and C F, we have—

$$P = D F = R'. \cos. \phi = W \frac{\sin. \theta \cdot \cos. \phi}{\sin. (\phi + \theta)},$$

$$Q = C F = R. \cos. \theta = W \frac{\cos. \theta \cdot \sin. \phi}{\sin. (\phi + \theta)};$$

$$\therefore \frac{P}{Q} = \frac{\sin. \theta \cdot \cos. \phi}{\cos. \theta \cdot \sin. \phi} = \frac{\tan. \theta}{\tan. \phi} = 1 + 2 \tan. \theta^2.$$

Also, $P + Q = W.$



By means of these formulæ we can ascertain the relations existing between all the forces and the angles for any given values of θ and W. Table II. shows the relative values of P, Q, and W, and the inclination (ϕ) of the thrust R' at A, which have been calculated for several values of θ . For the benefit of those of our readers who are not familiar with trigonometrical symbols, we may remark that by "tan. θ " is meant the ratio of B I to A I, or of B C to D B, or of E F to F C.

TABLE II.

θ°	tan. θ	ϕ°	P : Q	P : W	Q : W	H : W
14°	.25	12½	9 : 8	9 : 17	8 : 17	.12
18½	.33	15°	11 : 9	11 : 20	9 : 20	.15
26½	.50	18½	3 : 2	3 : 5	2 : 5	.20
30½	.58	19°	5 : 3	5 : 8	3 : 8	.22
37	.75	19	17 : 8	17 : 25	8 : 25	.24
45	1.00	18½	3 : 1	3 : 4	1 : 4	.25
51	1.25	17	4 : 1	4 : 5	1 : 5	.244
56	1.50	15½	11 : 2	11 : 13	2 : 13	.23
60	1.75	14	7 : 1	7 : 8	1 : 8	.22
63½	2.00	12½	9 : 1	9 : 10	1 : 10	.20

From this table it will be seen that when B I is half A I, or the angle θ is 26½°, the vertical pressure on A is half as much again as that on B; and when B I equals A I, or the angle θ is 45°, the vertical pressure on A is three times that on B; and for $\theta = 60^\circ$, P is seven times as great as Q. In fact, the pressure on A increases with the angle of inclination until the rafter becomes vertical, or $\theta = 90^\circ$, when it is evident that the whole weight is carried by the support at A. On the other hand, the difference between P and Q decreases as θ gets smaller and smaller, until they are equal, when θ vanishes, or the beam, A B, is level.

Combining the results of the two problems we find that the total vertical pressure on the support at B is Q + L; while the total horizontal thrust at B is the difference between T and H. If T is greater than H then there will be a horizontal thrust equal to T - H conveyed down the rafter, B A, and to be added to the horizontal thrust, H, already acting at A; consequently the total horizontal thrust at A will be H + T - H, or T; and the direction of the reaction at A will then be that of the resultant of the vertical force, P, and the horizontal force, T, the lines representing the two forces being of course measured upon the same scale of parts.

THE NATIONAL ART AND INDIVIDUALITY OF IRELAND — MR. GLADSTONE'S VISIT.

TWO not a little remarkable "expressions of opinion," by very eminent men, have but just been given to the world, and as they both of them involve the most important and vital of art principles, we cannot but think that the readers of this journal may feel interest in them, and, maybe, in a passing comment on them. We allude to Mr. Gladstone's pleasant talk about Ireland, and the "impressions" the things and doings there, artistic and otherwise, have made on him, even, as he says, beyond his expectations. The other is a more distant matter, certainly, but not the less important—that of the *résumé* of the impressions produced on Professor Monier Williams by a second tour he has made in Southern India. To our mind, these subjects, and such as these, have, and always have had, a peculiar interest, not alone for their strangeness and uniqueness, and from the fact of our knowing so very little indeed about them, but from the still more weighty fact of their being the artistic expression—for we confine ourselves here to art matters, though it be a little difficult to avoid wandering into bye-ways sometimes—of the national art-feeling of those by whom the special art and architecture have been produced. In the past, if not in the present, there can be no doubt that the individuality of thought and method of work of the Irishman and the Hindoo accomplished things distinct from all else, and worthy of attentive study, as quite separated and distinct expressions.

And first, then, of Mr. Gladstone's "impressions" of Ireland and Irish individuality. If India be somewhat too remote and out of the way to excite much, if any, of what may be termed homely interest and British sympathy, this cannot be said of Ireland. Ireland and England are as close to one another as two separate things can well be, and it is the fact of the individuality of Ireland—though so near—which seems to have made so strong an impression on Mr. Gladstone, and which makes his visit to it remarkable, and of note beyond the mere novelty of it and the excitement of the passing moment. Not quite so much note of this visit to Ireland, and the seeing it for himself, by the late Prime Minister, has been made as, perhaps, might have been

expected, for he has evidently seen what he never saw before, and never expected to see, or to have any experience of. What is this? That the things of Ireland and the art of Ireland are different from what they are here, and that they admit, as he says, of improvement—but improvement in an Irish way, and not in ours. In short, that Ireland is an individuality in the world. More no man can possibly say. It is, he says, impossible to speak on Ireland without some reference to its own history, both in the past, the present, and the future. "The beauties of Irish scenery are such, and the interest to be found in Irish antiquities are so profound and comprehensive, that I must say they entirely surpass my expectation." These are Mr. Gladstone's express words, and are, as it seems to us, full of emphasis.

It is really wonderful to note how little, considering the nearness of Ireland to ourselves, we know of it. Of Irish fine art or architecture how little, when going into details, we can be said to know, and how impossible, indeed, it would be, without the going to see it each one for himself, as Mr. Gladstone has done, the work *in situ* as it is! Of the Irish Gothic in out-of-the-way places, and unrestored, we know absolutely nothing. More is actually known here of the "stone age" era in Ireland than of the works of whatever date of her native Gothic architects. What we do know a something about is, of those buildings in the principal towns which have been restored and more or less adapted to the special wants of the day, and which are, indeed, English additions—or at least imitated from forms to be found here. Mr. Gladstone was struck with the beauties of Irish landscape scenery—not to compare it with landscape to be found here, and thus through it to see Irish nature—and with Ireland's antiquities and indigenous architecture, and could not but see in them a something different and quite distinct from what is to be found on English ground. It is to this distinctive art, architecture, and antiquities that we would call attention, for their own sake, and on account of their own special and national merits and individualities, and from the fact of their having made the impression they did on Mr. Gladstone's mind as Irish work *per se*.

It is very difficult, if not impossible, to put clearly and distinctly before the mind's eye of any one who does not actually see it, the precise character of an art-work, be it what it may—a picture, a statue, or a building; still less may be the details of one; and it is in the details that the Irish architects of past days at least accomplished so much that makes their work alike admirable and peculiar to themselves. It is to be seen conspicuously in the Round Towers, though the way in which they are built, as far as the walling is concerned, is at times of the roughest. Sharpness of outline, accurate balance of the different parts, fineness of drawing in the mouldings, where they exist, and a fine discrimination and keenness of eye, go to make up the perfection of the whole work, whatever it may be, insignificant as some may think it who have not studied such work with due and sufficient care. It is this which has given to the Greek work itself its all but incomparable place in art and architecture, and which has, though in many cases unconsciously, found to be the all-attractive element in it. It is the final triumph of art-skill—the artist-architect can go no further, and it is, though but nowadays all but unthought of, that supreme quantity in architecture which raises it and its production to the rank and level of sculpture and painting.

We might note here some of the antiquarian specialities of Ireland—objects not to be found elsewhere, and, even if found in other localities, in far distant ones.

There is the mysterious monument at New Grange which finds a counterpart in distant Mycenæ of antique days, and which would seem to connect the two countries together in some way or other—the old sea voyagers going farther and doing more than we, perhaps, now give them credit for. Was this the work of the native Irish of that distant day, or was it not? Equally mysterious either way. Then, again, there are the "raths" abounding, as it would seem, all over this Ireland—low circular mounds, with bushes and ditches, and thought to be of religious purport by some, and by others for living and building on and places of sepulchre. In all probability for all these purposes, for the Irish people are now, and have always been, a singularly religious people, full of pathos and intensity of feeling, and so constantly needing some outward form by which to express it. A remarkable race of men and women, and well able to improve themselves for themselves, and by themselves, if but left free to do so—right capable, as we think, of developing a style of architecture, and that of their own, and one peculiar to themselves. This, indeed, is the gist of Mr. Gladstone's speeches, and the expression of this opinion, fair and true as it is, has been drawn from him by the facts which he could not help seeing. More, much more, might here be said, for the subject is new.

And if it be true that we know so little of the art-specialities of a place so near as Ireland, how very much less can we be said to know of so distant a place as India, and one so entirely foreign to us in all possible ways? If any doubt this they have but to read with some attention the instructive letter, published at length in the *Times*, of Professor Monier Williams, on the state of Southern India. And here again it is that we are not a little tempted to wander beyond our proper work, that of art and architecture, for they both of them are not a little influenced by the "conditions" round and about them. They for the most part follow, but do not create, ideas. If Ireland be a distinct individuality, then certainly is India so. Professor Williams looks at the things about him in India with English eyes, fully as much so as Mr. Gladstone does at Ireland, but the wonderful and powerful individuality of the country he is in, and is writing about, is too much for him, and in spite of himself almost he has come to the conclusion that to really "improve" India such improvement must needs be in the native way, and through and by native agencies—*i.e.*, the Hindoos must do their work in their own way! But here, again, the thought strikes us how little do we know about the art and architecture of India out of the well-known and beaten paths? What are the special ideas which give birth to the Hindoo architecture, to the temple arrangements, and even to the minor forms and details? Are these now copies—mere copies—as our modern Gothic here is, of pre-existing forms, or are they quite new, and of to-day, and how far and in what way is the actual executive workman the author of the work he executes? Does he work unconsciously from drawings? We may well ask such questions, for nowhere in the world is the power of the executive work more conspicuously evident than in Hindoo work. Many things so hard and impossible of solution might here find explanation. In some elaborate photographs we have lately seen of Hindoo structures all looks more like magic and dreaming than reality—more like a realisation of a page out of the "Arabian Nights," more so even than any actual work of architectural "imaginings" by the Arabs themselves. We note these things to show how capable the "poor Hindoo" is of improving himself, and how there is in his mind faculties yet at work and active which

are capable maybe, and this is noteworthy, of anything in art and architecture, provided only that it is all his own, and from himself. We have thus thought that beyond the passing moment there might be some interest in these remarkable admissions by men so eminent. Ireland is but a small place, and but a part of a mighty empire, but it is quite distinct in its individualism, and serves to show, if it does no more, that there is in all nationalities a power of ever-present action and growth, but to be worth anything it must be their own. C. B. A.

ROADS AND STREETS.*

MR. D. K. CLARK has revised and condensed Mr. Henry Law's old work on the art of constructing common roads, and has added a second part by himself on recent practice in the construction of roads and streets, together with an historical sketch of the subject of road-making. The newly-added portions of the book will probably be the most valuable to the majority of its readers, but Mr. Clark's work in condensing and revising the older part is by no means wasted. Law's Treatise was undoubtedly the best of its kind when published, and Mr. D. K. Clark's additions have made it a book which every borough surveyor and engineer must possess, and which will be of considerable service to architects, builders, and property-owners generally.

Mr. Clark's description of the common roads, as they existed in England during the earlier years of the present century is instructive. At that time the common convex road was most prevalent, and the consequence of the false principles on which it was constructed, and of the want of proper repairs are well illustrated in several diagrams, which may probably appear exaggerated, except to those who are unfortunate enough to live in districts where such primitive roads are not yet altogether things of the past. Macadam and Telford were foremost in England in the work of road reconstruction. Their principles are too well known to require repetition. Mr. Clark reminds us that whilst Macadam deserves well as the pioneer of good roads, it may be observed that he had been to some extent anticipated in his system by Mr. Edgeworth, an Irish proprietor, who had previously advocated a similar plan. Mr. Edgeworth also recommended that the interstices should be filled up with small gravel or sharp sand, a practice which, though it was condemned by Macadam, is now adopted by the best surveyors. In his short review of the history of London pavements, Mr. Clark tells us that the first Act for paving and improving the metropolis was passed in 1532, when the streets were described as "very foul, and full of pits and sloughs, so as to be mighty perilous and noxious as well for all the King's subjects on horseback as on foot with carriages (litters)." Before the introduction of the turnpike-road system the streets of London and other large towns were paved with rounded boulders, or large irregular pebbles, imported from the sea-shore. These usually stood from 6in. to 9in. in depth in the carriage-way, and about three inches deep in the footpaths. The comforts and conveniences of such a pavement may be estimated by those unfortunate enough to have to travel over some of the cobble pavements in country towns, and for which a generation back Birmingham in particular was famous. The boulders were succeeded by pavements of irregularly-shaped blocks of stone, which did not fit well together, and which from this cause and their wide joints soon became uneven, and presented a sur-

* The Construction of Roads and Streets, By HENRY LAW, C.E. Revised and added to by D. K. CLARK, C.E. London: Crosby Lockwood and Co.

face alternating in muddy hollows and isolated stone blocks. Telford's system, introduced about fifty years ago, formed the basis of our present method, although smaller cubes of stone than he used have, for several reasons, become more generally used; Macadam's system was introduced in some of the streets where the traffic was light, but it was found unequal to the granite. Wood pavements seem to have been first used in Russia, where they appear to have been known for some hundreds of years. Hexagonal blocks of fir seem to have been adopted by preference, grouted with a boiling mixture of pitch and tar. Wood was also extensively used in Norway, Sweden, Denmark, and Ireland. In the United States and in this country wood has been tried in various ways. In England Mr. David Stead was the first constructor of wood pavements. His system, which was patented in 1838, consisted in the use of hexagonal blocks of Scotch fir or Norway pine, from 6in. to 8in. across and from 3½in. to 6in. deep, laid on a foundation of beaten gravel or concrete. He also tried experimentally pavements of round blocks of wood—sections of trees—placed vertically, the interspaces being filled with sifted gravel or sharp sand. His system was tried on the Old Bailey in 1829, but it did not answer. Various other systems were tried in succeeding years, one of the earliest and best being Mr. Carey's. Asphalte was first introduced from France in 1836, and has since been used with the best results for footpaths and open spaces, when some good variety (such as Claridge's) was selected, but with results more or less bad for carriage-ways.

Commencing with the construction of new roads, the reader is first instructed in the subject of exploration for roads. Of course, in laying out a road in an old country in which the position of the towns or industrial centres requiring means of intercommunication is already determined, there is little liberty for selecting the line to be taken; but in a new country, where the only object is to establish the easiest and best road between two distant stations, the physical character of the country constitutes the basis for the selection of the route. Hence the importance of a close acquaintance with the geography of the district, and of obtaining, if possible, a contour map thereof. Directions for making sectional plans of roads are given, and determining levels, and much useful information on earthwork, drainage, excavation, &c. The third chapter, which treats on the resistance to traction on common roads, is a good one, and so are those which follow it on road sections and repairing and improving roads. In the chapter on the foundation and superstructure of roads Mr. Clark adds a valuable note of some evidence given in 1819 by Mr. Walker, before the Select Committee on the Highways of the Kingdom. Speaking of the advantage of filling up or grouting the joints of granite pavement with lime water, which finds its way into the gravel under and beneath the stones, and forms the whole into a concrete mass, that gentleman suggested the use for the same purpose of a mixture of a little of the borings or clippings of iron, or small scraps of hoop iron, with the gravel used in filling up the joints of the paving. The water, he said, would very soon create an oxide of iron, and form the gravel into a species of rock. He instanced a piece of hoop which he had himself taken from under water, to which the gravel had so connected itself to four or five inches around the hoop, so as not to be separated without a blow from a hammer. Cast-iron pipes which are laid in moist gravel soon exhibit the same tendency.

Mr. Clark commences the second part of the book, which is more properly his own

work, with a description of the materials employed in the construction of roads and streets, and then gives a number of details connected with the construction of modern Macadam roads, omitted by Mr. Law. He then proceeds to consider the important question of wear and cost of such roads, and adds some particulars of their construction as practised in France. Passing on to stone pavements, Mr. Clark is naturally indebted, as we ourselves have been year after year, to the valuable reports of Mr. Haywood, the City Surveyor, for details and statistics; but Mr. Clark has, of course, been able to do more with these reports than we could, dealing with them as a whole, and not in part, and the information thus gained adds materially to the value of the book. The same is to be said with regard to asphalt and wood pavements. The extracts from the late Sir John Burgoyne's paper on rolling new-made roads, and from Mr. Paget's admirable report on the subject, made by order of the Metropolitan Board of Works in 1870, form, with other matter, an appendix which is likely to be very useful. Altogether the book is good, alike in its absence of all matter which does not really belong to the subject, and in the wise selection Mr. Clark has made of new sources of information.

THE MANUFACTURE OF MARBLEISED SLATE MANTELS IN AMERICA.

THE manufacture and use of marbleised slate for many purposes—the most important of which is for mantel-pieces—has reached a magnitude in America of as great an extent as in this country, and some particulars thereof will be acceptable. They are furnished by the *Polytechnic Review*. The material chosen for ornamentation, in imitation of fancy marbles, is slate, which has the advantage of low cost, ease of sawing and working, and fine grain. The slate used at these works comes from Vermont by vessel, and is landed on the wharf of the works. It is in slabs, about an inch thick, roughed to the sizes and shapes most used. The outlines are cut with a band saw. Marble is inferior for "marbleising," because of its cost and its coarser grain; the grain of slate running in planes parallel with the flat surfaces, while marble is open and porous, and requires more coats of pigment. Rubbing and smoothing are performed on a horizontal east-iron wheel, about 10ft. in diameter, running about 57 revolutions per minute. For marble, coarse grit-sand is used; for slate, a very fine grit. After smoothing, any channels that are to be made are cut with a rotary diamond cutter, the bit being hollow and rotating about 5,000 times per minute; a stream of water passing through it preventing injury to the diamonds. The channel in a "half front" is cut in about three minutes; by hand it would take one man an hour. The arm carrying the bit is heavily weighted, to ease the operator and cause greater steadiness of cut. Channels having acute angles or sunken bevells must be cut by hand, as must some irregular designs. The inner curve of the front is worked to a true line if a fireboard is to be set in, otherwise the frame of the heater will cover any trifling irregularity. The slab being worked to the required outline and surface, is now ready for marbleising. The "ground" is mineral colour, ground in copal varnish, because this is a quick dryer. The ground is generally black or brown. When dry it is ready for the veining or pattern. Upon the surface of a tank of water various colours mixed in oil are spread in peculiar characteristic patterns, these varying according as the colour is ground, dropped, or sprinkled on, and stirred, fanned, or otherwise mingled and interangled. The colours do not blend. A slab being dipped edgewise in the water is brought up so that the variegated film adheres to its surface, making the "marble pattern." The marbled slabs are put in a steam kiln and kept at from 185° to 210° F. for twelve hours, baking the colours thoroughly. They are next coated with copal varnish, and again kiln-dried; then rubbed down with pumice-stone powder, again varnished

and dried, and then rubbed with the finest polishing powder, and then with the hand; when they have a high rich lustric, and are ready to be shipped or to be put together by clamps, &c., in place. There are about nine "standard" marbles, which are imitated; about six or seven occasionally selected, and about six or eight odd patterns very rarely called for. "Tennessee" marble is the hardest to imitate, and Sienna the next. These are not done by dipping, as they are not "veined" patterns, but are produced by handwork somewhat as follows:—To imitate "Tennessee" the slab is ground in a reddish-brown colour mixed in copal varnish; this colour is dry in half an hour, and is then spotted with the same colour, made lighter with white or darker with burnt umber until it is covered with spots, which sink into the ground colour and present a somewhat blurred appearance. When this is perfectly dry (which will be next day), take white paint mixed in water, and coat the slab with it, take a sponge and soak up some of the paint, the balance will be in small white spots as in the natural marble. The blurred appearance underneath will look like various stones thrown and mixed together. To imitate "Red Pyrenese" the slab is ground in varnish and colour, as for dipping, but instead of oil colours water colours are used. For one peculiar pattern, the slab is (after black ground) coated with brown water colour, which is next partly removed, by touching with a handful of thin muslin strips. These absorb the colour, and leave bare places of peculiar outline. White colour is then dripped on with a sponge, and runs on the cleaned places only; giving a pattern which could not be obtained by dipping, or in any other way. The use of water-colours gives a peculiar pearly or transparent effect, needed in the imitation of conglomerate stones, and by it Mr. Williams hopes to imitate even the now inimitable Mexican onyx, which excited so much attention at the Centennial.

Where there are "panels" to represent various marbles on one slab, they are separated by cut lines, which are either filled with gold size, or otherwise used to act as boundaries. The veining of one stone should not appear continuous in an adjacent panel representing another kind of stone; this is a common fault, and is in part remedied by leaving a wide unveined band or channel between the panels. Where there is a small veined panel, or a series of such, on a plain black ground, the panels are first coloured by dipping or hand work, and the surrounding surface is coloured with a brush. If the general surface is veined, the panels are first made, and then covered with paper, the whole slab is then dipped, and the panels are protected by the paper. An expert "dipper" will prepare the films and dip 400 square feet of slate (about 150 slabs) in five hours.

THE LATE CAPTAIN DRAKE, J.P., OF BREAKSPEAR'S HALL.

THE death of this gentleman may fairly claim a record somewhat more ample than the short shrift of a mere obituary notice. He died possessed of one of the most extensive and valuable building estates in the suburbs of London—the Wickham Park estate, in Deptford, situated in the parish of St. Paul's, and principally in the districts of New Cross and Brockley. His ancestry and his residence are historically notable—the one including Prior Wykeham, of Wykeham, and the renowned Sir Francis Drake; the other Breakspear's Hall, Harefield, Uxbridge, Middlesex, the residence in a bygone age of Nicholas Breakspear, who was the only Englishman that ever reached the dignity—which he did as Adrian IV.—of the Papal throne and tiara, to which he rose from an humble condition, and despite of influential and virulent opposition to his advancement. Adrian acquired celebrity from the successes of his missionary labours when legate to Denmark and Norway. He was honoured by the young King Henry II. of England, whom by a bull, circa 1154, he made Master of Ireland. At Sutrium the stirrup of Adrian IV. was held by Frederick I., Emperor of Germany. If tradition is to be relied on, Pope Adrian, if infallible, was not invulnerable, the record

stating that his five years' pontificate was summarily ended by a blue-bottle fly getting into his throat while he yawned, and choking him. Breakspear's Hall, the residence in the 12th century of Nicholas Breakspear, afterwards Pope, and latterly of Captain William Wickham Drake, is a fine old mansion, built upon an eminence in a prettily wooded, pleasantly undulating district in the parish of Harefield, Middlesex. Within and without the mansion exhibits many interesting and antique objects and relics.

The late Captain Drake left the public service many years ago to take the oversight of the extensive properties—the Harefield and the Wickham Park estates—to which he fell heir on the death of his father. At that time, a little more than thirty years ago, the Wickham Park estate consisted almost entirely of market garden and meadow ground; there are now on the property in Breakspear, Manor, Wickham, Cranfield, Harefield, and Brockley Roads, Wickham-terrace, and other places, more than 1,000 dwellings and mansions, including detached and semi-detached villas, containing from 15 to 20 rooms each, and letting at rentals of from £50 to £180 per annum. Many of the houses most recently erected are, in their accommodation and in their internal and external proportions and decorations, of a very superior class, and great improvements upon the earlier buildings on the estate. It was laid out almost entirely by the late Mr. J. T. Jenkins, Captain Drake's efficient agent and surveyor, and, it may be added, judicious adviser. Mr. Jenkins is fitly succeeded in the important and responsible post he held by his son, Mr. J. J. Jenkins. The estate extends from Lewisham High-road for about a mile southwards. It also includes the whole of the houses in Florence-road, Mornington-road, Stanley-street, and other parts of Deptford.

An idea of the extent of the property may be formed from the fact that there have been built upon it St. Peter's parish church, St. David's Congregational church, a large Baptist church in Brockley-road, a Wesleyan church in the same road, Zion Chapel (Baptist), New Cross-road; in progress at the present time are a Presbyterian church and a London School Board school. The places of worship referred to, with their adjuncts, in spacious lecture, school, class, and waiting rooms, en suite, are in style and accommodation as remarkable evidences of progress during the last thirty years as those given in the character of the private residences built on the estate, as just referred to. The names of many of the roads and streets, &c., on the estate are memorials of the Drake family and properties, such as Breakspear, Wickham, Harefield, &c. Captain Drake died quite suddenly and unexpectedly on the 18th ult., at Breakspear's Hall, from a fit that followed his morning bath. His illness lasted for only a few hours. He was in his 68th year. His widow, there being no issue, will have a life interest in the estates.

ILLICIT COMMISSIONS.

ALMOST threadbare as this subject has become, it has too serious an influence to be let alone. Though not alarmists ourselves, we must be convinced, even from the correspondence in our own paper, how widespread the evil of taking secret commissions or bribes has become. No trade, agency, or profession appears exempt from its contaminating influence upon a certain class, whose only idea of moral rectitude is the conventional one of getting on well in the world and paying one's way. A reprint under the heading of "Illicit Commissions, Mercantile and Professional," from the *Westminster Review* of July last, is before us, in which the writer sums up the substance of the numerous articles and correspondence that have appeared on the subject. We cannot resist quoting the author's concluding remarks on the subject:—"Now, we are firmly convinced that the evil of these secret commissions, if not quite so far advanced as that of adulteration, has become so widespread and inveterate that nothing short of arming society with a similar remedy will avail to check it. Those who see its injurious tendency are too often powerless to make head against it. We have noted that the better

class of insurance offices find themselves unable to check or abandon a practice which competition compels them to adopt." The writer quotes Lord Chief Justice Cockburn's remarks, which admirably lay down the extent of the illegal bribe. These are his words: "The profits acquired by the servant or agent in the course of, or in connection with, his service or agency belong to the master or principal; that the profits directly or indirectly made in the course of, or in connection with, his employment by a servant or agent, without the sanction of the master or principal, belong absolutely to the principal." It is here seen that an indirect profit, a trafficking on an employer's name or business, is as much a species of dishonesty as a bribe offered or accepted. Many will be startled at this, but we cannot ourselves see the slightest difference in the two transactions—both are dishonest and surreptitious, and have been regarded so by the Court of Equity. It is clear that every kind of secret business or commission is recoverable by law, though it is also a fact that the remedy as it at present exists is not an easy or sure process by civil proceedings, and rather defeats the object to be desired—namely, the punishment of or the social stigma on the bribe-taker. What is required is a criminal procedure for such offences, with a penalty as a deterrent of the practice.

A copy of a letter by Mr. John S. Storr, which that gentleman sent to Mr. Cross the other day, gives a fair *résumé* of the extent of these irregularities, and which include among the offenders solicitors, architects, sworn brokers, bankers, theatrical managers, merchants, shipping agents, town clerks, directors, managers, secretaries, &c. It further informs us that the subject is now fairly before the Government. Thus we have some assurance that illicit commissions and bribes will soon be nipped in the bud, and that we may be saved the recurrence of such a fraud as that which lately ended in the conviction of a secretary, an agent, and a chairman of a well-known dwellings company.

IRISH NOTES.

A NEW parochial house in connection with the Church of the Sacred Heart of Jesus, Donnybrook, is being erected by Messrs. Meade and Son, builders, from designs by Mr. G. C. Ashlin, architect. Extensive buildings are being erected at Rathmines, at the intersection of Palmerston and Cooper-roads, under the title of "The McGrough Home." They are to be occupied by Protestant women, "who will be placed singly, or in pairs, in each house." The houses will be furnished and supplied with gas and water. It is expected that the works will be finished before January next. The funds left by the late Mr. McGrough for the erection, &c., of these buildings, amount to upwards of £50,000. Mr. Jaunes Rawson Carroll, architect, has furnished the designs, and is superintending the works, which are being carried out by Messrs. W. and J. Beckett, builders. A large chapel is attached to the Home.

Plans for alterations and additions to the Protestant Cathedral, Limerick, have been submitted by Mr. J. F. Fuller, architect, and are at present under consideration. It is thought that the changes will not be commenced till next spring.

A presbytery has been lately added to the Roman Catholic Church of St. Andoan, High-street, Dublin, from designs prepared for same by Mr. G. C. Ashlin, architect.

Mr. Spurgeon announces that Merrion Hall is to be sold for £7,000. It may be mentioned here that this building, erected about fifteen years since, from designs by Mr. A. C. Jones, architect, has collapsed financially since the death of Mr. Henry Bewley, an eminent Dublin citizen.

St. George's Church (diocese of Down and Connor), which had been closed for months past, has been reopened. The interior of this church has been entirely repainted and cleaned. The walls have been painted in oil a light neutral tint, the ceiling coloured white, the open beams and girders of the roof, with the remainder of the wood-work, stained and varnished in their natural

colours. The font, which is handsome, and of white marble, has been moved from the centre of the church to a more appropriate and ecclesiastical position near the entrance. The chancel has been cleaned, the painting and stencil work being retouched, and in some parts renewed. Altogether the interior now presents a bright and attractive appearance.

It is hoped that St. Coleman's Church, Gort, will be reopened, after extensive repairs, towards the end of next month.

A chancel has been added to the church of Loughmore, diocese of Ferns, from designs by Mr. J. F. Fuller, F.S.A., architect, who has also, we believe, prepared plans, &c., for a new tower and spire for Kilshane Church, for Mr. R. Wise, London, in whose demesne the church is situated.

The Church (Roman Catholic) of St. Mary of the Angels, Church-street, Dublin, is about being built from plans of Mr. J. J. McCarthy, R.H.A., architect. Part of the work was done about a year back, but owing to want of funds the works were stopped.

CHIPS.

The Wallingford Town Council decided, on Wednesday week, to invite Messrs. Ripley and Simmonds to make a preliminary survey of the town as a step towards meeting the sewerage and drainage difficulties.

The Town Council of Hull made in the year ended 30th August, 1877, a profit of £3,320 8s. on the supply of water to the town.

A large building in Conduit-street, Bedford, that has been in turn used as chapel, store-house, lumber-room, and hospital, has recently been acquired by Wesleyans, and has been altered to serve once more as a chapel. The exterior has been stuccoed, the interior furnished with pitch-pine open pews and other fittings, and a gallery added. The work has been carried out by Mr. L. B. Moore, contractor, at a cost of about £1,600.

Plans, prepared by Mr. Bohn, C.E., of Hull, have been accepted by the rural sanitary authority of Beverley for the drainage of the village of South Cave.

At the Fitzwilliam Museum, Cambridge, more than 500 engravings of the early German, Dutch, and Flemish schools have been mounted and incorporated in the collection, and the Syndicate have had all the etchings of Rembrandt and his scholars, numbering 1,328, to be stamped, arranged, and catalogued.

It was, on Thursday, decided to invite designs for a new building for Bolton Infirmary. Premiums of £50, £30, and £20 are offered.

The Freemasons of Aberdare are about to erect a mission-hall on a site secured for the purpose in Cannon-street. The plans and designs of the proposed building have been prepared by Mr. W. D. Blesley, architect, of Cardiff.

St. John's Parish Church, Sevenoaks, is in course of restoration, the contractors being Messrs. Punnett and Sons, of Tunbridge.

A steam saw-mill, in connection with a new scheme for smack-building on an extended scale, was opened on the 26th ult., at Gorleston, Great Yarmouth. The machinery was supplied by Mr. Barnes, and the building executed by Mr. J. H. Want, from plans prepared by Mr. H. Dudley Arnott, architect, of Gorleston.

The Blanford Town Council have accepted, with thanks, the offer by two ladies to defray the expenses of a new floor for the Corn Exchange, suitable for dancing, and other improvements. The floor will be of pitch pine, laid on 6in. of concrete, and the works will be carried out by Mr. Green, builder, under the supervision of the borough surveyor.

At the last meeting of the St. Austell School Board the tender of Messrs. Paul and Ede was accepted, at the sum of £1,922, for new schools at Carclaze. The plans are by Mr. Silvanus Trevail.

A new high altar and reredos has been erected in the Roman Catholic Church of St. Francis of Assisi, Stratford. The style of the work is Italian, and the work has been executed by Mr. Austey, from the designs of Mr. S. J. Nicholl, architect.

The Prince of Wales' Coffee Palace was opened at Fulbar-street, Renfrew, on Monday. It includes dining-hall, seating 140, and other accommodation on the ground floor, and reading-room, &c., upstairs. It is the gift of Mr. and the Hon. Mrs. Campbell, and is to be conducted on temperance principles. Mr. Macqueen was the architect of the building, and Mr. Gait, of Paisley, the builder.

A limited liability company is projected for the supply of the towns of Hayward's Heath, Cuckfield, and Lindfield, with water, to be procured from a reservoir at the foot of the Downs at Plumpton. The plans and estimates have been prepared by Mr. Blaber, surveyor. The three local boards concerned are considering the desirability or otherwise of taking shares in the proposed undertaking.

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ILLUSTRATIONS.

DOMESTIC CHAPEL, MOORESFOOT—"BUILDING NEWS"
CLUB DESIGNS FOR COTTAGE HOSPITALS—TRIANGULAR BRIDGE AT CROYLAND—EXTENSION OF THE WHOLESALE FISH MARKET, MANCHESTER—BOARD SCHOOLS AT HOVE—HOUSE AT NO. 21, HYDE PARK GATE.

OUR LITHOGRAPHIC ILLUSTRATIONS.

EXTENSION OF WHOLESALE FISH MARKET, SHUDEHILL—MANCHESTER CORPORATION.

THE markets committee invited four Manchester architects, in the early part of this year, to send in competition drawings under motto, and ultimately selected the designs of Messrs. Mangnall and Littlewoods out of the four for adoption. The plot of land for the site adjoins the present wholesale fish market, and covers an area of 1,996 square yards. The bays will be each 45ft. in width, the roofs being supported upon cast-iron columns of similar design to those of the present market. The centre portion of roof will be raised for ventilation, and ample light will be obtained from continuous skylights to the raised portion of roof, and one continuous bay on each of the lower roofs. The roof principals will be constructed with cast-iron principal backs and wrought-iron tie-rods, which will have a lighter effect than the wood principals to the present roofs. The elevation is treated in a similar manner to the existing market, which will form a series of four gables, faced with brick and stone, with an entrance in the centre of each, enclosed with ornamental wrought-iron gates, 14ft. wide, and carved recessed semi-circular panels over, about 12ft. diameter, with emblematical figures thereon. There will be openings on each side of entrance, with semi-circular heads, filled in with ornamental ironwork, finished externally with stone arches, and shafts with carved capitals. The portion devoted to shops, fronting Thomas-street, is laid out to contain 8 shops, each about 22ft. by 17ft., and 14ft. high on the ground floor, with cellars, and will have two stories over the same, which can be utilised either for offices, or sale-rooms in connection with the shops. A central entrance is provided in Thomas-street to approach the first and second floors. Columns, with beams over, are introduced every 17ft. at the division of each shop, so that a tenant can have one or more shops at pleasure; and the brick wall adjoining the market will have a continuous iron beam level with ceiling of shops, and supported on pillars, so that openings can be made, the width of each shop, communicating with the market, so that fish dealers could occupy some of the shops for a retail trade if thought desirable. The contract for the whole of the works has been recently let to Messrs. Robert Neill and Sons, contractors, Manchester, for the sum of £15,200, and the building is to be completed as speedily as possible.

DOMESTIC CHAPEL, MOORESFOOT.

THIS chapel is to be erected at the residence of Arthur Moore, Esq., M.P., and will be connected with it by a low cloister, 30ft. by 5ft. It will consist of a nave, 24ft. by 15ft., and chancel, 13ft. by 11ft., and will have a small sacristy and private tribune attached. In style the building bears a close resemblance to the stone-roofed churches erected in Ireland in the eleventh and twelfth centuries, and especially to Cormac's Chapel at Cashel (illustrated in these columns by a series of measured drawings a few years since), which is in the neighbourhood. The material adopted is the

sandstone of the locality, which is of a pale-red tint. The construction of the groined ceiling is precisely similar to that at Cashel. The engaged columns supporting the ribs are repeated at the exterior, and bear a stone cornice under the eaves. The public entrance for the tenants will be through a deeply-recessed doorway in the front gable. This gable has two stories of arched corresponding with those of the interior, and is pierced by a circular window, having a Celtic cross interwoven in the tracery. The cost will be about £2,000. The architect is Mr. George Ashlin, of Dublin.

ELLEN-STREET BOARD SCHOOLS, HOVE, BRIGHTON.

WE this week include in our pages of illustrations plans and an elevation of the schools about to be erected by the Hove School Board in Ellen-street, Hove. In our issue of October 26 we gave an account of the designs which were submitted in the competition for these schools, and we refer our readers to the description we then gave of this design, which was submitted under the motto, "Mens." Accommodation is provided for 800 children, in the proportion of 400 infants, 250 girls, and 150 boys. The materials will be picked stock brick for the walls, with red brick for the gables, groins, &c., and moulded red brick for the cornices, string-courses, and panels. The roofs will be covered with brown tiles, and the turret, constructed of oak, will be covered with lead. The most recent improvements will be adopted in the arrangements and fittings of the interior. As the front of the building will set back 10ft. from the line of street, a wrought iron railing, in character with the style adopted, will extend the whole length of frontage, a distance of 200ft. The architects are Mr. Fred. W. Roper, of 9, Adam-street, Adelphi, and Mr. Thomas Simpson, of 16, Ship-street, Brighton.

TRIANGULAR BRIDGE, CROYLAND.

VISITORS to Croyland regard with surprise this extraordinary and apparently useless bridge, which stands over dry ground at the intersection of the four main streets of the town. It is a very substantial building of Barnack rag, and was probably built early in the fourteenth century. The first mention of a triangular bridge occurs in a charter of King Eldred, A.D. 943, and it is supposed that the present bridge was erected on the site of the more ancient one. It did not always stand over dry ground, for the three great drains which meandered down the principal streets here met, and mingled their sluggish waters under the bridge, but the drains were filled in about 50 years ago. The bridge is crossed by three steep flights of stone steps and inclined planes, which meet over the crown of the arches; the roadways are from 7ft. to 9ft. in width. It was evidently intended for foot passengers only. Antiquarians have supposed that it was built with a three-centred arch, as an emblem of the Trinity, and that it was originally surmounted by a cross, from which outdoor sermons were addressed to the people. The large stone figure which is built into the wall at the foot of the bridge has proved a great puzzle to antiquarians, some of whom have supposed it to be a representation of our Saviour enthroned in glory, which formerly occupied some conspicuous position in the adjoining abbey, while others incline to the opinion that it is statue of King Ethelbald (who founded the monastery about the beginning of the eighth century), holding a globe in his hand; but the peasantry of Croyland assert that it is neither the one nor the other, but only Oliver Cromwell nursing a loaf of bread. There seems to be a strong feeling among the good people of Croyland that it is high time the bridge was demolished to make more room for the traffic at this rather awkward intersection of the main streets, and the grand old stones utilised for the very necessary work of repairing the roads, but it is devoutly to be hoped that a better feeling may soon spring up, and that when the long-talked-of railway across the great fens is constructed, road materials may be more plentiful, and this quaint monument of antiquity, with all its historical associations, may still remain an object of interest to many future generations.—G. R. WEBSTER.

NO. 21, HYDE-PARK GATE SOUTH.

THIS house has lately undergone extensive additions and alterations, the accommodation being much more than doubled, besides the addition of a four-stall stable, coach-house, and grooms' rooms over. The drawing-room, dining-room, and library are *en suite* on the entrance floor, all overlooking a large garden in the rear. On the upper floors are a billiard-room, twelve bedrooms, two bath-rooms, &c. The building is faced with picked stock bricks, with red Suffolk brick and Portland stone dressings. The carving was executed by Mr. Seale, and the works generally have been carried out by Messrs. Macey & Sons, under the superintendence of the architect, Mr. Alfred Williams, of 22, Southampton-buildings, W.C.

"BUILDING NEWS" DESIGNING CLUB.

THIS week we illustrate some of the designs for cottage hospitals received from contributors to our Designing Club. They were reviewed on Nov. 16, on p. 495.

LIVERPOOL ENGINEERING SOCIETY.

ON Wednesday evening last, Dec. 5th, 1877, this society held its usual fortnightly meeting at the Royal Institution, Colquitt-street; Mr. Graham Smith, A.I.C.E., president, in the chair. The usual business of the society having been transacted, Mr. F. C. Pembroke Jones read a paper on "Stone in Engineering Work." Granite, he said, is found in most mountain chains, and varies in colour in accordance with its chemical constituents, as also in strength and durability. Hornblende he considered as much superior to mica in the formation of granites, both for durability, strength, and hardness. As regards the decay of granite, he stated that it usually commences with the decomposition of the mica, which, by its exfoliating, deranges the cohesion of the grains. After briefly referring to talcous slates, some varieties of which are used for houses, mica slates, and flinty slates, he went into the details of common or clay slate, which is so largely used for roofing and other purposes, at some considerable length. The best sandstones, such as Craigleith, Darley Dales, Heddon, and Renton, contain on an average 95 per cent. of silica, and weigh about 142lb. After describing the magnesian limestones, the ordinary limestones and oolites, and the various purposes for which they are employed, he completed his remarks by describing quarrying operations, and the making of artificial stone. The meeting was well attended, and the discussion of this most important constructive material well sustained.

COMPETITIONS.

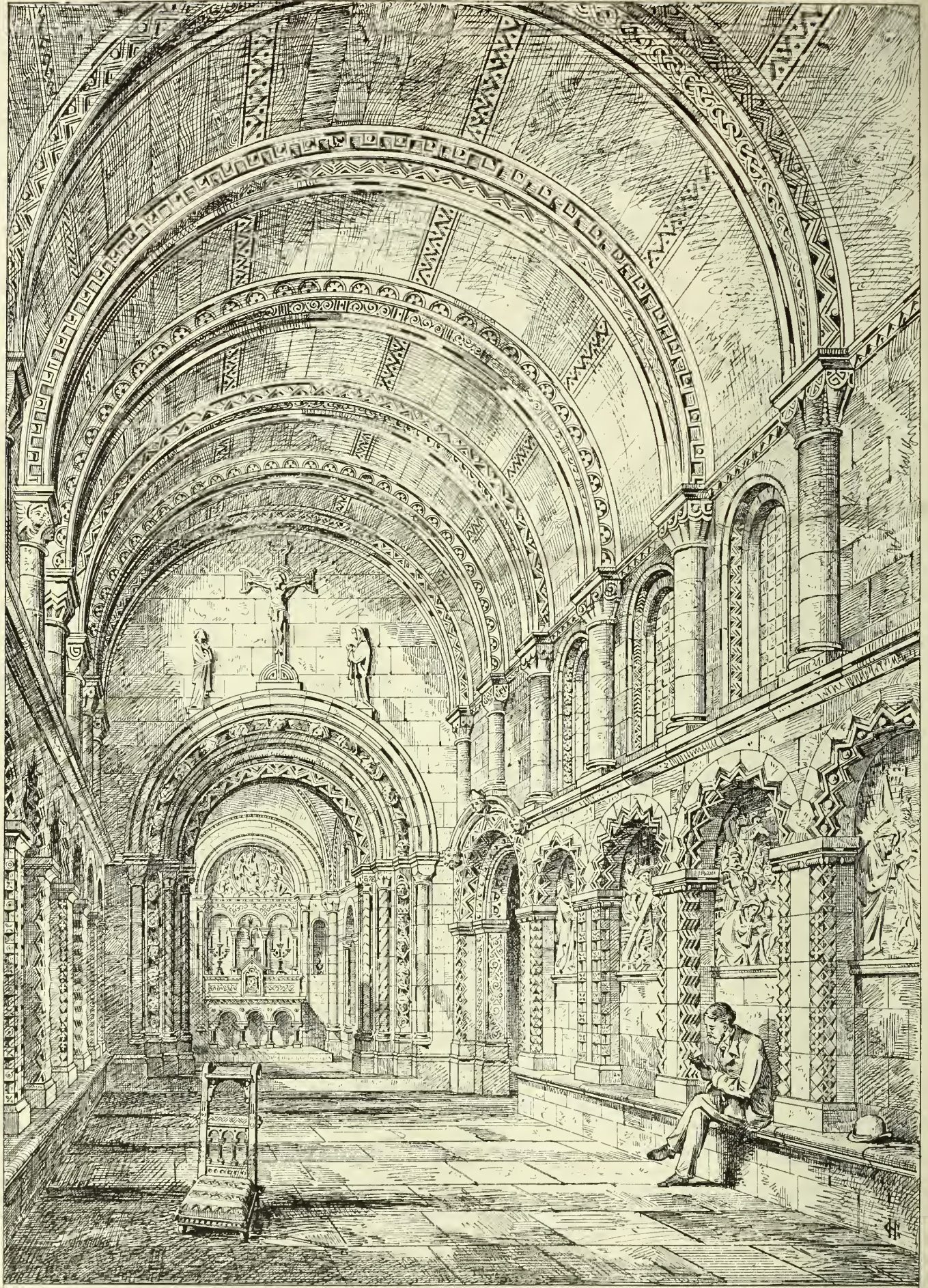
CAMBRIDGE.—A rather unusually important competition is just now in progress at Cambridge for new buildings in connection with King's College. The competition is a limited one, and the competitors are Sir George Gilbert Scott, R.A., Mr. George Edmund Street, R.A., and Mr. William Burges. The drawings are now at Cambridge for private inspection previous to the award. The new wing will complete the quadrangle, and face the street in the place of the screen wall which at present occupies the site. The buildings will provide chambers for professors and fellows of the college.

WEST HARTLEPOOL.—The West Hartlepool Improvement Commissioners have issued invitations to Mr. James Garry and Mr. John Hatton Lowe, architects, of that town, to send in competitive designs for their new market, public hall, town offices, &c., on the present market site. Maximum cost to be £20,000. Both gentlemen have decided to compete.

The tender of Mr. James Holden, the lowest of seven sent in, has been accepted by the Corporation of Bolton for sewerage and other works in the new road to the cemetery.

The Government, it is said, have no intention to carry out that portion of the report of the select committee of last session which recommended that the projected new public offices should be built on a site to be acquired between Charing-cross and the Horse Guards.

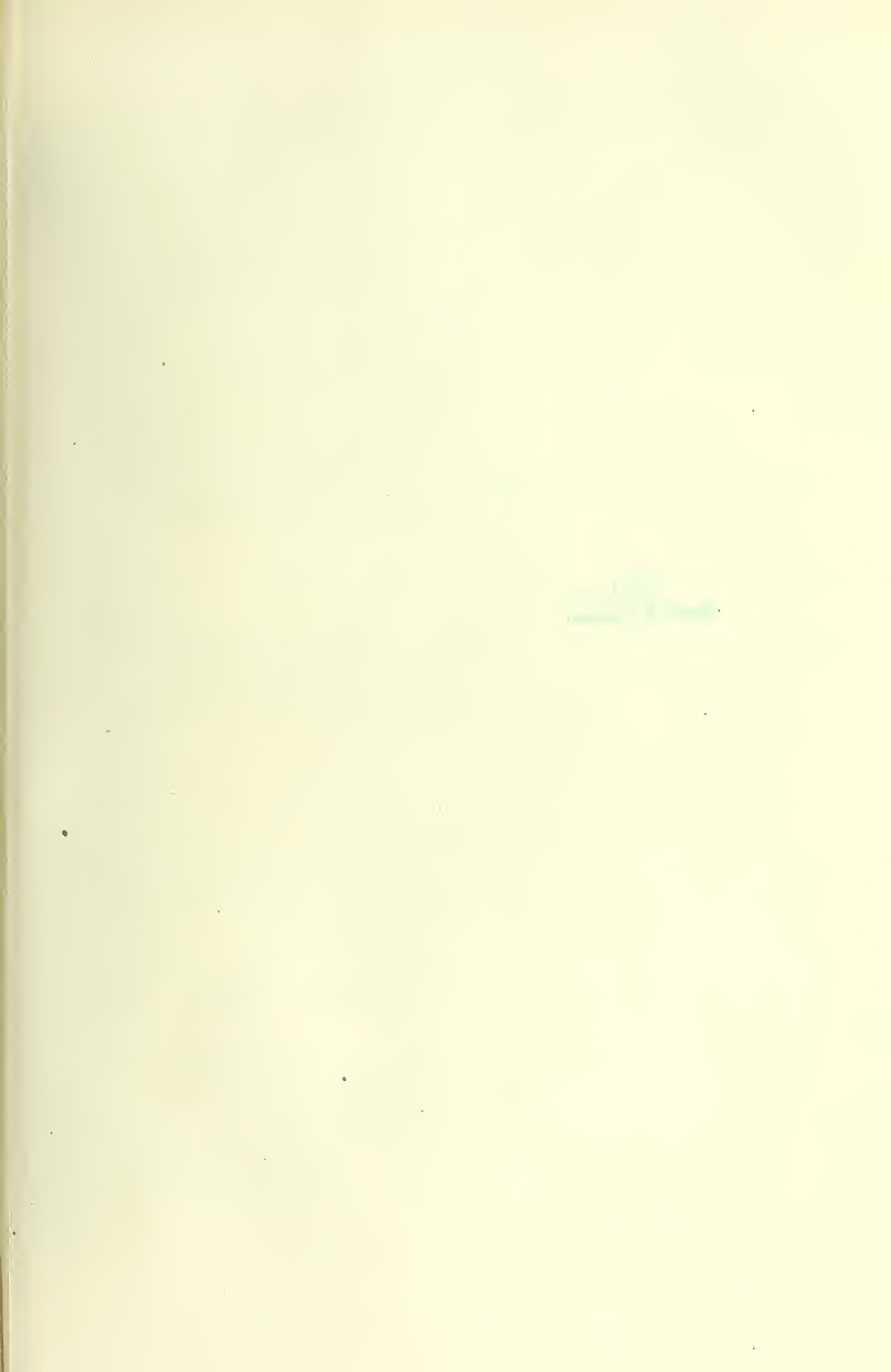




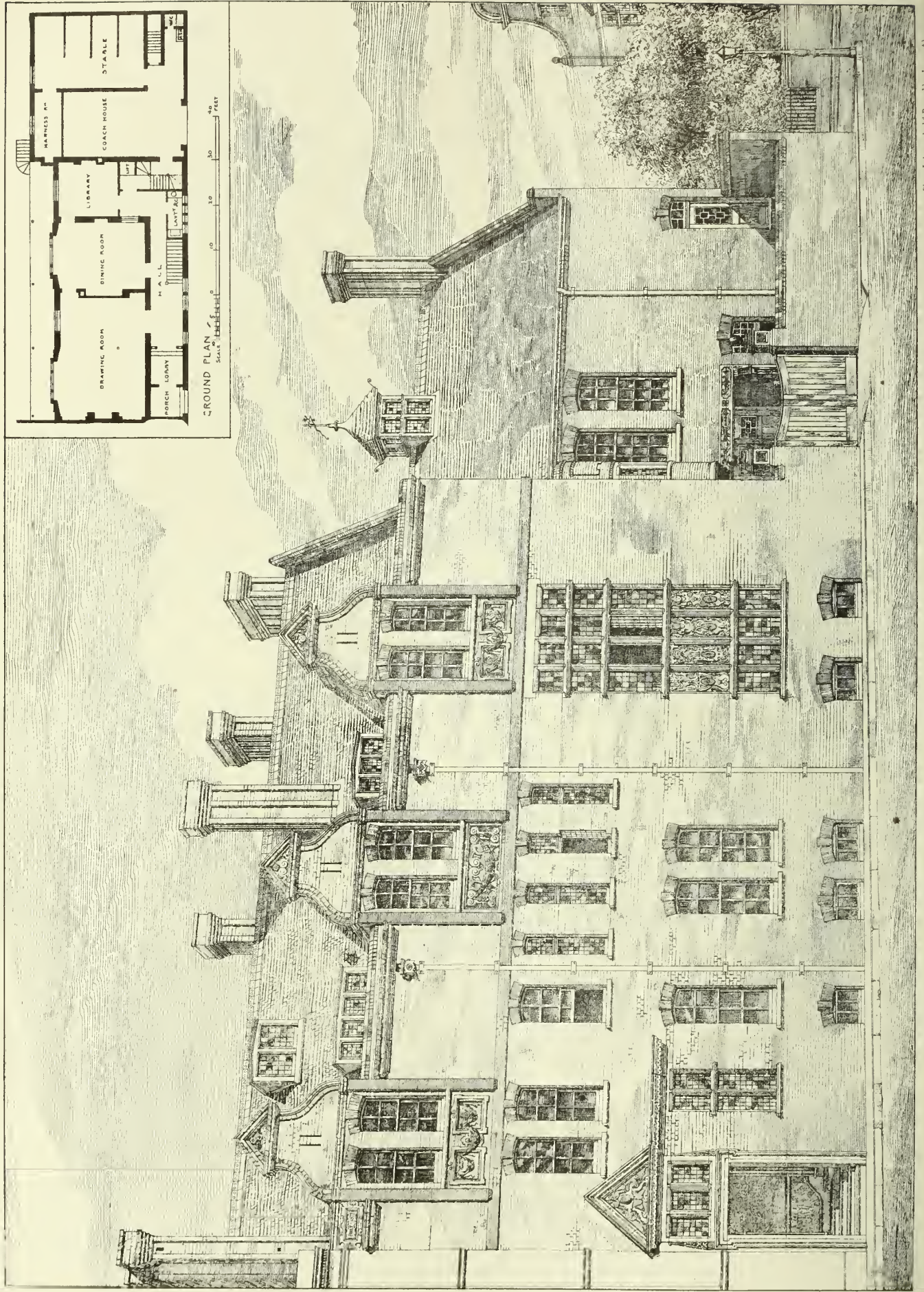
REC'D DOMESTIC CHAPER MOORESTOWN or MOORE'S

Photo Lithographed & Printed by James Aberman, 6, Queen Square, W.C.

Geo. C. Ashlin, Archt.



THE BUILDING PEWS, DEC 7, 1877.



EXTENSION
OF THE
WHOLESALE FISH MARKET
MANCHESTER

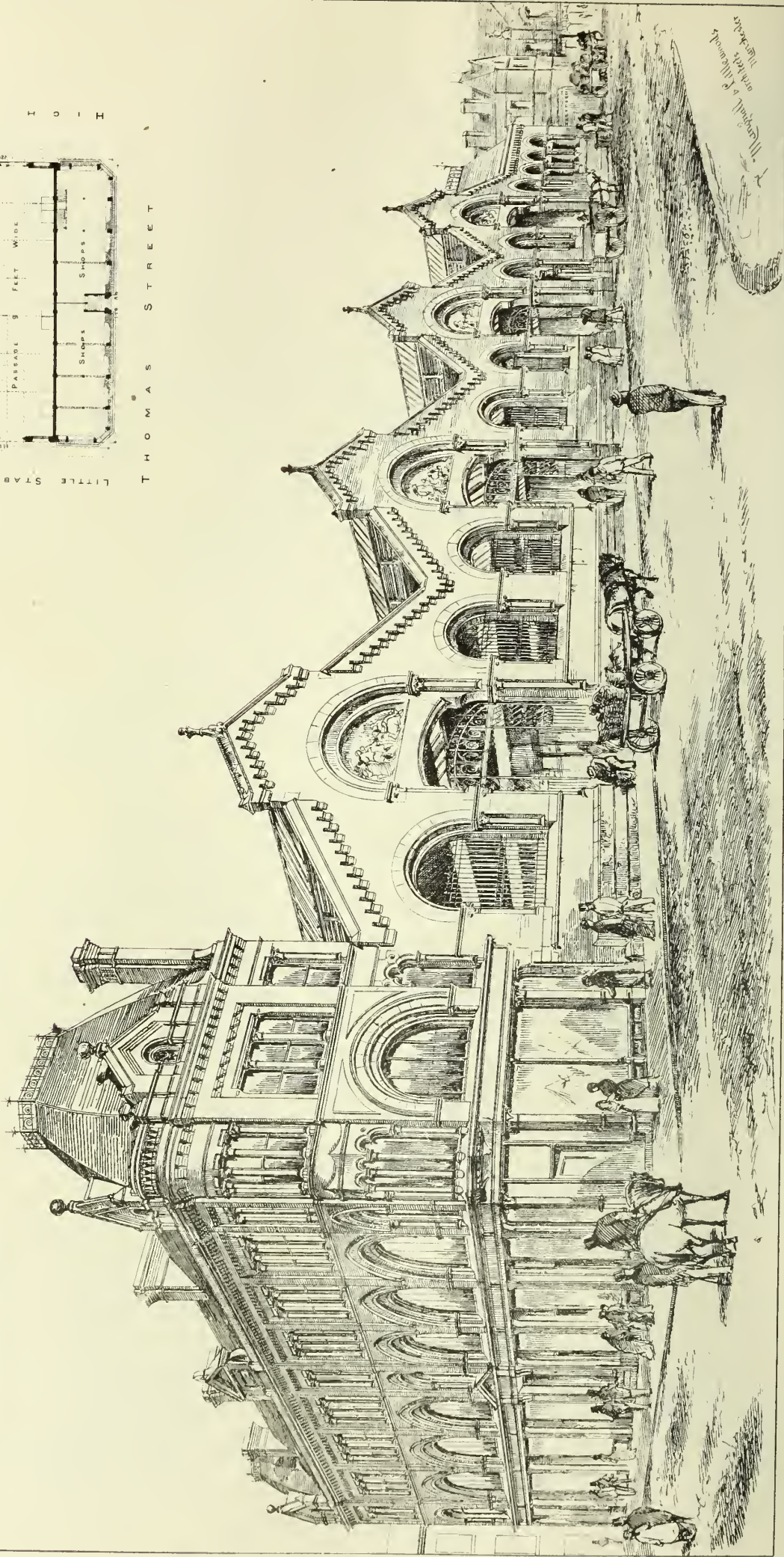
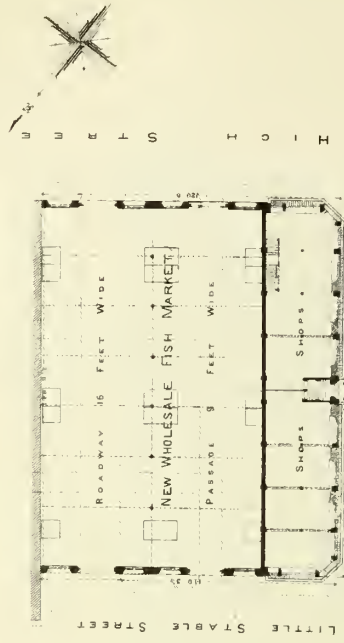


Photo Lithographed & Printed by James Abramson, 6 Queen Square W.C.

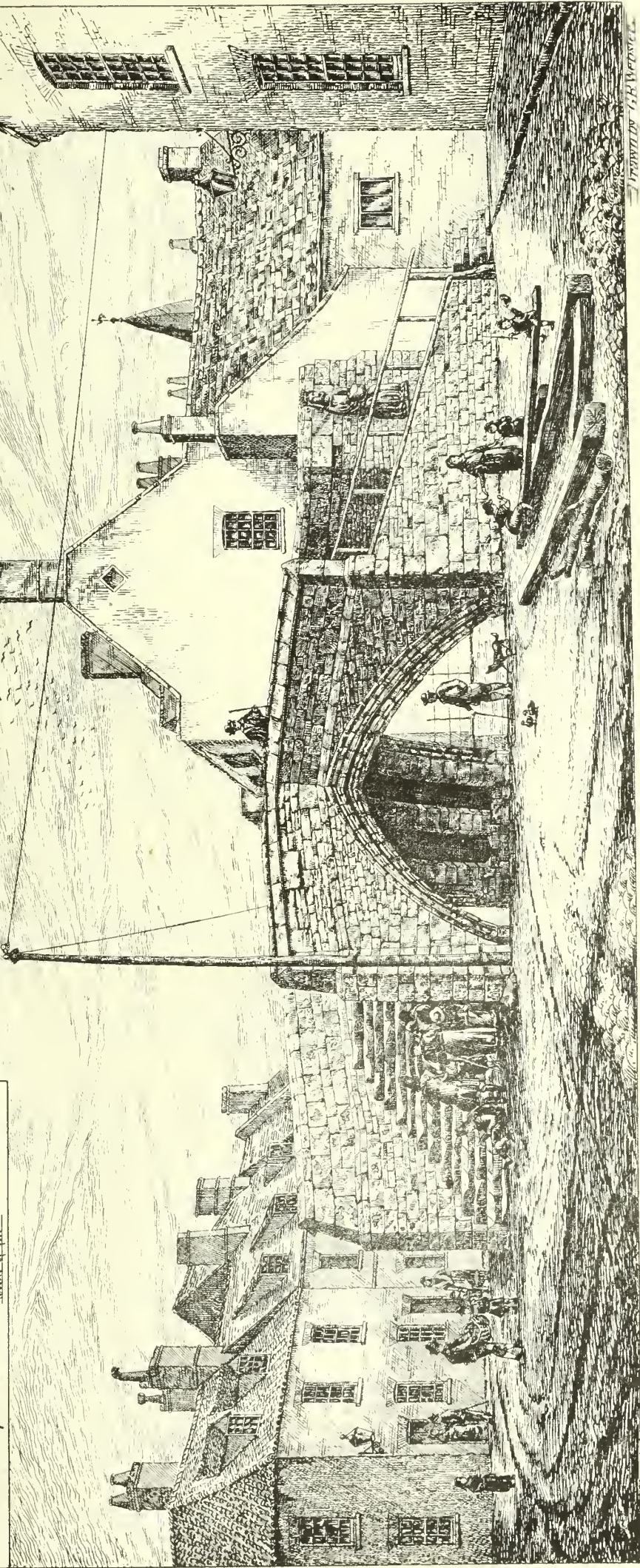
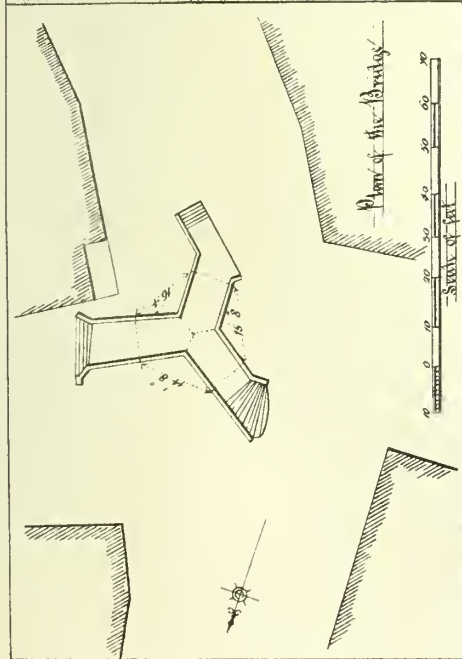


Photo Lithographed & Printed by James Ackerman, 6 Queen Square, W.C.

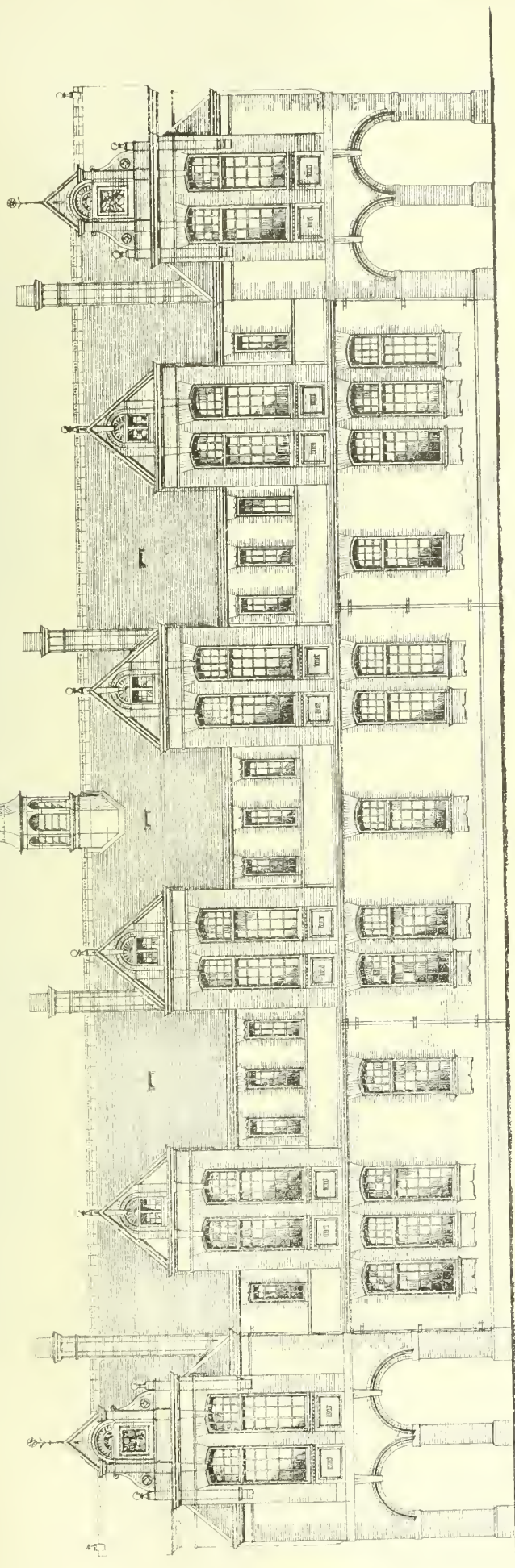
TRIANGULAR BRIDGE, CROYLAND, LINCOLNSHIRE.

Illustration by G.H. Whistler

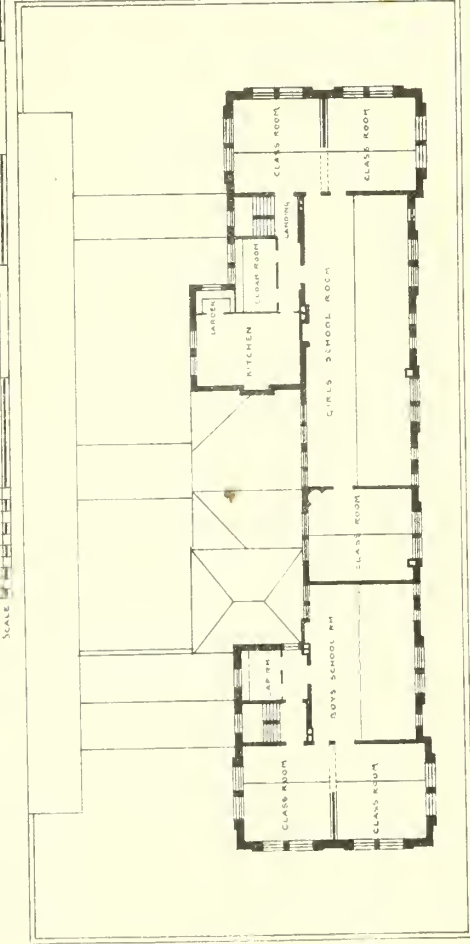
THE BUILDING AT REWS, DEC 7. 1877.

SCHOOL-BOARD for the ^{City of} HOVE: SUSSEX.
Ellen Street-Schools. 1877.

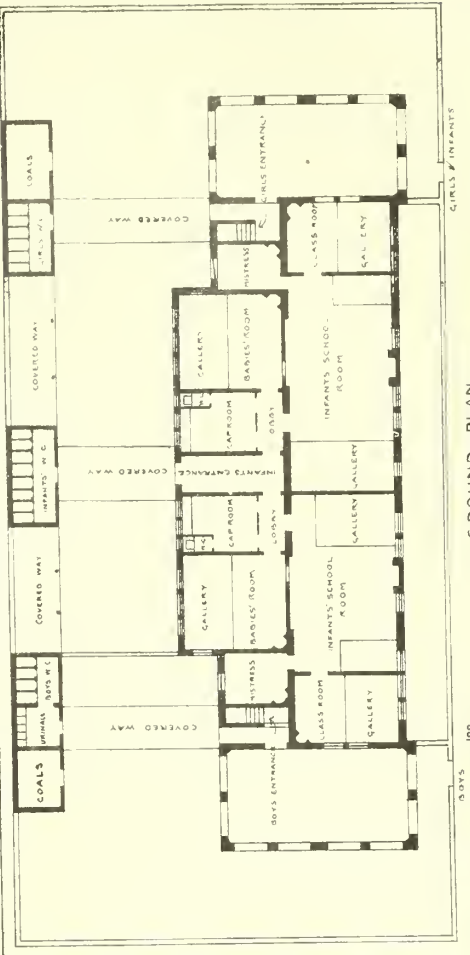
Fred. W. Popper & Adam S. Adolphus London ARCHT
Thomas Simpson. 16 Sup St. Brighton ARCHT



SCALE OF 100 FEET

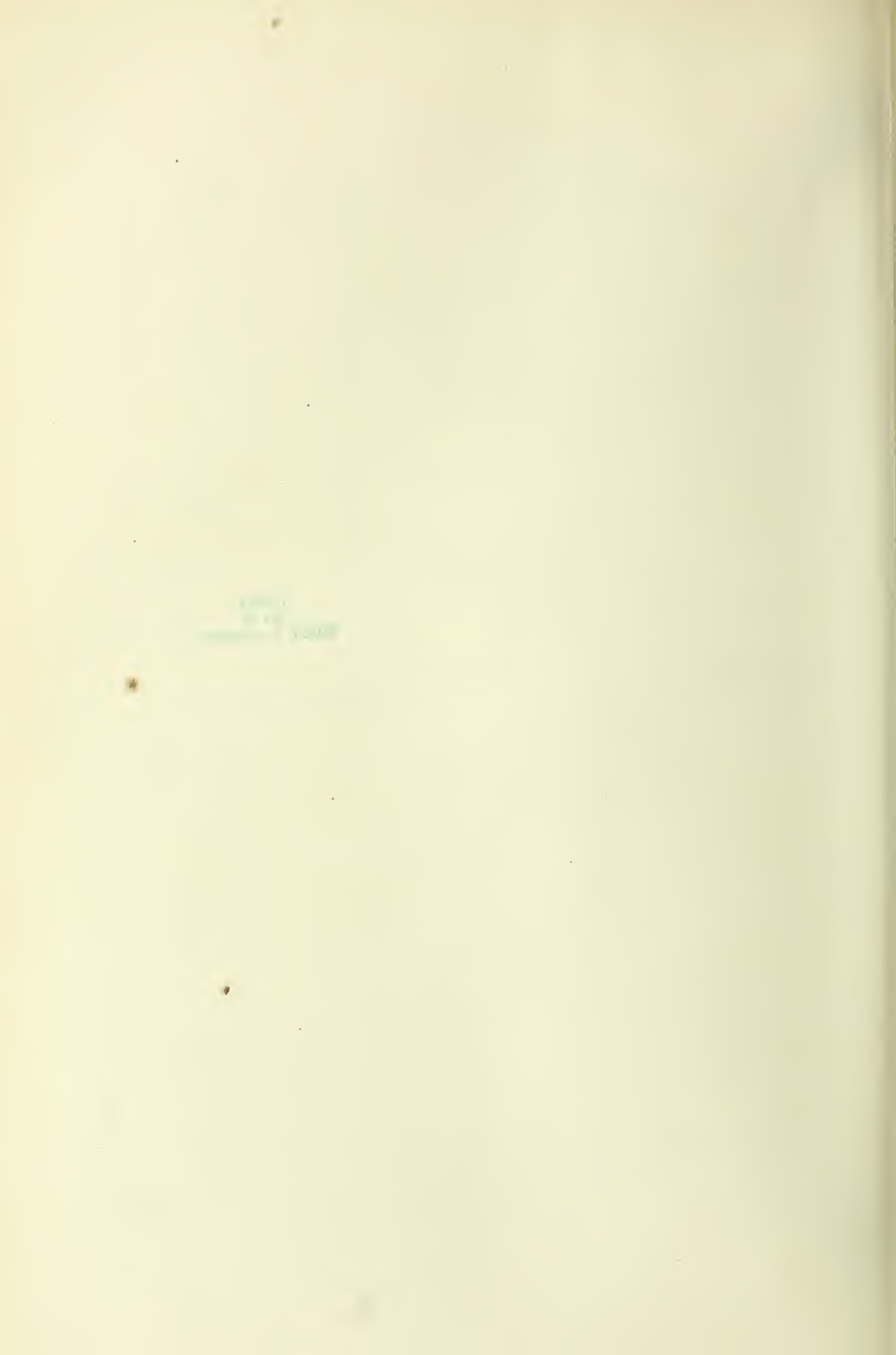


FIRST FLOOR PLAN



GROUND PLAN

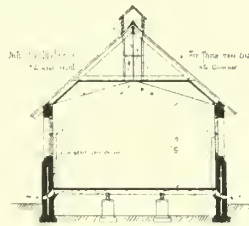
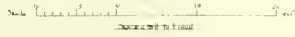
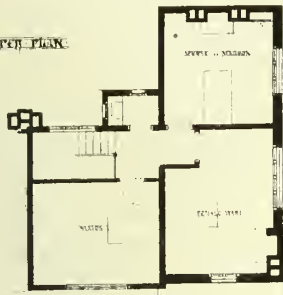
Photo Lithographed & Printed by James Ackerman, 6 Queen Square W



Building News Designing Club

Sketch for a Cottage Hospital

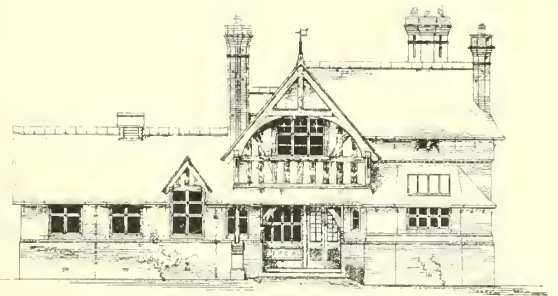
Upper Plan



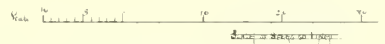
SECTION OF MAIN



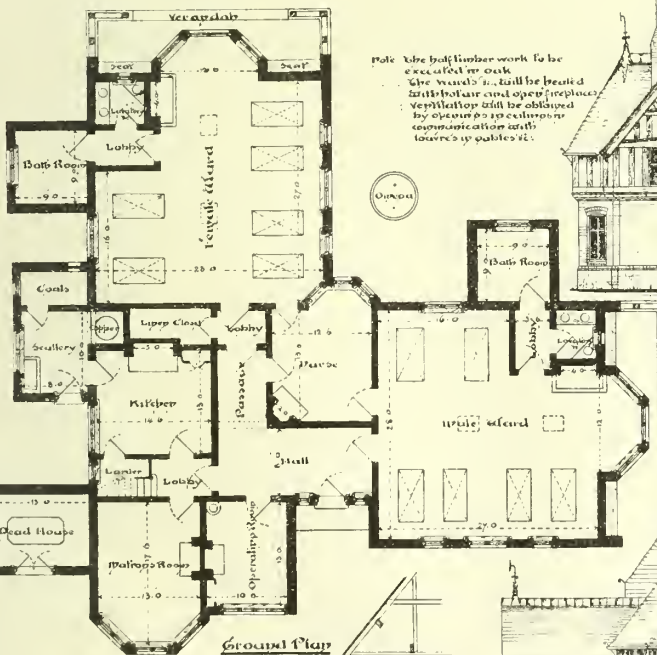
Ground Plan



SOUTH-WEST ELEVATION

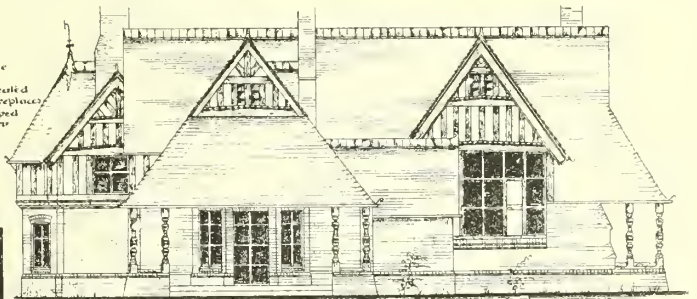


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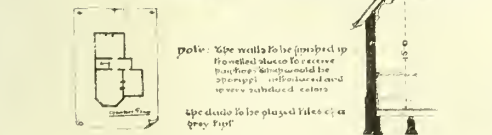
Ground Plan

Note: The half timber work to be executed in oak. The woodwork will be treated with linseed oil and varnish. Ventilation will be obtained by means of a system of communication with towers or gables etc.

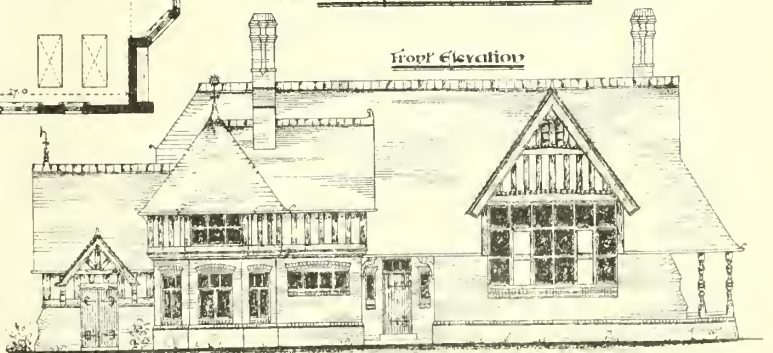


Side Elevation

Building News Designing Club
Sketch for a Cottage Hospital



Note: The walls to be finished up finished sheet iron or concrete. The floor to be finished with a smooth surface. The walls to be plastered with a grey tint.



Front Elevation

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fortnightly meeting of the Institute was held on Monday evening; the President, Mr. Charles Barry, in the chair. Mr. F. Ouvry, F.S.A., who has for many years past discharged the duties of honorary solicitor to the Institute, was, on the motion of the President, elected by acclamation an honorary fellow. The compliment was acknowledged in appropriate terms by Mr. Ouvry. The forty noblemen and gentlemen proposed for membership in the new class of honorary associates (whose names we gave a month since, on page 469) were balloted for and elected, with the exception of Mr. Watts, R.A., in whose case there was some informality in the nomination forum. The following elections also took place:—As fellows: Messrs. Thomas Blashill, 10, Old Jewry-chambers, E.C.; John T. Christopher, 16, Bloomsbury-square, W.C.; Edmund B. Ferrey, 15, Spring-gardens, S.W.; Horace Gundry, 13, John-street, Adelphi, W.C.; George Legg, 61, King William-street, E.C.; Alfred Norman, Devonport and Plymouth. As associates: Messrs. William F. Hammond, 42, Insurance-road, Auckland; E. B. J. Knox, 93, Longmarket-street, Cape Town; Arthur G. Northover, Erith Villa, Lee, Kent; George Robson, 60, Waterford-road, Fulham, S.W.; Reginald St. Anbyn Ronuieu, 10, Lancaster-place, W.C.; William Scott, 3, Great Woodstock-street. Various donations to the library were acknowledged with thanks.

MIDDLE-CLASS HOUSES IN CENTRAL LONDON AND PARIS.

The PRESIDENT, having called attention to the series of drawings on the walls of the room, illustrative of architecture in Japan, forwarded by Mr. Josiah Conder (some of which were beautifully tinted), said under the new rules Mr. White's paper, read at the last meeting (see page 521, *ante*), was now open for discussion.

Mr. CATES said Mr. White had cleverly treated and almost exhausted his subject, on which he had qualified himself to speak by an experience gained by residence in two capitals. It was to be regretted that the prejudices and mistaken ideas of Englishmen should have been so opposed to the mode of building adopted on the other side of the water, and that in consequence this metropolis presented so sombre and woe-begone an appearance. This resulted from the common delusion amongst us that health could most certainly be secured by living in what the Londoner called the country, but which was simply an ill-built, ill-ventilated house (known as a suburban villa), erected on ill-drained land. To and from this residence and his business he was compelled to go daily by train or other conveyance, at a great expenditure of time and energy. Mr. White proposed a plan by which he would give residences adapted to all classes, within easy reach of the centre of the city. If this were adopted, and the extension of houses carried out vertically instead of horizontally, this metropolis would no longer be a huge polypus, rotten at the core, and stretching out with unhealthy suburbs on every side, with an enormous and needless outlay on formation of roads, drains, and sewers, gas and water mains, and police supervision. If they examined the maps of Paris and of London of 20 years ago and now, it would be seen that the former city had been almost reconstructed, and presented a most beautiful appearance, although it had undergone troubles from which London had been happily spared. The *maison-à-loyer* system of building had enabled this to be done, and it would be well for London if some bold man, and great landowner, would facilitate the erection of some of these dwellings. A great objection to the ordinary houses-in-flats was their closeness, but in the plans exhibited there were means afforded by the central court and carriage entrances for a full current of fresh air to be carried into the centre of the block. Such houses would have to be constructed substantially—they could not be run up by our speculative builders, but would afford work for a better class of builders, and a higher style of architecture might be expected to grow up. Referring to

the island in Regent-street, chiefly of Crown property, the planning of which Mr. White had used as a typical illustration of London house-over-shop arrangements, Mr. Cates defended the management of the Crown estates from the implied censure, and pointed to the greatly improved condition, and the great improvements in the thoroughfares through the Crown property in the west of London. He contrasted the action of its managers in the formation of Regent-street and Waterloo-place, through a labyrinth of narrow courts and streets, with that now being displayed in carrying into effect the Metropolitan Streets Improvement Act, under which there were being driven straight cab-roads from point to point by the simple process of taking down houses on one side of the suggested route, leaving that bare and unoccupied for years, while the miserable shanties and hovels still stood on the other side as foul witnesses of the course which the self-governing body of the metropolis thought it best to adopt. In dealing with their estates landowners were often hampered by leases of varying length, marriage settlements and entail, the existence of which they regretted as much as any one else.

Mr. WHICHARD said the subject of Mr. White's paper was practically a new one in the room, for while the housing of the lower classes in more compact dwellings had been recognised in London for the last 18 or 20 years, the principle had not been applied to providing for superior classes. It was worthy of notice that, whereas in the large towns of Scotland the system of building in flats was once common, it was now being abandoned, and new streets were laid out in rows of smaller, self-contained houses, with larger corner blocks, planned in flats. One great difficulty in adopting Mr. White's suggestions in London was, that ground was let on building leases, terminating at unequal intervals, in plots of extremely narrow frontage and irregular shape. Until this system could be rectified it would be almost impossible that such buildings could be largely erected. The chief difficulty was the existence of easements of various characters which prevailed to a great extent in London. The carrying out of many most important improvements was stopped by absence of a law as to rights to light and air. In any combined dwellings for the middle classes it would be necessary to carry the buildings to a great height, to recoup in some measure the outlay, and fireproof construction, lifts and external staircases would be absolute necessities to insure them being let to satisfactory occupiers.

Mr. HANSARD complained that Mr. White had not estimated the cost of the sites of his buildings in the rents to be paid, and this he feared would be very misleading both to members and the outside public. The cost of such a scheme would be so heavy that it could not be carried out. The island in Regent-street, for instance, was a plot of about 190ft. by 70ft. To rebuild it as suggested by Mr. White, after arranging with the leaseholders (who have about 40 years to run) for the purchase of their interests, the freeholder would have to expend about £500,000 in the erection of new buildings.

Mr. STREET, R.A., asked Mr. Hansard what he calculated the cost at per cubic foot?

Mr. HANSARD replied that Mr. Street might calculate it as he liked—the sum named would be about the cost.

Mr. HEBB had calculated that the superior system of planning and building suggested by Mr. White would cost about £30 per room, and, if that were so, such houses were out of the question in London. The more compact houses were, the more costly they proved to build, and probably the cheapest house that could be erected was the two-storied type of the speculating builder, for there could be no doubt that this individual knew how to build cheaply. He did not attach importance to the objection that had been raised as to acquiring sites for such buildings as had been suggested, that the leases of the land might run out at different times, for any surveyor or manager of a large estate would take care that all leases ended by one date.

Mr. DAWSON considered the suggested combined residences might prove useful and

would soon be occupied in central London; but if they attempted to build such in the suburbs they would certainly fail—the cost would be too great. Although Mr. White's plans were clever, they did not include many necessary improvements that should be looked for in a London middle-class house. The area covered was a great deal too small, and the cramped domestic offices, and total absence of scullery, would not be tolerated. The Parisian model had been too closely adhered to. Everything had been done to secure concentration, but such a block would cost 25 per cent. more than the London house.

Mr. FORSTER HAYWARD pointed out that the proposed carriage entrances to courtyards would cut up the pavements to a very large extent, and especially if thorough communications were made from front to back would much increase the dangers of London streets.

It being now half-past nine, the PRESIDENT took a show of hands as to whether the discussion should be adjourned or closed, as the new rules provided. The majority being in favour of terminating the discussion that evening, the President remarked that they must have sympathised with Mr. White when he gave them his experiences of the interminable arrangements that have to be made between the Parisian architect and his *compagnons de travaux*. He had come to the conclusion that although such residences as Mr. White had described might do very well for the bachelorhood of London, for those with small families, or "no incumbrances," yet nothing could be more uncomfortable than for those with large families to be in such dwellings. One could understand how this mode of housing the people vertically rather than horizontally grew up in Paris, but London was not so distinctly the centre and capital of the country as that city was, and there was therefore not the same demand for concentration. English servants would, too, have to be educated for several generations before they could be persuaded to use a room about 10ft. x 12ft. for every purpose required, nor would Englishmen like to store their wine in a small cupboard or rack instead of the mode to which they were accustomed. Mr. White would indeed have to revolutionise all the habits of Londoners to carry his suggestions into effect. At the same time there was a large class of people for whom these flats could be provided, and he should be very glad to see Mr. White display his skill; if such residences yielded a return of 8 or 10 per cent. he was sure the revolution Mr. White so much desired would be effected. He had himself, when at Vienna and Turin, and other Continental towns, heard the cry, "give us your English houses"—a demand which suggested that people were everywhere discontented with what they had, and fancied that which they did not possess was better.

Mr. WHITE, in replying on the discussion, acknowledged the vote of thanks passed to him at the last meeting, and expressed his pleasure that the subject had evoked so much discussion. It had been objected that his plan would seriously affect our national habits. This might be true, but the sooner some of those habits were altered the better. It was said to be a serious thing to interfere with an Englishman's castle. This title might apply to the houses in Belgrave and smaller squares, but not to the average dwellings of central London. Under his system every man would have his castle defended by a portcullis, placed as in Paris at the top of the landing. His houses were intended for central London, and while it might be granted that it would be much better to live in a £50 house in a suburb than in one of these, still people were willing, as in Paris, to pay more in proportion to nearness to the centre of the capital. It had been objected that so much space was taken up by passage room, but there was not proportionally more space occupied by walls than in an ordinary two-roomed house with its landings and staircases. Under the usual system they climbed this space; under the Parisian one they passed through it horizontally. These passages also shut off the several parts of a residence in a manner not provided for in the ordinary dwellings in flats. It had been said that his ideal façades were not high enough; this was true, and if he were to carry the buildings

half as high again his plans would show a still greater gain upon the common ones. He had been condemned, not only as a revolutionist but as a radical; the question was a political rather than an artistical one, certainly, and reform was greatly needed. Entail ought to be cut off, and a law of light and air determined upon, and passed. Before this reform could be carried out some amelioration of the condition of the thousands of those living in central London was possible, if the ground landlords would study their own interests by laying out their land on a scientific basis.

The PRESIDENT then called upon Mr. James Neale to read his paper on St. Alban's Abbey, amidst general cries of "Postpone." Mr. Street and others urged that it would be impossible to do justice to the subject if commenced at 3 minutes to ten o'clock, and Mr. Neale himself asked to be allowed to reserve it for another evening. The President gave way, and declared the meeting adjourned to the 17th inst., when Mr. Looock Webb, Q.C., would read a paper on "The Law of Easements." Replying to Messrs. Clarke and Street, he said it must be left to the council to decide as to when Mr. Neale's paper would be taken, and as to whether a special meeting should be convened for the purpose.

SCHOOLS OF ART.

BERWICK.—On Tuesday week the annual meeting of the art and science classes, held at Berwick in connection with the Kensington Museum, took place. From the annual report it appeared that the number of students under Mr. Wallace, the teacher, was 90, being the largest number which the class has yet reached. At the examination in May last 32 were examined in freehand, 20 of whom passed: in model 25, of whom 20 passed; in geometry 21, of whom 8 passed; and in perspective 19, of whom 6 passed. The prizes awarded were—in freehand and model, 3; geometry, 2; and perspective, 5. The total grant earned by the school was £109 17s., and the total income, £185 5s. 3d.

EDINBURGH.—The prizes gained by students in the Edinburgh School of Art were distributed on the 29th ult. The report, which showed an increase in the number of students, stated that the numbers in the school in 1876-77 were:—In the male school, 487, being an increase over the preceding year of 28 students; in the female school, 306, being an increase of 49. Total number of students, 793, or 77 more than in the preceding year. The awards to the school by the Science and Art Department were from the national competition:—To the male school—2 silver medals, 3 bronze medals, 4 Queen's prizes. To the female school—1 bronze medal, 1 Queen's prize. In the third-grade examination 29 students have been successful, viz.:—21 students of the male school and 8 of the female school. Of these 2 have obtained free studentships. At the local examination of the second grade, held in Edinburgh in May, 255 students in the school presented themselves for examination, viz.:—140 from the male school, 115 female school. Of these 129 passed, being 65 in the male school, and 64 in the female school. Of these 21 in the male school have gained prizes, and 18 in the female school. 77 strangers also came up to this examination, viz.:—39 males and 38 females. Of these 17 have passed, viz.:—12 males and 5 females; and of the males 7, and of the females 2, have gained prizes. Mr. Andrew Reid, one of the pupil teachers of the male school, went to South Kensington in February, where he passed examination, and has obtained an art master's certificate of the third grade. The results of the year are not so high as were attained in some previous years marked by brilliant success, but the school, like every other open to all comers, is subject to an extremely different range of ability in its students from year to year.

OXFORD.—The annual distribution of prizes and certificates was made in connection with this school last week by Mr. Goldwin Smith, who delivered an address on the relations of art to manufacture in which he endeavoured to establish that England is irremediably losing

the great American market for the heavier and coarser goods, but that she may yet retain, at all events for many years to come, all the productions in which art and cultivated taste play an important part. On this ground, he argued, schools of art and design should be supported with no niggard hand by the Government. The annual report of the school showed that classes had been held in the evening under the direction of Mr. Alexander Macdonald, Ruskin teacher of drawing, assisted by Mr. Price, who took entire charge of the afternoon classes. 971 drawings, the work of 114 students, were sent to South Kensington, only 15 of the drawings being in the advanced stage. None of the latter, and but 7 of the former, gained the full awards, showing a falling off from previous years. No third-grade prizes were awarded. At the second-grade examination in drawing 58 members and 11 "external" candidates from other parts of the district presented themselves. 23 of the members succeeded in taking 24 passes, and 4 external students were also successful in passing.

SALISBURY.—The annual distribution of prizes, in connection with this school of science and art, took place on Thursday, the 29th inst., in the council chamber, the walls of which were hung with an interesting and very numerous display of works, including some studies of architectural details from buildings as well as from copies, the work of carpenters and other artisans. The report was highly satisfactory, and stated that the evening classes are attended by 86 artisans or their children, and that they were bearing practical fruit, as four of the members were earning a livelihood by some branch of art acquired in the school. An ex-student is employed by a London firm in painting flowers, and a sixth has been recently engaged by a firm of carpet manufacturers in the North of England as a designer. 1,674 works—a larger number than in any previous year—were sent to South Kensington, and the money grant earned by them exceeded that of any previous period. 8 third-grade prizes, a bronze medal, and a Queen's prize of books were awarded in the national competition. The second-grade competition was not so satisfactory in results as in former years, 28 having obtained certificates, and only 4 prizes, besides 4 who completed their certificates. This was to be accounted for as the standard of excellence had been considerably raised since last year, and Salisbury had only five schools before it in the United Kingdom, including those of the metropolis. The committee pointed out, however, that the Department threatened to withdraw the grant unless the accommodation be increased, and this would be equivalent to closing the school. They, therefore, urged on the citizens the adoption of the Public Libraries Act. During the proceedings a vote of thanks was cordially passed to the master of the school, Mr. Joseph Harris, to whose exertions, it was stated, the school owed its position and successes.

SUNDERLAND.—The annual presentation of prizes in connection with the Sunderland School of Art classes was last week held in the hall school, and there was a very large attendance. The mayor said that there now in the school 214 pupils, being a decrease of 31 since last year. He also mentioned 194 out of 214 students had sent works up to the annual exhibition at South Kensington. These 194 persons, who represented nearly the whole of the 214 constituting the class, had sent up no less than 2,061 separate works, the average being 10 works for each person, indicating a considerable amount of labour and industry during the year.

TUNBRIDGE WELLS.—The prizes and certificates were distributed to the successful students in the science and art classes at the Old Town Hall, on Friday evening, by Sir David L. Salomons. The report of the art classes showed that the number of evening students was steadily increasing, and that the classes are self-supporting. 40 students presented themselves at the Government examinations, of whom 14 obtained certificates and 4 prizes; 343 works were sent up to South Kensington, for which the full grant had been

awarded, 1 student had gained a third-grade prize, and 4 second-grade prizes. For the local prizes the competitions had been very satisfactory, especially in that for design, which was added to the list in 1876.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LEEDS ARCHITECTURAL ASSOCIATION.—The annual soirée of the Leeds Architectural Association was held on Friday last in the "Fidelity" Masonic Hall, Carlton-hill, Leeds. Amongst the exhibits were a number of sections of rolled iron joists. Some samples of concrete, made with a mixture of crushed slag as a substitute for granite, were exhibited by the Aireside Hematite Iron Company. We understand that this material has been adopted by Mr. Corson for the fire-proofing and steps at the new theatre. A variety of photographs of ruins in Yorkshire was exhibited by Mr. Wormals, whilst some interesting specimens of cement work and tiling were shown by Mr. Patterson, Manchester. Specimens of carved panels, &c., were exhibited by Messrs. Marsh and Jones, architectural drawings by Mr. G. Corson; stained glass windows by Messrs. Boer and Co., whilst the principal paintings and pictures were exhibited by Messrs. W. Howgate, F. Whitwell, and J. R. Watson. Prizes, consisting of books, were offered amongst the junior members of the association, and these were distributed by the president of the society, Mr. G. Corson. He remarked that by the establishment of that association, the architects of Leeds had followed the example of their brethren in Manchester, Birmingham, Liverpool, Edinburgh, Glasgow, and other places. The prizes which he had to distribute has been offered by various members of the Association. He himself had offered a prize for the best sketch of ancient or modern buildings in Leeds; Mr. T. Ambler had given another for the best series of architectural designs; Mr. Archibald Ramsden had given one for the best design for a pianoforte; Mr. Franks had offered one for a design for a plaster cornice; and Mr. Walker had given one for the best set of measured drawings of old buildings in the neighbourhood of Leeds. Mr. Hobson had carried away his (Mr. Corson's) prize, and those of Mr. Ramsden and Mr. Franks; Mr. E. P. Shires had secured Mr. Walker's prize with a drawing of the Chapel of St. Mary Magdalene, Ripon; and Mr. Riley had obtained Mr. Ambler's prize. Mr. Corson added that it was intended at a future period to give a medal for the best series of measured drawings of buildings erected previous to 1750. Their society, however, was only young, and they might have to amend their programme. The business portion of the proceedings having terminated, the company inspected the various objects of interest exhibited, and the soirée was brought to a close shortly after ten o'clock.

The local board of health for Chelmsford are about to borrow £15,000 for carrying on a scheme of sewerage for that town, the suburbs of Springfield and Moulsham, and a few closely adjoining parishes. The sewage will be treated by irrigation at Brookend, Springfield, to which point it will be conveyed by gravitation.

The complete lists of plans for private bills were deposited in the House of Commons Private Bill Office on Friday last. There has been an increase in the number of the plans of railways, tramways, provisional orders, and miscellaneous bills as compared with last year. In the session of 1877 there were 73 railway bills, 14 tramways, 69 provisional orders, and 67 miscellaneous—total, 223. In the ensuing session there are 78 railways, 20 tramways, 95 provisional orders, and 77 miscellaneous—total, 270, or 47 more than last year.

Plans and designs, prepared for the county magistrates of Bedfordshire, for the rebuilding of the Shire Hall in St. Paul's-square, Bedford, were submitted to the Town Council of Bedford on Friday. The ground plans were generally approved of, but Alderman Horsford and others complained of the mean character of the proposed elevation, which was a mere alteration, with little improvement, of the front put up 80 years ago. Several members considered that a more ornate elevation was desirable for such a site, but a rider suggesting this for the consideration of the county magistrates was lost by 6 votes against to 5 for, the majority of the council deprecating the expense and delay which might be occasioned by the recommendation.

Building Intelligence.

BOSTON SPA.—The rebuilding of St. Mary's Church, Boston Spa, which was commenced in 1872 by the erection of a chancel, south transept, and south aisle, has this year been further advanced by the addition of the nave. The north and south sides are formed, commenced eastward, with arches opening to the transepts, and carried westward by arcades of three arches and piers opening to the aisles. These carry a clerestory. The stone used for the clerestory walls is that which composed the western tower. All the ashlar stone for windows, piers, arches, &c., is from the limestone quarries at Bramham Moor. The work done up to the present time has cost over £5,000, and the future work for the completion of the church, for which about £3,000 is required, is the building of the tower at the west-end of the nave, and the alteration of the present north aisle.

GARSTON.—The new parish church of Garston, near Liverpool, was consecrated last week. The new church, the style of which is Decorated, consists of a nave 92ft. 6in. by 22ft.; chancel, 30ft. 6in. by 21ft. 3in., with apsis at east end; north and south transepts, 28ft. 6in. by 23ft. 9in.; and north and south aisles, 68ft. 9in. by 11ft. There is a tower at the north-west, 10ft. by 10ft. internally, used as a porch, opposite to which is a porch 11ft. 6in. by 9ft. At the south-east there is an organ-chamber 15ft. by 14ft., and a vestry at the north-east. There is accommodation for 800 adults. The designs include a spire, but the erection of this has been postponed for want of funds. The contract for the church was taken by Mr. C. W. Mullin, of Liverpool, for the sum of £5,830. The church has been erected from the designs of Messrs. T. D. Barry and Son, of Liverpool.

IPSWICH.—St. Peter's Church, Ipswich, has been partially restored, and enlarged under the care of Mr. Gilbert Scott. Three new arches have been placed across the church at the east end of the nave and aisles. The entire floor of the chancel and aisles has been raised a step, and paved with Minton's tiles, the spaces being filled with Clipsham stones. The aisles also, except where the tombstones which were formerly in the chancel have been relaid, are paved with Clipsham stones, and 9in. Staffordshire tiles. The north chancel aisle is an addition to the area of the church, and the walls of it are new, while almost the whole of the east end has been rebuilt and a new east window inserted. The additional space afforded by the added aisle about compensates for the seats lost by the demolition of the gallery. The present area will comfortably seat about 650 people. The south porch, a good specimen of 15th century work, has also been restored.

METROPOLITAN BOARD OF WORKS.—On Friday this board directed that, with reference to the Building Acts Amendment Bill, replies be forwarded to the Westminster District Board, stating that it is not proposed to take any steps next session for the prevention of the use of hoardings for advertising purposes; and to the Society of Medical Officers of Health, stating that the board is not in a position to add a clause to the bill giving power to vestries and district boards to make bye-laws for regulating drainage, water supply, &c., in a similar way to those given to extra metropolitan authorities under the provisions of the Public Health Act, 1875, and that the board be the confirming authority. Drawings prepared by the architect, showing proposed alterations and additions to be made to the buildings in Chapel-place and Bruton-mews, Brompton-road, to fit them for the purposes of a fire-brigade station, were approved, and it was directed that tenders be obtained for carrying them into effect. An application from Messrs. Holland and Hannen, on behalf of Messrs. Kershaw and Becton, for the construction of a bridge over Nelson-street, Leman-street, E., was granted. Permission was granted Mr. W. Seckham Witherington, to erect two pairs of cottages on the Plumstead-park Estate, with Gater's patent concrete bricks. It was reported that a large number of applications had been received for appointment of assistant in the drawing office of the

superintending architect, and the works committee were requested to examine these, and reduce the number of candidates to six, for selection by the board.

NORTON LEES, DERBYSHIRE.—A new church at this place has just been consecrated. It is in the Early English style, and consists simply of nave and chancel. The tower is octagonal on plan, and above the lancet light belfry windows the spire springs at each angle from carved gargoyles. Dunford Bridge stone has been used, and the roofs are steep-pitched, and are interspersed with bands of varied colour, the whole surmounted by a red cresting. The apex stones of the gable have richly-foliated crosses. The interior of the church, although small (just over 110ft. from east to west), is pleasing; the roofs are of considerable altitude, and, springing from stone corbels, are of red deal, stained and varnished. The chancel arch is carried by foliated capital, and there is a carved pulpit and lectern in oak, the other fittings being of pitch pine. Mr. T. R. Rodby, of Sheffield, carried out the stonework, and Mr. T. Bodger, of the same town, the woodwork. The stone carving is by Mr. Harry Hems, of Exeter. The church has been designed and erected under the immediate superintendence of Mr. J. D. Webster, architect, of Church-street, Sheffield, at a cost of £3,400.

TADCASTER.—A new cemetery at Tadcaster was consecrated last week. In all it has cost about £2,800. It is about 6½ acres in extent, and contains a keeper's lodge and two chapels. These buildings are built of Bramham Moor stone, with slate roofs. Messrs. Atkinson and Co., of Micklegate, York, are the architects, and Mr. Watson, of Barkstow, was the contractor.

UNION CHAPEL, ISLINGTON.—The new chapel at Islington for Dr. Allon's congregation was opened on Wednesday, Dec. 5th. In plan and arrangement it is somewhat of a novelty, belonging to the class which includes Santa Fosca, Torcello, St. Stephen's, Walbrook, and other churches based, not on the ordinary principle of a nave and aisles, but rather on that of a large central area. The purpose of this arrangement is to bring all the congregation, numbering 1,600 or more, well within range of the preacher's voice, and to place them where the stone piers will not intercept their view of the pulpit. The galleries, unlike those which it was the fashion a hundred years ago to thrust into many old and all new churches, are not mere wooden stages. As at Andernach and Flavigny, in Western Europe, and in many Byzantine structures, they form an essential part of the general design; they are carried on stone arcades, and have stone parapets inlaid with marble and onyx. A large tower, of which the first 60ft. only are built as yet, forms the centre of the west front. Internally it opens into the church by a lofty arch, and contains nearly 300 sittings. Behind the chapel are schools for 700 children, a lecture-hall, and a multitude of class-rooms and vestries. The architect is Mr. James Cubitt, author of "Church Design for Congregations."

A new clock and bells have been added to Sligo Cathedral by Messrs. Gillett and Bland, of Croydon.

There are rumours, we are sorry to hear, on the authority of the *Athenaeum*, that a very extensive and comprehensive scheme of restoration has been resolved on by the chapter of Southwell Minster. It is proposed first to re-roof the whole building, to build two spires on the magnificent Norman towers at present existing, to remove the present choir screen, modelled by Bernasconi, and substitute an "elegant" iron grill for it; and, in short, to make this ancient building a great deal better than new. Surely the funds for such an outrage will not be forthcoming.

Several improvements and developments are in contemplation at the Lincolnshire watering-place of Skegness. At a meeting held on the 22nd ult., of the Pier and Hotel Company, plans for a pier, prepared by Mr. Sandeman, C.E., of Newcastle-on-Tyne, were approved. The pier is to extend 600 yards into the sea, to be floored 15ft. above spring-tide level, and, with ornamental head, landing-stage, and refreshment-rooms, is estimated to cost £14,000. It was also decided to erect an hotel adjacent to the foot of the pier, at a cost of about £6,000. A meeting has since been held to promote the erection of a new parish church to seat 700 persons, and to cost £3,000. The Earl of Scarborough is supporting each of the undertakings, and in this instance gives the site and some of the materials.

PUBLIC HEALTH.

The Leading Journal of Sanitary Science and Progress. The number published December 7 contains articles on Over-crowding in Liverpool, Proposed Hospital for Infectious Diseases at Maidenhead, Biblical Sanitation, Dr. Acland on Hydrophobia, Tube Wells, Purification of Sewage, Epidemics in India, Unhealthy Premises in Liverpool, Dr. Richardson on Temperance, Accrington and its Medical Officer of Health, Rewards for Information as to Cases of Infection, Public Health Reports, Legal Intelligence, Correspondence, Intercommunication, The Editor's Table, Clearings, &c. Price 2d. Annual subscription, postfree, 11s. 3d. Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—G. A., Dublin.—E. T.—H. C. and Son. DESIGNING CLUB.—Drawings received:—A. L. B., Medicus, Mentouniere, L. in G., Excelsior, Cave Canem, J. W. C. (in circle), Naiveté, Nomme, Ambition, Discreet Volo, Tom Pinch, D. and H., J. A. Seward, S. Dutton, Walker, W. Watson, H. F. B., W. W. N., J. E. S., R. H. Hill.

Correspondence.

THE ARCHITECTURAL STUDENT.

To the Editor of the BUILDING NEWS.

SIR,—In a letter published in your last week's issue your correspondent, "C. P. E." cannot imagine why the Royal Academy of Arts (course) should be included in the "Architectural Association Handbook." The reasonable degree of proficiency is, to his mind, an unreasonable degree, and a student must bind himself for seven years.

The regulations for admission as student of the Royal Academy are inserted in the handbook for the same reason that the lectures at King's and University Colleges, and other courses of instruction, are given—viz., to point out to the members where they can obtain further training than that which is to be acquired by office routine.

The standard of excellence required by the Academy is far lower than that which is insisted on in all the French, German, and Italian schools. Many of the students of the Academy, after one year's study there, join the classes of the Association, but I have not yet heard that the excellence of their drawings is superlatively good or unreasonable. It would be interesting to learn from "C. P. E." in what manner the students of the Academy are bound for seven years, and the nature of the penalties inflicted if they fail to attend; also whether, as a member of the Association, "C. P. E." considers himself bound to attend all the meetings, work for all the classes, and contribute regularly to the "Sketch Book." The privileges of an Academy student are:—(1st) Gratuitous instruction in drawing and design; (2nd) the right of attending all the lectures; and (3rd) free admission to the exhibitions held at Burlington House for a period of seven years. But "C. P. E." is not obliged to avail himself

of these privileges any more than he is expected to raise the standard of excellence of his drawings to an unreasonable degree to pass through the course there prescribed.—I am, &c.,
R. PHENE SPIERS.

ENGLISH AND FOREIGN WORKMEN.

SIR,—I am glad to find your correspondent, "G. H. G.," agrees with me as to the importance of establishing the proposed technical colleges for workmen not properly taught, and for artisans' boys on leaving school, for whom no proper provision is made by apprenticeship or otherwise at the present time.

I did not say, however, that free trade was the necessary cause of the decline of British workmanship, but I pointed out how free trade had been misused and turned to the convenience of capitalists, with the evil consequences inseparable from selfish aggrandisements.

The common accusation that the unions impede the skilful and best workmen and reduce them to the level of the unskilful, is founded on fact, and therefore it is a just accusation, the grave consequences of which are best known to those who have suffered by them. Let me give an example:—A gang of masons were set to prepare a quantity of stone steps. The builder, a master mason, observed that at the rate the work proceeded he would lose money by the staircase, although he had been allowed a fair price. He watched the gang and soon spotted the inferior workman, down to whose capacity all the rest were working. Upon the withdrawal of this man the work proceeded at the usual pace, and the builder reaped the reward of his tact and observation. Comment is superfluous.

As regards "piecework," "sub-contracting" is not exactly the same thing. A contract may include piecework, often with advantage to every one concerned, when a skilful workman by this means is enabled to exercise his talents to his own advantage, reaping the reward of excellence and that which commonly accompanies it—rapidity of execution. Whatever tends to individualise work is as helpful to the best workman as it is injurious to the worst. The piecework system so understood, was exactly "that under which our greatest architectural works were carried on."

Separate contracts for separate trades always existed, and masters of each trade took pride in their work, and their apprentices were proud of their masters, and sometimes eclipsed them, which in the case of the 'prentice pillar at Roslyn had a tragic ending, but the pier remains to tell of loving handicraft. It is the association of all trades in one great contractor that is the invention of our times, and without it, perhaps, many of our greatest achievements would never have been realised. But this is essentially an engineering system, and where time is limited, and concentration and co-operation is demanded in vast inartistic works, no better plan could be devised; but in works of art and taste it is different.

Both architect and proprietor may be glad of the concentration of responsibility peculiar to the one-contractor system, and of the ease with which it enables them to get through the business of building at the lowest cost and least trouble and risk to themselves; but they must not expect the same interest to be taken in the work, or the best workmanship to be the result, unless the work be done and measured at a schedule of prices, which then ceases to be contract work at all, as is usually understood and practised.

"G. H. G." rightly remarks "apprenticeship now is very different: the high-pressure master has no time to devote to his younger men." In fact, many of the great contractors haven't a single apprentice, and how the young men pick up their knowledge of their trades is a marvel, and without doubt the levelling principles of trade-unions alone enable many men to get a living. Good workmen, well taught in youth, are, and always will be, independent of associations; bad workmen, ill-taught in youth, are, and always must be, dependent on extraneous aids.

High prices are not grudged to men whose separate work will command it, but they are withheld from men whose aggregate work is

inferior, or certainly not meritorious. As "G. H. G." admits, "If trade-unionism fulfils its legitimate function, it will simply content itself with the regulation of the profits of trade." Nothing can be more unprofitable than the disorganisation produced by strikes, which have never yet been proved an advantage to those for whom they are supposed to be a defence. The carpenters' strike in France in 1840 led to the invention, and subsequent, almost exclusive construction, of roofs and floors of iron and plaster. Substitutes for stone are now in demand, and the loss of work to be done hereafter will lessen the profit of higher prices even if they are gained; in short, in such a case, the next harmful thing to defeat is victory.—I am, &c.,
E. C. R.

TOWER BRIDGE.

SIR,—Among the Parliamentary plans deposited for the ensuing session are two proposals for relieving the traffic north and south of the Thames, the widening of London-bridge, and the erection of a bridge at the Tower. The former is deposited by the City architect, and the latter by Messrs. Le Fevre and Co.

The bridge at the Tower is to consist of five spans or openings—one span 200ft., 30ft. clear headway; two spans 150ft., 28ft. clear headway; two spans 110ft., 25ft. clear headway. The bridge has been designed by Messrs. Le Fevre and Co. with a view to meeting the objections raised by the Thames Conservancy and the wharfingers during the progress of the bill last session. A model of proposed bridge may be seen at Messrs. J. and G. Rennie's, Holland-street, Blackfriars.—We are, &c.,
LE FEVRE AND CO.

PRESERVING AND RESTORING ANCIENT BUILDINGS.

[COPY.]

The Society for the Protection of Ancient Buildings, 26, Queen-sq., Bloomsbury, Oct. 30, 1877.

SIR,—It having come to the knowledge of the committee of this society that the interesting church of North Frodingham was about to be restored, a letter was written to the vicar (a copy of which I enclose) deprecating such restoration. A reply was received, in which he says, "Allow me to refer you to my architect, Hugh R. Gough, Esq., 6, Queen Anne's-gate, Westminster, who will no doubt be able to correct your mistaken judgment." I enclose a prospectus, and shall be glad if you would kindly reply at your earliest convenience.—I am, Sir, yours very truly,

For WM. MORRIS, Hon. Secy.
Hugh R. Gough, Esq. (Sgd.) V. Newman Marks.

The following is a copy of the enclosure referred to in the above:—

The Society for the Protection of Ancient Buildings, 26, Queen-sq., Bloomsbury, Oct. 1, 1877.

SIR,—The Committee of the Society for the Protection of Ancient Buildings have heard with regret that you propose to "restore" your church of North Frodingham, and they desire me to call your attention, and to note the dangers that beset all restorations. As you will see by the enclosed prospectus, the society protests against any restoration that means anything but necessary repairs. Having seen your sketches of the church "as it is" and "as it will be," the committee infinitely prefer the old structure "as it is," and they trust that such an act of vandalism, as is contemplated, will not be carried out.—I am, Sir, yours very truly,

(Signed) WM. MORRIS, Hon. Secy.
Rev. H. West, Vicar of North Frodingham.

Re North Frodingham Church,
6, Queen Anne's-gate, St. James's-park, S.W.,
November 1st, 1877.

SIR,—I should be glad to know the grounds on which your society see fit to accuse me of an act of vandalism. It is a serious charge to bring against an architect, and if, as I presume, it be founded simply upon a very badly-executed sketch of the church as it was and as it is to be, issued by the vicar in an appeal for funds, and without their having any actual knowledge of the church itself or the works now being carried out, I must say I think the liberty they have taken is a most unwarrantable one; indeed, it appears to me to amount to libel, and such statements made to clients are calculated to injure my reputation and put me to pecuniary loss.

Although I have a very great reverence for antiquity, and have constantly to insist upon retaining old work, often against the wish of my clients, I am unprepared to go to what seems to my mind the absurd extremes of your society—that is, if I read your prospectus aright.

The neglect and irreverence of the past three centuries have left much to be amended, and much to be undone: fine roofs concealed by plaster ceilings, good masonry plastered over, mural decoration hidden by successive coats of whitewash, mean ricketty tables in lieu of altars, "three-deckers" in place of decent pulpits, "the squire's pew" instead of stalls and desks for priests and

choir, family pews and faculty pews of all sizes and shapes; the singers' and other galleries, with their inevitable ricketty staircases, destroying the beautiful proportions of many a parish church; the Lion and Unicorn instead of Holy Rood; stoves with hideous pipes carried through roof or window; these and a host of other such abominations are certainly "historical," but their history is a sad one, and I, for my part, feel no reluctance in sweeping such things away, and "restoring" a church to the use for which its founders and benefactors in times past intended it. Doubtless, as Mr. Ruskin says, "the dead have still their right in them." The faithful departed who built them, not only for themselves, but for posterity, will not grieve but rather rejoice at such restoration as this. Again, your society would, I presume, simply "protect" a ruin. Many an old abbey, crumbling away, and half overgrown with ivy, ferns, and mosses, is, I admit, a "picturesque" object, yet, I think, a painful one, and I would infinitely rather see all such "restored" to their religious use, crowded with devout worshippers, than "protected" as choice subjects for the artist's pencil, or sights for gaping and irreverent excursionists, perhaps picnicing at a ruined altar. Although we have no 19th century style of architecture, I do not see that we want one any more than we require a new religion. Your society pray me "to remember how much is gone of the religion, thought, and manners of times past, never, by almost universal consent, to be restored." In this opinion we differ vastly. The very work you attempt so feebly to resist, indiscreet and unwise as much of it has been I admit, goes far to disprove your statement. What has the work of the last 40 or 50 years been but to restore the beauty of the religion, and with it much of the thought and manners of times past?

If such a work as this be vandalism I rejoice to say I plead guilty to the charge, and trust I may add many more such acts to those I have already and am now committing. I can only respect the history of a sacred building so long as it has not interfered with the use for which it was intended. Changes, historical though they be, which have interfered with its use, I am ever ready and anxious to obliterate, but whatever else remains to show the ancient structure and its alterations in successive ages I am unwilling to touch. Thus it is not my practice to remove a particle of old work so long as it is or can be made capable of doing the duty it was intended for, nor do I in any case permit old stone or other material to be scraped and made to look like new—such, I admit, is vandalism; but when roof or walls are, from age or neglect, unsafe or incapable of doing their duty, I do not hesitate to pull down and rebuild, unless they admit of repair. Contrary to Mr. Ruskin, whose brilliant talents I am bound to esteem, I consider we have the same right to touch an old building, when occasion requires, that our forefathers had, and if the original builders intended their works to be permanent they must at the same time have been aware that materials were liable to decay, and have trusted to future generations, renewing from time to time, and with careful and reverent hands, that which should decay. I am also of opinion that a lost limb even is often better than a crutch, as a decayed member may affect the whole body.—I have the honour to be, Sir, your obedient servant,

(Signed) HUGH ROUMIEU GOUGH.
The Society for the Protection of Ancient Buildings, Wm. Morris, Esq., Hon. Sec.

P.S.—I reserve to myself the right to publish this and any further correspondence on the subject.

The Society for the Protection of Ancient Buildings, 26, Queen-sq., Bloomsbury, Nov. 28, 1877.

SIR,—I am afraid we must plead guilty to having founded our criticism on the sketch you have mentioned, to which a member of our society called our attention. It was clear from this sketch that considerable alterations are proposed to be made in the fabric of the church, and we presumed that these alterations would be of such a nature as our society would condemn. That we were not mistaken in this presumption has been rendered obvious by your letter to me, which undoubtedly advocates principles diametrically opposed to ours. It would be useless for me to enter into a lengthened argument upon these principles, especially as you have seen a general statement put forward by the authority of our committee, and all the more useless as it seems to me that you argue beside the question, and make it rather a matter of Ecclesiastical* propriety than of art or antiquarian interest. It is from these latter points of view alone that our society professes to deal with the matter, believing, at the same time, that it is not impossible to reconcile the interests of art with Ecclesiastical* propriety.

You may be quite sure that there could be nothing personal intended in what we have said about work which it seems you have contemplated. We should have said the same to any other architect under similar circumstances.—I am, Sir, your obedient servant,
(Signed) WILLIAM MORRIS, Hon. Sec.

Re North Frodingham Church,
6, Queen Anne's Gate, St. James's-park, S.W.,
1st December, 1877.

SIR,—I have to acknowledge the receipt of your letter on the 28th in reply to mine of the 1st ult. If the principles therein advocated by me are diametrically opposed to yours, I quite agree that it would

* Thus in original.—H. R. G.

be useless to enter into argument. I am glad to hear that you think "it is not impossible to reconcile the interests of art with ecclesiastical propriety." Such has been my aim, and the question whether this result will be best attained by following the principles advocated by me or by those which are diametrically opposed to them and put forward by your society, I am content to leave others to judge. It may be that you intended nothing personal in your remarks to my client, but as you say you would do the same in the case of any other architect under similar circumstances, I would remind you that in so doing you incur a responsibility and lay yourselves open to an action for damages. It would, therefore, be desirable for you in future to know a little more of a proposed work before condemning it.—I am, Sir, your obedient servant.
(Signed) HUGH ROUMIEU GOUGH.
Wm. Morris, Esq.

ARCHITECTS AND BELLS.

SIR,—Will you allow me to make a few remarks about the very awkward way in which architects often design steeples and turrets for bells in new churches? I shall not now speak of the high narrow steeples often designed for peals of eight and upwards, where it is often impossible to hang all the bells for ringing without "hoisting" some; but I shall touch on the awkward inaccessible turrets designed to carry one or more "ting-tongs." Several times I have been compelled to bring ropes down from these through diagonal or even horizontal pipes in the wall, over pulleys, though I knew all the while they would not act properly so. Then, again, these turrets are generally accessible only by a high ladder, so that it is quite an undertaking even to mend a rope or oil the bell. To remedy this, and render breaking the rope less liable, I have seen heavy chains attached at top, which almost weigh the bells up by themselves, and render anything but slight jangling impossible. The drawings of All Souls, Harlesden, amused me, where five small bells seem to be hung in three different turrets, and four of them have the ropes down a long pipe, and drawn out by the chimer almost horizontally—the worst thing possible. These I perceive are not inaccessible, but, may I ask, are these all meant to be chimed together? Surely, architects might always manage to make a weatherproof turret where the rope could be carried straight from the wheel or lever through the roof; and, if not accessible by stairs, could not fixed ladders or irons in the wall be provided for a man to be able to reach the bell at five minutes' notice at most? As for steeples, let them never be less than 15ft. square inside.—I am, &c.,
Sutton Bridge, Lincolnshire. J. R. JERRAM.

Intercommunication.

QUESTIONS.

[5215].—Heaton Norris and Reddish Cemetery Competition.—Can any correspondent inform me whether any decision has been come to in the above competition, and, if so, whether the premiums have been awarded, and to whom?—M. E. T.

[5216].—Wanted a Remedy for Checking Progress of Damp in a House.—Would you kindly, through your columns, obtain for me a word of advice on the following? A gentleman living in the south of Ireland called me in professionally to suggest a remedy or even a stay to the progress of damp, which exists in his dwelling. The house has four stories, its front and gables neatly and substantially cemented, has a projecting cornice, with good weathering, a blocking, with sound lead gutter behind, having high turn-up and broad-top flashings, set with slate slips in cement. On examination I found most of the rooms uninhabitable—not damp alone, but actually water streaming down the walls, the plaster cornices saturated, and, in many instances, crumbling away, while the ceilings were wet and discoloured for many feet into the rooms. My first impression was that the gutter was faulty. This I examined, inch by inch, yet not a flaw, the slating perfect, and not the slightest evidence anywhere of a weak point. On inquiry, I found that this house was built about ten years since, of our local sloh bricks. These bricks are made out of the slob at the mouth of the Douglas river, a place not far distant from Cork Harbour, and, of course, before burning must contain a large percentage of salt; but I thought the open-air process of drying, with the subsequent calcination would suffice to drive out such an amount of this treacherous substance, that the residue would be, for all practical purposes, harmless. Yet, in this case I must ascribe all the evil to the use of those bricks. I should very much wish to obtain other opinions, and to learn what remedy there may be. Battening and sheeting may hide the walls, but how save the ceilings?—A CONSTANT SUBSCRIBER.

[5217].—Mansard Roof.—Will some practical reader kindly give me the dimensions of scantlings in a mansard roof—distance between centre of walls 32ft?—Two Foot.

[5218].—Raising House.—What is the proper mode to ascertain the additional weight thrown upon the walls, caused by raising a two-storied house another story, and what precautions should be taken to ensure the old building settling; and in building

a new wing to the old house, what depth should the foundations be taken to be safe for both portions?—Two Foot.

REPLIES.

[5153].—Damp Ceiling.—I should recommend "I. A. C." to dig up the earth over the cellar or that part of it which is damp, and to cover the rag landings which form the ceiling of cellar with a layer of asphalt about an inch thick. This layer would be judiciously extended below the flagged path as well. The asphalt may be laid to a slight fall on either side. After this has been laid, fill in the garden earth again.—G. H. G.

[5155].—Projecting Perspectives.—It is quite practicable to project the rays backwards from a small scale plan. Of course, the draughtsman must decide on the size he requires for the perspective, and draw the seat of his picture plane at right angles to the line of sight, upon which the several diverging rays are projected. As to the elevational heights, they may be obtained by making a proportional scale.—G. H.

[5179].—Binding the "Building News."—Your correspondent will find it much more convenient to bind his large illustrations the full size of the page, and avoid folding them. The binding should be on the end and not on the side. I have the illustrations for the last three years bound in two large and 5 small volumes, each about 1 1/2 in. thick, and find this arrangement exceedingly convenient.—G. Z. A.

[5193].—Concrete.—"J. M. S." will find all the information he can well get on the subject in "Concrete: its Use in Building," by Thomas Potter; or he may inspect houses I am erecting in concrete and brick.—WM. CHYNOWETH, Handsworth.

[5203].—Competitions.—By all means "Engineer" can claim compensation for the missing specification and plans, if he has applied for them without satisfaction. Architects are put to enough trouble and cost in sending in drawings without being losers of their labours.—H.

[5205].—Tar Paving.—A good tar paving is made by boiling creosote oil and pitch together, in the proportions of 1 gal. of oil to 1 lb. of pitch. Mix well together. The best foundation is clean gravel, well dried, the coarser sort being laid at the bottom, and the finer at the top. The dark surface of the tar can be lightened by siftings of fine gravel or crushed spar.—G.

[5209].—Ceilings.—The best remedy would be to knock off the loose plaster and repair the ceiling. Sometimes lining with paper may be resorted to; the latter is the cheapest mode of making good a ceiling in the condition named.—BUILDER.

[5214].—Tilting Fillet.—Attachment of Girders.—The effect of laying slate without any tilting fillet may be conceived without a sketch. Of course, the effect would be meagre, and there would be less prominence or contrast. A fascia board may be utilised by making it deeper, so that its top edge would form the tilt under the first row of slates.—H.

LEGAL INTELLIGENCE.

LOCAL BOARD BYE-LAWS.—INFRINGEMENT.—A somewhat extraordinary case was recently heard at Eastbourne before Mr. Swift (in the chair), Mr. Goldfinch, and Mr. H. Curtis. John Harding, a local builder, was summoned for building four houses without the distance at the rear required by the Local Board Bye-laws.—Mr. Coles, the clerk of the Eastbourne Local Board, appeared for the prosecution; and Mr. Lamb, of Brighton, for the defence.—The facts are as follows:—In the month of June last, the defendant, wishing to build some houses in the York-road, instructed Messrs. Blessby and Spurrell, architects, to prepare the plans. They were accordingly prepared, and in due course submitted to the building committee of the Local Board, were passed by them, and sent before the board, who, by resolution on the 2nd of July last, approved the plans. The property in question adjoins that of the chairman of the board. About the end of July the defendant began to build the houses, and continued to do so until the 28th September, when he received a complaint from Mr. Jones, the surveyor, as to two of the houses, that they did not comply with the bye-laws. On the 4th of October he received a notice to discontinue the building altogether, and did so. Mr. Graham then met the defendant, and told him that the cottages would overlook his premises, and wished to know whether they could come to terms for purchasing the carcasses of the cottages as they stood. Ultimately, however, a summons was issued to compel him to pull down the buildings.—Mr. Lamb, in his defence, contended, firstly, that having given their approval of the plans the board could not, after such a lapse of time, withdraw it. In the course of his observations he commented strongly upon the course adopted by the board in actually prosecuting Mr. Harding for erecting a building according to plans which the board itself had sanctioned. He further contended that the proceedings of the board were premature, inasmuch as the buildings, being incomplete, were not, according to the bye-law, a dwelling-house.—The Chairman of the Bench said the magistrates were of opinion that however discreditable it might be to the board to institute these proceedings against a person for building according

to plans which they had sanctioned, the Local Board had no power whatever to alter their bye-laws as they pleased to suit different cases, and were in all instances bound to enforce them, as much, indeed, as if they were Acts of Parliament. Under these circumstances, the board was not bound by its mistake. The penalty was £5, but defendant would be fined 5s.—Mr. Lamb then asked for a case, which was granted.

FIRE REINSTATEMENT.—GREENWICH POLICE-COURT.—Messrs. Cubitt and Co. appeared to two summonses at the instance of the Vestry of Rotherhithe, charging them with infringements of the Metropolitan Local Management Act, in failing to give notice of the rebuilding of two houses in Rotherhithe-street, in that parish. Mr. Stokes attended in support of the summonses, and Mr. H. D. Greene, barrister, instructed by Messrs. Dawes, of the Temple, City, for the defendants. The case occupied some time in hearing, but the facts may be briefly stated. On Sunday morning, the 24th June last, between four and five o'clock, an extensive fire broke out at granaries in the above street, and the flames spread and set fire to two houses, situate north and south, and numbered respectively 357 and 35. The former was occupied by Mr. Carpenter, a pawbroker, and the windows were broken by the heat of the flames, which entered the building, and great damage was sustained, the whole of the original walls standing, except a wall at the back of the premises, where there was 5ft. of the old wall left, and of the premises. 35, the old walls stood at the height of 15ft. Mr. Greene contended that there had been no rebuilding, only repairing, of the premises, and that under the 75th and 76th sections of the Act the penalty imposed was only applicable where notices were not given of the digging of foundations for new buildings. The premises in question had received extensive repairs with the assent of the Phoenix and the Guardian Insurance Companies, by the defendants, who had for years carried out works damaged by fire, and had never given such notice. The case was one of great importance, and he objected to an adjournment of the case, which had been asked for, to call the surveyor to the vestry to give evidence, who had failed to attend that day. Mr. Slade said, from the evidence before him, he did not consider that any offence had been committed, and both summonses would be dismissed. Mr. Greene asked that defendants' costs of attendance should be allowed, but was informed that costs were not usually allowed in such cases.

LIGHT AND AIR.—Motion to Commit for Contempt.—Chancery Division.—Dickey v. Pfeil and others.—Mr. Chitty, Q.C. (with whom was Mr. Ribton), moved on the part of the plaintiff to commit Messrs. Pfeil, Stedall, and Co., wholesale iron-mongers, of Holborn, for an alleged breach of an injunction granted in the long vacation by Mr. Justice Fry, restraining them from carrying up a wall beyond certain specified limits, so as to obstruct the access of light and air to contiguous houses belonging to the plaintiff. The wall, as erected since the order, caused a current of air, which drove the smoke down the chimneys of the plaintiff's houses, and his tenants had in consequence left, and the plaintiff, asserting that the defendants had contravened the order of the court, moved for the committal of the defendants. Mr. Martin, Q.C., appeared for the defendants, and referred his lordship to the precise terms of the order, by which it appeared that the wall complained of was not built in breach of the injunction. His Lordship (the Master of the Rolls) refused the motion with costs, and the defendants afterwards undertook to raise the chimneys of the plaintiff at present affected by the wall of the defendants.

IN RE J. F. AND E. VAN CAMP.—The bankrupts, Messrs. John Francis and Edward Van Camp, were builders and contractors, carrying on an extensive business at Station-terrace, Kilburn. This was a first sitting, held on Wednesday, for the proof of debts and the appointment of trustees. The bankrupts had presented a petition for liquidation, but at the first meeting no resolution was passed by the creditors, and an adjudication followed. The debts were returned at about £230,000, of which the greater portion were unsecured, with assets of the nominal value of £23,000; but it was understood that a composition of 5s. in the pound would shortly be offered to the creditors. Proofs to a large amount having been admitted, Mr. J. J. Michael, merchant, Portobello-road, and Mr. S. Lovelock, Coleman-street, were appointed trustees, with a committee of inspection consisting of Mr. E. M. W. Goslett, Soho-square, and Mr. Henry Lucas, Lombard-street.

STONEMASONS' NAMES ON WORK.—A singular case came before the West Hamlet bench on Monday week, a stonemason, named Francis Jones, being summoned by a Dr. Atkinson, of the same town, for damage inflicted by him on a stone enclosure at the cemetery. At Dr. Atkinson's request defendant made a palisading, and took the opportunity of inscribing his name upon the stonework, and had since refused to erase it, alleging it was the usual custom; hence the action. Mr. Simpson, who appeared for the prosecutor, contended for the purpose of bringing the case within the Act, that the conduct of defendant was wilful and malicious, and cited a case in point. Mr. Francis Oldfield assessed the damage at a sovereign. He admitted that it was usual to put the mason's name on a stone bearing an inscription, but not if objected to, and never

on a blank stone. The defendant said he had no idea the doctor would have objected, but he had since obliterated the name from the palisading. Mr. Oldfield, recalled, said this was so, but the stone was worn off the plumb. Defendant thereupon promised to supply another stone, and on this arrangement the magistrates adjourned the case for a week.

WATER SUPPLY AND SANITARY MATTERS.

FRASERBURGH, ABERDEENSHIRE.—On Thursday in last week the police commissioners met for the purpose of formally inspecting the sewerage works, which have just been completed throughout the town. The work has been carried out from the plans, and under the supervision of Mr. John Jenkins, of Aberdeen, by Messrs. Murray and Urquhart, contractors of the same city, at a cost to the commissioners somewhat exceeding £4,000.

TUBE WELLS FOR WATER SUPPLY.—At a meeting of the Society of Engineers, held on Monday evening, a paper was read by Mr. Robert Sutcliff on "Tube Wells for large supplies and in various strata." Mr. Sutcliff observed that in laying down plant for obtaining large supplies of water a number of tube wells were coupled together by horizontal mains, so that one pumping engine drew from many tubes. In this way, for the last eight or nine years, the leading breweries in Burton-on-Trent have obtained the bulk of their water supplies. Messrs. Allsopp and Sons pump 600,000 gallons daily from 30 three-inch wells, and Messrs. Bass and Co. 500,000 gallons from 25 tubes. Thus in one town two breweries are obtaining sufficient water for a town of 40,000 inhabitants. Although some of these Burton wells are within a stone's throw from the Trent, the quality, level, and temperature of the tube water differ from those of the river water. The town of Carmarthen, in Wales, is supplied by 10 two-inch tube wells. In sandy soil strainers or filters are used, which prevent sand coming into the tubes. A tube well was sunk in a very fine sand at Chislehurst by pumping up six barrow loads of sand and replacing it with gravel. One advantage of the gravel filter is its imperishability, and if made sufficiently large the velocity of the water is not sufficient to bring the grains of sand within the area acted upon by the pump. The author observed that in rocks and other hard strata the method of sinking tube wells was similar to that employed in making artesian borings, but the mode of pumping and development of supply was entirely peculiar to the tube well system. Bored tube wells can be made through any stratum and to any depth that an ordinary artesian boring can reach. Mr. Sutcliff thought it possible that coupled tube wells in the chalk might solve the problem of providing London with pure water.

The guardians of Eastbourne Union propose to expend £2,500 on the erection of an infectious diseases hospital in connection with the workhouse. At Friday's meeting of the board, besides deciding on this step, the members accepted the contract of Messrs. Morris and Son, amounting to £114, for laying on gas to the house.

Messrs. Wilson and Masters, of Sheffield, have this week been appointed architects to the School Board for Hunshelf.

The Rawmarsh School Board last week adopted a plan and specifications by Mr. Platts, architect, for a new school for 700 children, to be erected in Netherfield-lane. The building will be of brick, with stone facings, and is estimated to cost £4,000, exclusive of site, for which another £1,000 is to be paid.

The thirtieth annual ball in aid of the funds of the Builders' Benevolent Institution will be held at Willis's Rooms, on Thursday, the 31st of January.

Our Office Table.

LECTURING on Saturday upon technical education, Professor Huxley regarded its basis as elementary education plus such a training as would awaken intelligence, some knowledge of the elements of physical science, and an ability to draw. The present system of universal education formed the nucleus out of which a satisfactory system of technical education might be developed. He advocated an intellectual ladder, by which youths of special aptitude might be assisted to rise through the universities to any position they could reach; and commended the modern movement of the London livery companies towards reviving the traditions of the guilds of the middle ages.

We thought the doom of Temple Bar was sealed when a fortnight since we read an advertisement in our own columns, inviting application from persons willing to undertake its removal. A few days later, however, our advertisement manager received instructions to stop the second insertion of the said advertisement, and a foreboding at once seized us that the friends of antiquity and obstruction were resolved on one more effort on behalf of the ugly relic. At last week's meeting of the Court of Common Council the City Lands Committee received permission to remove the Bar, but were instructed to take care of the materials until they had considered the advisability of re-erecting them in some more convenient locality in or near the City. Somebody asserted it would cost £20,000 to re-construct Temple Bar in Epping Forest, and one Alderman had the common sense to declare that the City might make a much better use of its money than to incur the cost of such a re-erection. If any citizen has such a veneration for the last of the Bars as to undertake its removal and re-erection at his own cost, no one need grumble; meanwhile the City can take care of the old stones, along with the thousands of tons of similar material in their possession, removed to make way for the asphalted roadways.

THE Council of the Society of Arts offer the sum of £100 (placed at their disposal by Messrs. Watherston and Son), together with the society's medal, for the best Essay on the Art of the Silversmith, past and present, of all nations, with practical suggestions for its future development. The essay must be historical as well as practical, and should point out the chefs d'œuvre produced in various countries.

NOTICE OF REMOVAL.

**CHUBB AND SON,
LOCK, SAFE, AND IRON DOOR MAKERS,**

Have REMOVED their SAFE and LOCK BUSINESS to new and extensive Premises,

123, QUEEN VICTORIA STREET, ST. PAUL'S, E.C.

Illustrated Price Lists gratis and post-free.

Makers to the QUEEN, H.R.H. the PRINCE OF WALES, and the Bank of England.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Society of Arts. Cartor Lectures. "Manufacture of Paper." Lecture III. by W. Arnott, F.C.S.; 8 p.m.

WEDNESDAY.—Society of Arts. "Freedom in the Growth and Side of the Crops of the Farm considered in its bearings upon the interest of Landowners and Tenant-Farmers," by J. B. Lawes, F.R.S.; 8 p.m.

Trade News.

WAGES MOVEMENT.

MANCHESTER.—In a circular the Manchester and Salford joiners' strike committee state that the number of men now on strike is 773, and that they intend to prosecute Messrs. Neill and the chief constable of Salford for the false and malicious imprisonment of one of their pickets.

WHITLAND ABBEY GREEN SLATES.

These SLATES are of a grey-green tint, are stout, and made in all sizes. A large stock available for immediate delivery. For further particulars (with a list of important buildings covered), apply to the MANAGER, Clynderwen, R.S.O., Carmarthenshire. — [ADVT.]

Holloway's Ointment is not only useful and certain of effecting a cure in outward diseases, it may be employed with like benefit in diphtheria, sore throat, hoarseness, bronchitis, pleurisy, influenza, asthmatical complications, and chronic coughs. The ointment must be well rubbed into the skin adjacent to the disordered or diseased parts.

TENDERS.

BANSTEAD.—For fencing land at Banstead, the site of proposed Kensington and Chelsea school. Messrs. A. and C. Harston, architects, 15, Leadenhall-street:—
Taylor and Brooker (accepted) £597

CROSSINGTON.—For the sewerage of the parish of Crossington for the Rural Sanitary Authority of Bridgwater:—
Tucker and Davis, of Middlezey (acc) £260

EDMONTON.—For making and kerbing roads, laying sewers, &c., on the Millbrook Estate for S. Bird, Esq. Messrs. Whitmore and Kennard, surveyors; quantities supplied:—

Killingback	... ..	£2,257
Williamson	... ..	1,871
Crockett	... ..	1,500
Bloomfield	... ..	1,411
Wood, F. and F. J.	... ..	1,382
Jackson	... ..	1,250
Pound	... ..	1,152
Taylor	... ..	1,138
Rutty	... ..	1,130

EXETER.—For rebuilding No. 99, Fore-street, for Sir F. Bathurst, Bart. Messrs. Tarring and Wilkinson, architects, 69, Basinghall-street, London:—

Gillard, J. R., Exeter	... ..	£4,469
Stile, J., and Sons, Exeter	... ..	4,411
Sharland, T., Exeter	... ..	4,180
Seadding, H. J., Exeter	... ..	3,829
Stratford, J., Okehampton	... ..	3,785

[* Accepted subject to reductions.]

GREAT BERKHAMPTSTEAD.—For erecting a new Sanitary Hospital for the Rural Sanitary Authority:—

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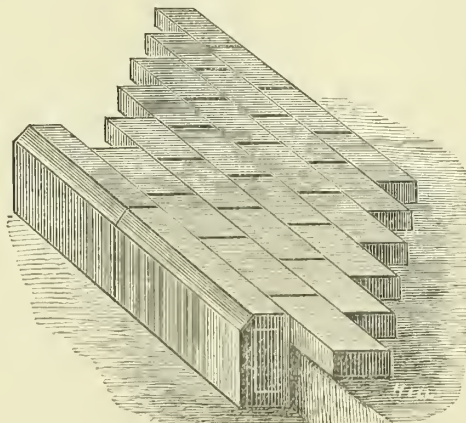
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THE BUILDING NEWS.

LONDON, FRIDAY, DEC. 14, 1877.

ARCHITECTURAL PRIZE DESIGNS
AND DRAWINGS AT THE ROYAL
ACADEMY.

THOSE who prepared the list of architectural subjects for the Academy prizes this year could certainly not have been aware of the nature and requirements of a complex structure, such as that proposed to competitors for the "Gold Medal and Scholarship." Imagine a "House of Legislature for a great colonial capital" advertised for without any particulars being given respecting site or dimensions. Would any architect go to the trouble of preparing plans with such meagre instructions? It is true the Academy subjects are ideal and not restricted, but the least that could have been done would have been to have given the area and dimensions of the site, and the requirements of the building. In the absence of such data students—especially novices—are completely without helm or compass, and it is absurd to expect anything but purely visionary and impracticable designs. It may be said the Academy's idea of art is a very different thing to every-day prosaic architecture—a mere abstraction—an artist's aerial fancy; if so the architectural school is a misnomer. The most genial imagination and mind best stored with data would be perplexed in the contemplation of such a subject as a Legislative Assembly for a great capital. We may here just ask, too, whether the purpose of the prize would not be better attained if the council proposed subjects more within the compass of the student's conceptions? Would not the faculty of design be called into play in a more thoroughly practicable manner? The result of the Utopian ground taken by the Academy and the absence of conditions, is that only two candidates have entered the arena for the gold medal this year, and having no precise data to determine the merits, the committee of selection have had to make an award that appears at least open to animadversion. One of the designs shows a plan distributed in the most palatial manner, with an extravagant quadrangle in front, while the other covers little more than half the area. Looking at the two designs, and remembering the seven months of study and labour their authors have expended upon them, it is certainly rather difficult, under the circumstances, to award the palm to either. The Gold Medal and Scholarship of £25 has been awarded to "Detur Digniori," Mr. Edward Clarke. The plan is a parallelogram, the main entrance being at one end, with four open courts for light and air. There is a grand loggia entrance, and vestibule in front leading to an octagon hall, from which cross corridors branch right and left, leading to longitudinal ones, which surround the building. Along the main or longitudinal axis, or block, are ranged the entrance, central hall, described as the Commons lobby, House of Commons, with its side division lobbies, Speaker's lobby, and entrance in rear. Entrances are also provided at each side, with grand flights of stairs to the first floor. On each side of the grand entrance we have the public and private bill offices, reading-rooms, with libraries at the angles. In the rear are the committee-rooms, with the refreshment-rooms and clerks' offices at the sides. It will thus be observed that the scheme consists of a parallelogram of surrounding blocks, crossed by a main centre, and another block, the corridors being lighted from the courts, the apartments through the four façades, and the main chamber or House of Commons by clerestory windows.

The upper floor comprises the residential apartments, governor's or conference-room over the vestibule in front, and the official chambers and conveniences. The Speaker's private room, we note, is rather far from the main assembly. In other respects there is lack of judgment in location and size, though we find considerable merit in the general distribution of the departments, considering the author had no programme to follow. In the architectural relation of the parts there are one or two points to find fault with. Thus the octagon hall is preposterously high, and is carried up for the only purpose of making an external feature. First we have the octagon itself surrounded by coupled columns. Above this is another order and entablature, then an attic or two, and then the dome. Internally, such a hall would be as ridiculous and unmeaning as it could possibly be, as we pass from a moderately high vestibule into it. This sad want of proportion is quite as offensive externally. The dome and substructure appear to rise very inelegantly over the portico of the façade. It has a very stilted look, and the tambour is unpleasingly abrupt. No feature is so apt to pass into the phase of the pompous or ridiculous, when the height is disproportionate to the requirements and other dimensions, as the dome, and its employment here is questionable. Above the division lobbies, which are shut off from the body of the assembly hall by a screen between the coupled columns on both sides, are the ladies', Speaker's, and public galleries, and at the end the reporters' gallery. The columns support an entablature, above which rise the clerestory walls, pierced by coupled windows, the piers being adorned by an order of caryatides, which, in their turn, carry a flat ceiling. There is much taste and good drawing in the ornamental accessories, though the order of caryatides has a weak effect. In the elevation of the main front, designed in a Classical spirit, there is much that is both ostentatious and commonplace, though the centre portico of two orders and the slightly projecting columnar blocks at end are well managed. If the author had omitted the small and puny domes over the angles, we should have liked the elevation better, and they do not harmonise with the very ungraceful-looking central dome. The delineation of the latter in the perspective, by the way, is sadly out of drawing, the horizontal curves of the peristyle and drum not partaking of the flexure necessary at such a height above the point of sight. In other respects the perspective is carefully drawn, shaded in Indian ink. "Alea Jaeta Est" is the second design, and were it not for the very extravagant area of ground covered, we should be inclined to say there was little to choose between them. The author of this design has certainly exhibited much skill in the distribution of his building; the legislative halls are placed right and left of a long and spacious central vestibule, in the middle of which is a grand portico entrance. Thus the halls and the vestibule form a longitudinal axis the length of the building. There are five courts or areas, one large garden in the rear of the vestibule, and a court on each side of the two halls, round which are ranged the quadrangles or wings connected by corridors lighted from areas. The executive council hall is on the left and the legislative assembly on the right side, with end entrances and side division lobbies. Round each hall is an aisle or ambulatory, with stairs to galleries at the inner ends. At the back, facing the garden, is the conference hall, with the executive and assembly libraries right and left. A glazed portico surrounds the garden, and ample communication is given by means of the connecting corridors with the halls and other official departments. The grand

octagon vestibule is domed in the centre, in the front of which is a hexastyle portico. The advancing wings contain the president's and committee-rooms, while a members' entrance is provided on the left and the Speaker's and committee entrance on the right wings respectively. The offices and smaller apartments occupy the blocks behind. Private entrances are also shown in the rear, giving access respectively to the two assemblies. Smoking, refreshment, and coffee rooms are placed in convenient proximity to the wants of the two halls. On the first floor, in front, are the official residences for the President and Speaker, the rear portions of the wings being occupied by drawing and dining rooms, official chambers and bedrooms. On the whole, the plan is on a too palatial and extravagant scale for a colonial legislative structure; the vestibule, with its flanking corridors, is extremely pretentious and grandiose, and the halls are perhaps open to the objection of being too far separated for the economical discharge of their functions. There is, nevertheless, a certain grandeur in the architectural grouping of the parts, and considerable ingenuity and artistic subordination exhibited. The great length of the front elevation, and the rather dwarfed effect of the vestibule porticoes between the halls, is destructive of unity, and this defect is increased by the impoverished close range of Ionic pilasters, which screen the said vestibule in front. The external treatment here is certainly wanting in harmony with the end wings, and these also do not agree with the upper parts of the halls which flank the front, and are too pronounced. The clerestory windows of vestibule are poor, and do not accord with those of the chambers; the windows to the two-storied offices of wings are commonplace and badly proportioned; the central dome, with its crown-shaped lantern, is lumpy, and the portico below it does not combine agreeably with the composition, and looks stuck on. We note these defects in a composition that may fairly be said almost to divide the honours of the awarded design. The drawings are too faintly shown to do them justice, the ink used is too light, and the sepia tinted perspective is not finished, and scarcely represents fairly the effect.

Turning to the "Travelling Studentship" prize, won by Mr. Eley E. White, for a design for assembly-rooms, we find a boldly-conceived design in Gothic, with strong French tendencies, displaying considerable merit. There is a pleasing breadth of treatment in the work, which consists of a gabled hall with fleche, some well-designed windows in flank, and a clever arrangement of entrance, buttresses, and chimneys. The drawing, however, is rather faint, and lacks the precision and detail of an experienced hand, but there is evidence of artistic skill. In plan we find the entrance at one end, with a vestibule, a restaurant or refreshment-room in centre, and kitchen offices behind. The latter are very confused. The hall is approached by a staircase and vestibule, and is 120ft. by 60ft., with end gallery. "Ars Longa" is another design, and is by Mr. W. Scott, also in French Gothic. It is shown in a very vigorously-drawn and clever ink perspective and elevation, the hall above being well pronounced, with gabled ante-rooms at each end, a lofty tower crowned by a steep roof over one, and a series of gabled windows with sexfoil heads along the top, below which is another range of two-light windows, with circle-pierced heads. A range of circular-headed arches from the entrance. The plan is in many points preferable; the entrance is placed in the centre of the side, where there is a large hall and centre stairs to assembly-room, on each side of which are the cloak and lavatory-rooms. Behind these a large supper-room extends the whole length, well lighted, with ante-

rooms at ends. On the upper floor is the hall of the same length, but wider (120ft. by 60ft.), with minstrels' gallery over corridor, grand and second stairs, lifts, &c. For the figured architectural drawings Mr. J. H. Rayner carries off the medal. The subject chosen is the Church of St. Saviour, Southwark, the choir and crossing being delineated to a scale of $\frac{1}{4}$ in. to the foot, showing the groining in detail, and comprising plan, cross and longitudinal section and details. The drawings are effectively executed, and the cross section showing the iron roof over vaulting is interesting. A second medal for the same subject is given to Mr. George E. Langford. The measurements are more ample, and we note some divergences in the thickness, &c., of vaulting, &c. A third set of drawings are exhibited, showing lines of vaulting, but in an unfinished state. We see only one perspective outline, and for this Harriette Edith Grace takes the prize, as also for an example in sciography. The perspective is the Vestibule of the Farnese Palace, and the pencilling is exceedingly neat.

RESTORATION OF ITALIAN MONUMENTS.

IT would appear that all over the Continent, except where wars and rumours of wars distract the public mind, a general ambition exists to restore to their primitive grandeur the monuments of national history. Among the Germans this movement has been accompanied by a simultaneous multiplying of new memorials, whether dedicated to soldiers, statesmen, artists, or musicians, while Frankfort itself is not as yet satisfied with the honours awarded by it to Goethe and the Three Great Printers. The Italians, as a rule, have a less martial taste, and their revival of trophies long left to decay includes a far wider scope than is ever contemplated in Germany. For, although the people of the Fatherland never leave off adding stone to stone and sculpture to sculpture to the still uncompleted shrine of Cologne, the work is inexplicably slow, and the funds for its advancement exhibit no great degree of enthusiasm on the part of the nation. In Italy, however, a favourite moment has arrived for stimulating the popular feeling with reference to this patriotic task of art. At Mentana has been erected a monument, designed by one of the artist-bred Castellani, composed of granite, and characterised by the ornate style supreme in modern Italy, to the glory of the Garibaldian volunteers who fought for Rome—a pyramidal base, five steep Cyclopean steps, a noble square shaft, with something like a pagan altar on the summit, intended for the lighting of an anniversary fire, to be visible from every window of the Vatican, an inscription, and a florid architectural coronation of the whole. This, of course, was an undertaking representative of a special public spirit in the nineteenth century, but it had little or nothing to do with those grand relics of the past which it is seriously declared are more or less falling into decay, and which a national society of Italian archaeologists are eager to rescue. They are anxious not to be misunderstood. It is not ancient but modern Italy that they would preserve. It is not with the Coliseum, or the Forum, or Trajan's Arch or Column, that they concern themselves, but with the newer glories, the Duomo of Milan—which is betraying signs of a sad decay—the Cathedral of St. Mark, the Pisan Tower, and the Palaces of Florence and Genoa. More than this, some of the noblest creations of Michael Angelo are giving evidence of neglect, and, as we are reminded, it is almost impossible to travel from north to south of the Peninsula

without coming upon the warnings of incipient ruin. The quarries of Carrara, in numerous instances, are being put under requisition to supply the essential repairs; but in others, even more numerous, the process of dilapidation goes on more or less unregarded. Examples of this, in fact, are pointed out in the shape of protests at Ferrara, Parma, Modena itself—the very city—the Carrara marbles—Sienna, Naples, and Padua. But it is perhaps to be wondered at that, among the primal objects in view, the restoration of the Castle of St. Angelo should be included. Strictly speaking this is not an Italian monument at all—at any rate, of the period professedly selected by the restorers. Originally the tomb of Hadrian, it was converted into a fortress by the Goths, and has ever since, until recent years, been a symbol of Italian servitude. Apart from that, however, which forms no element in the subject, it is a mere citadel in combination with a prison, and if it does recal the names of Belisarius, Arnold of Brescia, and Rienzi, what have they to do with the annals of Italian art? It has come out of late that St. Peter's itself—styled by Madame de Staël “the greatest edifice ever constructed by man, for the Pyramids of Egypt themselves are inferior to it in height” (though therein Madame de Staël was wrong)—is not kept in adequate repair, notwithstanding the ample revenue set apart for that purpose. There are not a few Etruscan remains, indeed, which, comparatively speaking, have commanded more care than the most sacred monuments of modern Italy. Even the scarce memorials of genius bequeathed from the reigns of the Dukes of Urbino and Milan must moulder out of recognition before long, unless a saving hand be brought to their rescue. The Duomo of Milan itself, we are told—which, though shorter than Winchester Cathedral by a hundred feet, covers a third more ground—is exhibiting proofs of “mould” and “rust”—as Italian architects employ those terms—is losing its mellowness of tint, and becoming white again, and seems as though it had almost approached its destined age. This, however, is simply incredible. The massiveness of the masonry, peculiar though the material be, and the elaboration, so to speak, of the architectural framework inspire no such fears in the minds of those who have undertaken to renovate and preserve the Italian monuments for future Italian generations. In one respect possibly their complaints are justified. There are numbers of Italians, they say, who would cherish a fragment of the Bearded Bacchus, or the statue of an Athlete, or a marble monkey from the Vatican, while they would resign to dust the most exquisite memorial of the Renaissance. Tourist after tourist tells the same story, and Italian after Italian deplures it. It is true, no doubt, that the purely classical examples are the more typical of art in its highest development, but there is justice in demanding that the works of the Christian Italian genius shall not be relegated to decay. It is true, moreover, that the works of art belonging to the non-classic periods of the Italian chronicles are generally more or less ecclesiastical in their character. There is little of the romantic, the heroic, or the purely ideal to distinguish them, if we except the gigantic conceptions of Buonarroti; but even these, it is said, are gradually losing their perfection, while of the celebrated Roman frescoes it is still more positively asserted that the influences of a malign atmosphere are visibly beginning to tell upon their surfaces, and, so to speak, solidity. What remedies are proposed, and how such a kind of decay may in either case be guarded against, is not, as yet, even tentatively suggested. Hitherto, indeed, less attention has been bestowed upon these indications of, as it were, decom-

position than upon the restoration of monuments which have sustained rude and apparent injuries through the operations of time, or war, or civic neglect. There are, no doubt, preventive measures of the highest utility, but the solicitude of the associated restorers must before long be claimed by necessities more delicate, and unquestionably more difficult, to cope with. If once the great cartoons, or the marbles of Michael Angelo are assailed by that mysterious “rot,” which is even now whispered about in Italy, the salvage of these treasures will in itself constitute a national care. But it may be assumed that, in a considerable proportion, this is little more than the rumour of the studios.

In one instance, nevertheless, a structure among the most perfect, exquisite, and noble of all the Italian trophies, has been officially pronounced to have fallen into a state of dangerous decay, and it is believed the restorers—or, perhaps, they should be styled the conservators—propose, with permission from the Government, to commence their work. This is the Church of St. Mark, at Venice, and its façade especially. The great shrine which represents Venetian genius and history has been, perhaps, a thousand times described; yet the public-spirited Italian artists of our day are right in suggesting what it was in its full splendour, in order to show what it would be as a ruin—not, like most other ruins, a spectacle of ancient grandeur fallen; but gaudy, superb, and ostentatious—a picture of dilapidated magnificence. The façade of that basilica, no doubt, was, in its original design and condition, an incomparable though a medley monument—rather a triumph of riches, luxury, and an exulting genius, than a work accomplished in the pure pride of art; but a wonder of artistic magic, nevertheless. Its façade was a blaze of beauty, enriched with paintings in gold, “heaven blue,” purple, and scarlet; with architecture of every order and origin; sculptures including every form and subjects, the ideas of every people, as it were, and the parables of every religion—groups of saints and deities, friezes of animals and flowers, jasper from the East, marbles from Pentelicus and Africa, and gates of Corinthian bronze—the last, however, being prizes from the Mosque of St. Sophia at Constantinople, which, in its turn, was a copy from a previous edifice, and which, in fact, supplied in a general way the model of St. Mark's. But the builders were Italian still, notwithstanding their mixed Greek and Saracenic inspirations. Ornament is everywhere—on the green cupolas, the gilded globes, the peristyle, and its vaults lined with gilded mosaics; all this, indeed, exteriorly. Within, wealth was spread in every direction, like the rays of a sun, and gold was literally plastered on every capital, cornice, and intersection of arches—gleaming from five hundred pillars, from fifty altars, from every half-dim window. Add the pavement of tinted Oriental stones, the Grecian carvings in marble—the last illustrations, perhaps, of that dying genius—and we arrive at a faint notion of what this unique fane—not intended for the services of religion alone, but also for mundane pomps, as the audiences of great Venice, the reception of ambassadors, and solemn public assemblages—was in one period of its annals. The transformations recorded, for the information of the Government at Rome are, however, singularly enough, not so distinctly or so deplorably visible on the exterior as in the interior of the structure. There, we are told, in the somewhat florid language of the South, death has attacked the Cathedral of St. Mark from foundation to ceiling. Large cakes—so to term them—of blue and golden embellishment continually drop from the vaulted roof, leaving panels of melancholy emptiness. “The

skies and the stars descend in dust, leaving, in many places, nothing more than the bare masonry of the walls." Tourists carry away the fragments, and nothing as yet has been done—though something is now proposed—to arrest the process of artistic dissolution. Similar reports come from the Ducal Palace, where, it is asserted, the two celebrated colossal statues of Mars and Neptune—the tutelary genii of Venice in its Pagan mood, planted at the bottom of the Giants' Staircase—are drooping towards their fall, and where even the Tintoretto Gallery is said to be scandalously uncared for. In the midst of all this slow and silent decay the conservators, in a spirit of antiquarian patriotism, remind us, spaces are left vacant for the portraits of sixteen future Doges—spaces which will never be filled up. There are not many regrets, possibly, to be spared upon that point, and scarcely more upon another which, nevertheless, is emphatically dwelt upon. That the gradual decadence of the old monuments is to be deplored, and that a national effort to stay the insidious havoc would be a work worthy of Italy and of art may be at once and cordially admitted; but that the non-multiplication of structures so ambitious is a sign of Italian decadence may equally well be doubted. The great ecclesiastical and palatial ages have passed away for Italy, as for other countries, and we might as well sigh for another Appian Way or Street of Tombs as for a new Grand Canal or Genoa the Superb, or for the time when half a province was famished for funds to build a "Palace of the Syrens." In the meanwhile, it may be allowed that no less solicitude is due to the works of mediæval genius than to the excavated labyrinths of Herculaneum and Pompeii. The bronze doors of Andrea Pisani and of Lorenzo Ghiberti, at Florence, are worth at least as much as any number of funereal urns disinterred from beneath the cinders of Vesuvius; while the palace of the great Dukes of Urbino, with the interior of St. Apollinaris Nuovo and St. Vitale at Ravenna, are surely not less interesting as monuments than the Bridge of Augustus at Rimini, or the house of Diocletian at Spalato, even though the latter was long ago converted into a Christian church. They are not all purely Italian, or indeed of precisely Italian origin, but they are sufficiently associated with that nationality which gave its chief glory to the Renaissance to claim an inheritance from beyond the darker generations of the middle ages. But, as a universal rule, all men are to be praised who, in this, which is essentially and necessarily an utilitarian epoch, would recover and cherish what has been bequeathed to us by more imaginative and less scientific ages. We shall not, probably, gather the same fruit again from the same tree, and the world, so to speak, will be for the future, in these respects, rather more of a museum than a workshop. We may go on, indeed, up to a certain point, creating as well as preserving; but, in any case, the Italian archæologists are right in affirming that we cannot afford to lose, and ought to be ashamed of losing, a single memorial of beauty or greatness which we at present possess; and, therefore, while deprecating the interference of all irresponsible or experimental restorers, the world would gladly witness the establishment of an intellectual, sympathetic, and critical curatorship over the modern monuments of Italy.

THE LATE MR. SYDNEY SMIRKE, R.A.

IN the late Mr. Sydney Smirke, who died on the 8th inst., at the ripe age of 79, at Tunbridge Wells, we seem to have lost one of the remaining links between the present and the past generation. The family of the Smirkes appear to have been

long associated with art. Mr. Sydney Smirke's father was an old Royal Academician, and attained a prominent place as a depicter of many of Shakespeare's characters, while his talent in the representation of the humorous was largely sought after, and his pencil enriched many important works. Sir Robert Smirke, his brother, was, as our readers well know, celebrated as an architect, his name being associated with some of the earlier monuments of architectural art of the present century in the metropolis—the British Museum, the old Covent Garden Theatre, the General Post-office, &c., being a few of his well-known works. Another brother, the late Sir Edward Smirke, was also well known as an archæologist, and was warden of the Stannaries. Mr. Sydney Smirke was a pupil of his brother, Sir Robert Smirke, and soon acquired the taste for Classic architecture which had made the name of the latter so celebrated, though it must be remarked that Sydney Smirke's predilections were not exclusively towards that school, as he evinced a cultured and wider range of taste. On the death of Sir Robert much of his connection fell into the hands of Sydney, who continued to hold many of his brother's appointments. Probably one of the first buildings which brought the name of Sydney Smirke prominently before the public and the profession, was the Carlton Club House in Pall-mall, at that time considered one of the leading structures in the Venetian style of modern Italian. The design, as is well known, is founded on the model of Sansovino's library of St. Mark at Venice, the proportions and columnar façade of the Libreria being adapted with considerable judgment and taste, though it has not escaped the censure of the critics of its day. As a modern adaptation for the purpose of a club-house, it may be said to savour too much of a copy; nevertheless, we may affirm that it is far more appropriate in fenestration to the atmosphere of London than the heavier structures which accompany it, conceived in the spirit of the Florentine or the Pandolfini and Farnese palaces. Our objections are mainly to the colonniation and arcades and the heavy entablatures, though these have been considerably modified from the original. In conjunction with the late Mr. Basevi, a very eminent architect in his day, Mr. Sydney Smirke also designed the Conservative Club-house, another conspicuous example. Another great work that will long be connected with his name as an architect is the reading-room of the British Museum, a building deservedly esteemed for many points of constructive adaptability, ingenious economy of space, and fire-proof properties, though hidden from public view behind the severer and more monumental structure of his brother. That work Mr. Sydney Smirke obtained by the efforts of Sir A. Panizzi, the late principal librarian, to whom much of the merit of the design is, perhaps, due. He was also the architect of the new galleries of the Royal Academy at Burlington House, and of the Roman and Assyrian galleries at the British Museum, and designed the Italian arcades of the Horticultural Gardens, Kensington, in the latter of which considerable skill and taste are shown in the terraces and arrangement of levels, and the general effects and details of the arcades and terraces of the Villa Albano, and the cloisters of San Giovanni in Laterano have been kept in view. Of other works we may mention, the Juvenile Reformatory, Isle of Wight, Custom-houses at Gloucester and Newcastle, the restorations of portions of Lichfield Cathedral and York Minster after the second fire, the Savoy Chapel, and the Temple Church with Mr. Decimus Burton. Among domestic buildings we may note Oakley-park, Clumber-park, Luton Hoo,

and portions of Drayton Manor. Mr. Sydney Smirke held many important offices. He was architect to Bridewell and Bethlehem Hospitals, and to the Inner Temple; surveyor-general to the Duchy of Lancaster, and trustee to the Soane Museum. Many years ago he obtained the Royal Academy gold medal, was elected a Royal Academician, and was also elected a professor of architecture of the Academy in 1861, besides being its treasurer. He also obtained the gold medal of the Institute of British Architects.

The opinions and views of Mr. Sydney Smirke on architectural questions may be gathered from his very excellent lectures on architecture at the Royal Academy. Indeed, it may be affirmed that few men who have occupied the distinguished chair of professor at the Academy during the present century, have so thoroughly and logically handled the elementary principles of the art. In a lecture delivered in 1859, on "The Use and Application of Architectural Ornament," we find a masterly exposition of the subjects delivered in the clear yet elegant style of the lecturer. Sententious and epigrammatic, it contains a fund of valuable suggestions that even now would be read with keen interest. Speaking of the application of statues to the decoration of buildings, he says—"When a sculptor's object is exclusively to represent life, he can hardly, I apprehend, give to his subject too much of the freedom and elasticity of life; but when he applies himself to the very distinct object of architectural decoration some restraint must be submitted to. When the Greek artist designed the Athenian caryatides, we see in every portion of his work that, whilst never falsifying nature, he felt the necessity of giving both to the flesh and to the drapery a rigidity and formality which stamped a peculiarly artificial character on the statues. So, in the best times of mediæval art, a figure is usually designed in so severe and so simple a manner, with such angularity and rigidity in its drawing, that one sees at once that the natural model has been very widely departed from, and that an architectural character has been impressed upon it, which admirably fits it for its special purpose as an accessory to architecture." With similar reasoning, Mr. Sydney Smirke shows that all architectural ornament must be conventionalised, and he classifies it under—1, ornamental objects that have a direct practical utility; 2, purely æsthetic ornament; 3, ornaments designed with a view to impress a specific character on the work. Another paper by Mr. Sidney Smirke, read at the now defunct Architectural Exhibition, "On the Use of Colour in Architecture," is before us, treated in the same exhaustive and complete manner, and displaying a deep and exact acquaintance with the theories of colour, and an extensive knowledge of the art history of the subject. His study of classic Italian art was accurate and profound, and his Academy lectures on Architecture and Form may be regarded as the ablest discourses on the Italian style that have been delivered within the present century. It was Mr. S. Smirke, A.R.A., in conjunction with Professor Donaldson, who introduced to Lord Palmerston the deputation, in 1859, of many influential members of the profession to resist the adoption of the Gothic style for the new Foreign Office. Not a competitor himself, he was elected to express the views of the Classicists, and he fortified his opinion by referring to the practice of architects at Berlin, Munich, Paris, and Vienna. Speaking of style, he said, in a paper read at the Royal Academy:—"In architecture, I fear, it is a vain struggle to attempt to renew exactly any phase or state of existence that the art may have passed through. We may exactly reproduce a building, we may exactly repeat a form, we

may mimic every feature, but I greatly doubt whether we can ever really and truly recall to life a style that has once passed away." His mind was rich in ideas, called in his travels, and his sketch-books teem with notes and memoranda of foreign buildings. He was an accurate sketcher. It is said, too, he was extremely accurate in his estimates—a virtue which he inherited from his brother, Sir Robert, who, it has been asserted, never exceeded his estimate. Reserved in manner, he was highly valued by all who knew him for his genuine friendship, amiability, and strict integrity.

BUILDING NEWS DESIGNING CLUB.

REVIEW OF DESIGNS.—NO. XX.

A Hall Fireplace.

THE designs we have received for this subject are very numerous, and many of them have been skilfully handled. "Début," whose design we place first, has sent a very characteristic and highly-pleasing sketch of a projecting chimney-piece, the breast being supported on bold truss-like jambs, with moulded faces. The mantel forms a deep frieze, having a panel in bas-relief, with figures of chubby boys. The shelf forms a dentil cornice of small projection, and the breast or hood above is carried up vertically, its front having panelled pilasters with bas-relief enrichments standing above the jambs; between these the breast is relieved by a square panel, within which is a diagonal panel enriched with a centre shield. A dado is carried round at the level of mantel-shelf. There is a structural meaning evinced, and the design bears the impress of a cultivated taste in a semi-Classic spirit. No plan is shown. "B," in circle, is also simply treated and effective; the jambs of fireplace are vertical, and rise from attached semi-octagonal shafts. The arch is segmental, and springs from a recessed plane of the jambs, and the opening is partly recessed in wall. It is enclosed under a square moulded mantel, carrying a shelf, above which rises a plain gathered hood, having a projecting shelf near the top for bric-à-brac. Red-glazed tiles line the fire-opening, which has a dog-bar grate. Under the motto, "Tom Pinch," we have a cleverly drawn chimney-piece of domestic Gothic type, with a large arched opening or recess 9ft. wide, embracing side seats and lights on each side of the fireplace proper. A massive stone hood of pyramidal form springs from a richly-carved cornice or mantel 11ft. 6in. from floor. The arch is of semi-elliptical form, moulded, with flowers carved in the hollow. An impost moulding runs round, having a dado. The fireplace has simple jambs and mantel, and dogs are shown, between which, on a low hearth, are kindled the logs. Artistically, the treatment is clever, but the projecting jambs of the hooded recess, which take up 2ft. of hall, are questionable. The details show some good moulding. "Fleur-de-Lis" is also a cleverly-conceived hooded fireplace, with slightly projecting jambs and straight mantel. The band of oak foliage below the shelf is too florid, and the hood, which is canted at angles, is amenable to the charge of being redundant of carving. The oak branching in front of the sloped hood holding a shield is clever, but the foliage is too heavy. The motto below the circumambient label moulding on each side, "East or West, Home is Best," is characteristic. A shelf is shown, and the fire-grate is open, with dog-bars. "Another for Hector" is a clever and simple design, a low plain hood being carried by jambs projecting as consoles on each side. The fire-back is splayed and tiled, and a dog-grate is shown. "War" sends two designs of sloped hooded fireplaces. We prefer the one with the straight-sided hood. The jambs have bold console bases, the faces of which are deeply grooved—not very desirable for black or soot. We do not like the treatment of arch and tiles over the opening, and there is no shelf. The finish of hood, too, is meaningless, and the mouldings not happy. The smaller hooded design shows a better sort of corbel to jambs, less obstructive in hall, but we dislike the curved

lines of hood, and the heavy, barbaric-looking arch in three orders introduced. One would imagine it had to a portcullis. "Noah" shows the fireplace flush with wall, in a recess, the side jambs of which project slightly into hall, and carry a sloping hood. A seat is shown on each side, and narrow lights are pierced above them. There is also a corbelled shelf for ornaments within the recess. We take exception to the corbels supporting the arch of hood, which is a flat segment, and the treatment is a trifle too heavy. "Unit" is a similar composition, in a German Gothic style, but more florid. There is a flat arched recess, with hood over, the jambs projecting about 3ft. into hall. The fireplace is flush with wall, and above it is a band of carving with side leaded lights, filled with painted figure subjects, while over the opening is a mirror. The design is wanting in consistency of detail; the quatrefoils along the arch and the small spandrels are in bad taste. "Mentonnière" has a large splayed fire-opening recessed; the jambs are corbelled out above, and carry a hood. There is a gabled niche for clock in centre of mantel-piece, but no shelf. The carving is rather overdone, and the floriated cresting out of place. The author shows a flat mantel, a straight bar-grate, with polished steel uprights. "Bee" in circle goes in for a corbelled hooded chimney-piece, out of the hood of which springs a base, supporting a clock with chimes in wood case. The idea is fanciful, but certainly not architectural. Whatever reason induced "Discere Volo" to design such an excessively lumpy mantel passes us; and such jamb shafts! as if they were intended to carry a bridge. If the author had been contented to have given us a mantel, or half the depth, without a tenth of the exuberance of moulding and carving, he would have come nearer the mark. Why black in the sectional details so thickly? A line would have done. "Unit" takes an unnecessary deal of pains to show a design of little merit. It is too clever, and chopped up in the hood, just for the sake of getting a shelf or two. How much better it would have been to have omitted the corner vases, or to have abandoned the upper hood, which seems to rest on the shoulders of the lower one in a very acrobatic fashion. This part is beyond us—the jambs and mantel are better. We may mention also "Discipulus," too lofty in the proportion; "Watt," spoilt by the groaning bats carrying the hood, the corbels and the crowning; "Ambition," too meagre and commonplace; "Medicus," rather heavy, and with bad mouldings; "Cave Canem," not up to mark.

A Fender and Fire-Irons.

Coming to this subject, "Début" carries off the palm. His sketch shows a very spirited treatment of the fender and coal-scuttle. The fender is a flat semi-ellipse on plan, divided into panels by turned metal uprights, between which, upon a low plinth or band of plain metal, is open metal scroll-work. The coal-scuttle to match is of wrought metal, of a square basket shape, with hollowed scroll sides, and movable lining, the handle folding down under the cover. The sketches display much taste and refinement, and the fire-irons are equally appropriate, without losing their utilitarian character. The designs harmonise with the style of the chimney-piece of this author. "Another for Hector" is a clever treatment. The fender is of pierced brass and copper, with oxidised rail and base mouldings. Its profile is ovate, sloping inwards, the ornament being pierced foliage in panels of a Classic type. The moulded members are chaste. The scuttle is proposed to be of beaten copper sides, with a border of brass and copper studs, oxidised at the outer edge. Its form partakes of the ordinary type, there being a base and handle, with a lid. Brass folial ornament enriches the top, base, and sides. The fire-irons are scarcely so pleasing—the tongs have an awkward bend near the hinge. "Mentonnière" sends a Classical conception. The coal-scuttle is circular, of sheet iron, proposed to be painted chocolate, with gold and blue ornaments round base and top. We may doubt the appropriateness of its shape. It has a raised and moulded lid, and a handle. The fender is of cast iron or steel in the upright

open part, with cast brass rail. The top rail runs to a point in the centre—the middle panels being rather the deepest. The ends of fender form scrolls, in the middle of which are the rests for the fire-irons. These are of a commonplace character.

An Oak Lectern.

"B" in circle sends a pleasing Gothic design for lectern, not marked by any originality, but but by a quiet treatment. The base is cruciform, composed of four buttress-like projections, panelled on the fronts and return sides, and resting on a moulded square base. A centre square post, carved on each face, rises between the buttresses, carved in gabled form at top and carrying a revolving double slope with pierced ends, having a niched figure of an apostle on each side. The four buttressed projections are dovetailed to the post. "Fleur-de-Lis" is a more florid attempt in Late Gothic. We like the plainer shaft shown. The double-sloped desk, with carved ends and candle brackets, is in keeping, and the details display taste. "Noah" is a study displaying some ability, and the drawing is commendable, but we do not think the base and turned three-pillared stand harmonises with the lectern top with its quatre-foiled tracery. "Excelsior" has scarcely given us a lectern; it is more of a table or desk supported on four carved legs; style, Renaissance. "A. L. B." exhibits a fair slope for the books, and the tracery ends are neatly drawn. The carved cap and the four evangelists round the base are not so good, and would have been better omitted. We cannot understand the artistic interest in the lizard-like reptiles crawling up the four spurs of the base. Such representations are best avoided. "Normie's" book-rest is too flat, and the pedestal of four combined pillars not pleasing. We cannot see why a lectern support should be a pillar with capital and base; it is hardly appropriate. "L. in G." is more of a reading-desk. It is framed, with three sides filled with open tracery in panels; cut displays a want of knowledge in the adaptation of traceried forms. The sacred monogram occupies the centre panel, and a row of smaller panels at the base is proposed to be filled with coloured embossed figures of Christ, the evangelists, and the prophets. We may mention also "Prenez Garde," "Cleo" (overdone with stop-notches and meaningless ornament), "Naivète," and "J. W. C.," in circle. Our correspondents will pardon our saying that in the majority of these designs there is an immoderate attempt at ornament of a false kind, and a desire to mimic richly-carved pillars and unmeaning tracery, instead of designing something appropriate. For example, many have chosen a pillar as a pedestal, with caps and base. One has given us the model of a cast-iron clustered column, plain and very heavy, standing upon an open traceried base of icicle-like fragility.

AMENDMENTS OF THE BUILDING ACTS.—II.

(Continued from p. 533.)

RESUMING consideration of the Metropolis Management Amendment Bill, which is being promoted by the Metropolitan Board of Works, we now come to deal with Section 4, one of the most important in the bill. This section is intended to secure that in future all streets used for carriage traffic shall be 40ft. wide, and streets for foot traffic only shall be 20ft. wide. The method of effecting this object is the prohibition of any wall nearer to the centre of the roadway than 20ft. or 10ft. as the case may be. Whatever may be the fate of the details of the bill before passing into law, the principle of measuring the widths of streets from a centre line should be welcomed as a valuable innovation. And it has been pointed out by the Liverpool Architectural Society, in their recent report on the Model Bye-Laws, that the embodying of the same principle in Bye-law No. 53 would be an improvement of the model.

Cases will arise, however, of irregular streets in which it will be difficult to define the centre line throughout every part of its length; and it seems desirable that in these cases the Metropolitan Board should have power to prescribe the line. For this purpose an enabling clause

could be added to that clause in this section which empowers the Board to consent to the reduction of the specified distance.

It is not difficult to foresee that upon rebuilding in existing streets, owners will often suffer loss by being compelled under this section to set back from the general line of building; and it may be expected that some effort will be made to insert provisions enabling such owners to receive compensation. In cases of this kind it will frequently happen that old vaults or areas remain under the footway, or that it is desired to retain the front wall of the basement so far as it is below the level of the footway. On the one hand, it appears not quite reasonable that the consent of the Board should be necessary for the retention of such underground structures; and, on the other hand, it is desirable that the Board should have power to prevent the formation of new areas or vaults in any street before it is given up to the public. It is to be hoped that in order to meet these cases Section 4 will be amended in some such way as suggested below.

The expressions "the external wall or front" and "space left in front," are at once too vague and too narrow—too vague as not conveying a clear idea, and too narrow as limiting "front" to one only of the sides of a building. For in the absence of any definition of "front" it is quite arguable that a building may have two, three, or even four fronts to as many different streets. It would be better to discard these expressions, and to specify "building" simply.

Perhaps it is doubtful whether the term "extension" as used in this section would apply to such a case as that of a porch, say, removed from one side or front of a building to another; but "alteration" would cover all such contingencies, and would therefore be the better word for the purpose.

We here give the first paragraph of Section 4 in full, italicising whatever appears to be better excluded, and bracketing suggested additions:—

"4. From and after the passing of this Act no house or building [nor any part thereof] shall be *constructed* [erected] or *extended* [altered or enlarged] in such manner that the [outer face of any] external wall or front of such house or building or if there be a forecourt or other space left in front of such house or building the external [the outer face of any] fence or boundary of such [any] forecourt or other space [appurtenant to such building (whether such external wall or such fence shall be above the surface of the roadway or not)] shall be at a distance of less than 20ft. from the centre of the roadway of any [street] road passage or way [() whether a thoroughfare or not ()] being a highway (whether repairable or not by the inhabitants at large) which may [shall] be used [or intended to be used] for the purposes of carriage traffic or within [at] a distance of less than 10ft. from the centre of the roadway of any such [street] road passage or way which may [shall] be used [or intended to be used] for the purposes of foot traffic only without the consent in writing of the Board [.] Provided always that [And] it shall be lawful for the Board in all cases where they shall think it expedient to consent to the *construction* formation or *extension* [erection alteration or enlargement] of any houses buildings forecourts or spaces [fences] within the said distances respectively at such distances and subject to such conditions and terms (if any) as they shall think fit to prescribe. [Provided always that in cases where buildings shall be rebuilt nothing in this section contained shall prevent such portions of the external walls as shall have been below the surface of the roadway from remaining or being rebuilt in the positions which they shall have occupied immediately before the rebuilding of the superstructure.]"

It will be seen by the clause just quoted that the present requirements as to widths of streets will not be extended but will be made more precise. The same widths are prescribed by the Metropolis Management Amendment Act, 1862. Much difficulty, however, has arisen in enforcing the observance of those provisions, owing to the cropping up of peculiar cases which have not come within the statutory

definitions, and especially owing to a decision of the superior Court restricting the meaning of "street" to places where houses are built on both sides. It may be for this reason that the framers of the bill have omitted "street" from several clauses. The mention of "road, passage, or way," seems to be a sufficient safeguard, however; or if not, an interpretation clause could be added which would give to the term a meaning wide enough to include all possible cases.

The remainder of Section 4, with the desired alterations, runs thus:—

"In every case where any such house building forecourt or space [such fence] shall be *constructed* formed [erected] or *extended* [altered or enlarged] or begun to be *constructed* formed [erected] or *extended* [altered or enlarged] in any such road passage or way as aforesaid at a lesser distance from the centre of the roadway of [any] such [street] road passage or way [as aforesaid] than is [the distance] prescribed by this enactment or by the Board it shall be lawful for the Board to serve a notice upon the owner or occupier of the said house building forecourt or [of such] space [as aforesaid bounded by the said fence] or upon the builder or person engaged in *constructing* forming [erecting] or *extending* [altering or enlarging] the same requiring him to cause such house building forecourt or space [such fence] or any part thereof to be set back so that the external wall[s] of such house or building or the external [face of such] fence or boundary of such forecourt or space shall be at the distance prescribed by this enactment or by the Board from the centre of such roadway."

Section 5 provides that in case streets which are not highways shall afterwards become highways, any building or fence within 20ft. of the centre, if carriage ways, or within 10ft. of the centre if footways only, shall be set back to the prescribed distance when the Board so require.

Section 6 gives directions as to proceedings in case of default, and limits the penalty to five pounds and a continuing penalty of forty shillings a day.

Section 7 prescribes that streets formed for foot traffic only shall not afterwards be used for carriage traffic, without the consent of the Board, unless the width be 40ft. where there are houses on each side, or 20ft. where there are houses on one side only.

The latter part of this clause appears likely to produce rather awkward results. The effect of it would probably be that a 20ft. street used for foot traffic only, the cost of which had been borne by the landowners on each side, might at any time be made a carriage road, without the consent of the Board, by building on one side; and the owner on the opposite side must then add 20ft. to the width of the carriage road thus formed before he could build houses on his own land. There should be added a proviso that on the conversion of a foot road into a carriage road the houses on either side shall be kept back 20ft. from the centre of the original foot road, and the extra width added to the road, whether there are buildings on the other side or not. Or, otherwise, the landowners on both sides should be required to enter into a mutual undertaking with the Board for the addition of 20ft. to the road on the second side, so to speak, whenever houses shall be built on that side.

But here it occurs to us that Section 4 prohibits building within 20ft. of the centre of a carriage road; so that there seems to be some contradiction between that section and this, unless one of the sides of what has been a foot road is to be deemed the centre of a carriage road the formation of the other half of which may be deferred until houses are to be built abutting upon it. There ought to be no room left for doubt on this point, especially in such a case as that already mentioned, where the road divides the land of different persons.

In pointing to these apparent anomalies and omissions, it is assumed that there is no existing enactment which quite meets the cases that have been supposed. The remaining clauses of the bill, which relate chiefly to "foundations," shall be referred to in another notice.

W. G.

CHIPS.

The parish church of Wetherby was reopened on Friday last, after restoration by Mr. H. Walker, of Wetherby, at a cost of £750.

A meeting, convened by the Mayor, has been held in Birmingham, to consider the expediency of authorising the Town Council to make an application to Parliament for an Act to empower them to acquire, by purchase, agreement, gift, or otherwise, the disused burial-grounds within the borough, and to fence, lay out, and appropriate the same as open spaces accessible to the public, and for other purposes.

A resolution has been unanimously passed by the vestry of the parish of St. Anne, Westminster, regretting that the Metropolitan Board of Works has postponed the formation of the new street from Charing-cross to Tottenham-court-road; declaring that such postponement of a great metropolitan improvement is attended with great loss and inconvenience to a large body of ratepayers.

A new passenger station has been erected at Middlesborough, from designs by Mr. W. Peachey, of Darlington. Messrs. Shaffo and Barry, of York, were the contractors, and Mr. Alonzo Taylor, of Middlesborough, the clerk of works.

An extension of the bridge, and considerable addition to the railway station, have been executed at Sale, under the direction of Mr. Henry Woodhouse, C.E.

The members of the Association of Municipal and Sanitary Engineers and Surveyors will visit Dartford to-morrow, for the purpose of inspecting the West Kent Main Sewerage Works. The visitors will assemble at the offices of Messrs. Hayward and Co., the clerks to the Dartford Local Board, at 11 a.m.

Approval has been formally given by the Irish Local Government Board to a plan prepared by Mr. P. F. Leonard, C.E., for the drainage of the districts of Drumcondra and Glasnevin, in the rural sanitary district of North Dublin Union.

Walcot Parish Church, East Norfolk, was reopened last week, after restoration at a cost of £1,000.

The Cheltenham Town Council have received the assent of the ratepayers to the bill to be promoted next session for the purchase of the waterworks from the limited liability company.

The transfer negotiations between the Town Council and gas company of Retford have been brought to an amicable termination—the corporate seal having been affixed on Monday last to an agreement by which the local authority acquires the undertaking and works at a cost to the ratepayers of £24,000.

The annual exhibition of the works executed by students in the Great Yarmouth School of Art took place last week. The Norfolk journals speak of the exhibits as reflecting the highest credit on the students and their head-master, Mr. J. F. Ryan.

The local board of health for Cirencester determined last week to adopt a system of sewage irrigation for Cirencester, with an outlet on a sewage farm at Siddington, to which point the sewage will flow by gravitation.

Plans have been prepared for the Wrexham rural sanitary district by Mr. Glennie, their engineer, of a proposed separate drainage scheme for the districts of Bersham, Minera, and Brymbo, with an outfall on Barnhill Farm. The expense is estimated at £3,500.

In our notice last week of the Leeds Architectural Association we did not mention that Messrs. Powell Bros. of that town exhibited some specimens of the tile cartoons, similar to those exhibited by Messrs. Chubb and Son at the recent Croydon Congress Exhibition. As this series of designs has attracted favourable attention, Messrs. Chubb and Son request us to say that they will be happy to show the cartoons to any of our readers who will call at 57, St. Paul's Churchyard, E.C.

The new Conservative club at Broughton is approaching completion. Messrs. Armstrong and Dow, of that city, are the architects. A new Liberal club is now about to be erected from the designs of Mr. Whittington, architect, of Manchester.

The Council of the Society of Arts offer the sum of £100, together with the society's medal, for the best essay on the art of the silversmith, past and present, of all nations, together with practical suggestions for its future development.

Designs by Messrs. Adkins and Son have been accepted by the School Board for Wisbech, for schools in Elm-road. They provide for 200 girls and 137 infants, and are estimated to cost, together with school-house and internal fittings, £3,450.

Aleconbury Church, Hunts, was re-opened on Tuesday, after restoration and re-seating, from the designs of Mr. Christian, the erection of an organ by Messrs. Hill and Son, and the re-founding of some of the bells, now raised from a peal of five to one of six.

New school buildings were opened at Pontminster by the Risca School Board on Tuesday week. They are Gothic in style, accommodate 400 children, have spacious playgrounds attached to each department, and were built by Mr. J. Piggford, of Newport, at a cost to the board of £2,300.

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OUR LITHOGRAPHIC ILLUSTRATIONS.

KIMBOLTON GRAMMAR SCHOOL, NEAR ST. NEOT'S, HUNTS.

THESE buildings have been erected on a new site just outside the town, and were opened in September last under a new scheme, drawn up by the Charity Commissioners, for the management of the grammar school, founded by Henry Bayle and William Dawson, at Kimbolton, in the county of Huntingdonshire, in the year 1600, and the new scheme provides that the governing body shall consist of nine persons, of whom one shall be the owner for the time being of Kimbolton Castle, or some person named by him, to serve for a term of five years. Four to be representative governors, and four to be co-optative governors. The school is provided as a day school and boarding school for boys, to accommodate 80 boys, of whom 16 are boarders. The head-master is to be a graduate of some university. The new buildings have been erected by Mr. Thos. Spencer, builder, of Bedford, from plans prepared by and under the personal superintendence of Mr. John Ladds, architect, London. They have been built with local red bricks, and Bath stone has been used for all sills of windows, and sparingly introduced into the dressings of principal entrance to school and master's house, so as to make them at once apparent. The arrangement is simple, and the that for boys, tradesmen, and visitors, and entrance to master's house, are as far as practicable separate and distinct. There is plenty of room on the site, and provision is made for future extension, if at any time found necessary and the funds will admit. The buildings are covered with plain tiles—those from the old buildings, as far as sound, being re-used. The dormitory is partitioned off into cubicles that each boarder may be provided with a small room to himself—the wood partitions being about 7ft. high. The old buildings hemmed in the church on one side, and were so cramped for room that it was considered quite impossible to alter and rearrange them in accordance with the present notions of school requirements; so subscriptions were raised in the town and county, and they were purchased, taken down, and considerable improvements effected in widening the high road round churchyard, and part given to the churchyard, which is to be planted with shrubs. A low brick wall has been built round the yard, with ornamental oak gates, on the site of the old school, leading to the west door of church. This removal of the old buildings has the effect of exposing the south and west sides of church to view, also the exceedingly handsome tower and spire, with the elaborately moulded Early west doorway in tower.

"BUILDING NEWS" DESIGNING CLUB.

THE designs for a graveyard monument, and for a small railway station, illustrated this week, were reviewed a fortnight since (p. 547).

APSE OF CHRIST CHURCH, WESTMINSTER-BRIDGE-ROAD.

OUR illustration is taken from Mr. A. Bickerdike's drawing in the Royal Academy Exhibition of the present year. The original design for the pulpit contained richly sculptured subjects, but much objection was made to representations of this character, and a simpler design, with all sculpture omitted, as shown in the view, had to be substituted. Funds are now being raised for its execution. The organ was built by Messrs. Lewis, of Brixton, from the architect's designs. The two apse windows are filled with painted glass by Messrs. Clayton and Bell. The east window could not be pierced as the building abuts against adjoining property at this point—the centre bay has therefore been prepared for subjects in mosaic work. The spaces beneath the windows were intended for frescoes. The reredos is shown according to the architect's original intention. The objections to sculpture, however, apply here also, and it will probably not be erected at present. The space behind the reredos is used as a communication between the organist and choir, &c.

CHURCH OF ENGLAND SCHOOLS, HEWORTH, YORK.

THESE schools were built in 1872 for the new district of Heworth, for which Lady Wheeler had previously erected the church and parsonage. The schools are for boys and girls, with an addition, made in 1875, for infants, accommodating in all about 250. The Rev. Horace Newton, the first vicar, gave the ground, and contributed largely towards the expense of the buildings, which are of red and white brick, and some stone dressings. Messrs. G. Fowler Jones and Son were the architects.

ENTRANCE GATEWAY AND LODGE, MOUNT ST. JOHN, NEAR THIRSK.

THE illustration represents the external view of this lodge, now nearly completed for John Walker, Esq., who has also rebuilt the larger portion of the house, which is plain and built, like the lodge, of the local stone, and stands on the site of the old monastery of St. John, near Whitestonecliff, on a spur of the Hamilton hills. Messrs. G. Fowler Jones & Son were the architects, and the works are being carried out under their directions.

THE MARKET HALL, LEDBURY.

THIS structure was designed by the architect John Abel, who died in 1674. The building originally contained first and second floors, but within the last few years it has been restored, and the second floor at the level of tie beams of roof removed; the tie beams show mortices for floor joists, arranged like those of first floor. The present mullions and transoms of windows are modern, and from a piece of old mullion of larger section it is probable that each window had fewer lights originally. During the restoration it was found that, on the first floor, the building had sagged some 3 or 4in. all round the outside; this has been made up under the modern floor. The size of the building on the ground floor is 50ft. 2in. by 22ft. 3½in.; the 16 large posts are 15in. square at the base, diminishing to 13in. square at the top; the main timbers under first floor are from 13½ to 11in. square—all curved struts, 3½in. thick. The main wall timbers on first floor are from 11 to 10in. square, chamfered, and projecting on the inside; intermediate and diagonal ones, not showing on the inside, about 9 by 4in. All filling in between timbers is lath and plaster work.

SCHOOLS OF ART.

THE ROYAL ACADEMY.—Sir Francis Grant distributed the prizes to the students of the Royal Academy on Monday night. He spoke at some length on the necessity of truth in art. The following is the prize list:—Historical painting, gold medal, £25 scholarship and books, James Elder Christie; landscape painting, gold medal (Turner), Allen C. Scaley; painting of a figure from the life, silver medal, H. H. La Thangue; painting of a head from the life, silver medal, Blanche Macarthur; extra silver medal, Henry Gibbs; copy of an oil painting, silver medal, William Walker; drawing of a figure from the life, 1st, silver medal, not awarded; 2nd, silver

medal, Charles Knighton Warren; drawing of a head from the life, silver medal, Edgar Hanley; extra, silver medal, Lewis Will Jackson; composition in sculpture, gold medal, £25 scholarship and books, Thomas Stirling Lee; design for a medal, silver medal, not awarded; model of a figure from the life, 1st, silver medal, not awarded; 2nd, silver medal, not awarded; model of a statue or group, 1st, silver medal, Emmeline Halse; 2nd, silver medal, not awarded; drawing of a statue or group, 1st, silver medal, Bernard Evans Ward; 2nd, silver medal, Arthur William Hayes; drawing of a statue or group, £10 premium, Richard Alfred Williams; design in architecture, gold medal, £25 scholarship and books, Edward Clarke; design in architecture, travelling studentship, Eley Emlyn White; architectural drawing, 1st, silver medal, George H. Rayner; 2nd, silver medal, George E. Langford; perspective drawing and sciography, silver medal, Harriette Edith Grace; composition and design of a figure picture, 1st, £40, James Elder Christie; 2nd, £10, Henry Marriott Paget; proxime accessit, Walter Charles Horsley.

LEICESTER.—The annual distribution of prizes to the students of the Leicester School of Art took place on Wednesday week. The report of Mr. Pilsbury, the head master, stated that the number of students who attended the school last year was 258; this year there has been an increase of 46, the total number being 304. Last year 1,016 works executed by the students during that year, were forwarded to South Kensington. This year the number was 902, but the awards were higher in merit, and the grant to the school greater than that of last year. Last year 16 works were chosen for prizes, all of which received third-grade awards, but none were successful in the national competition. This year 15 were chosen, to 10 of which were awarded third grade prizes, while 5 obtained national awards. The highest result in former national competitions was in 1874, when the school obtained two awards—viz., a silver medal and a book prize. This year it has gained one silver medal, one bronze medal, and three book prizes. At the local time-examinations 69 students presented themselves last year, of whose exercises 9 were marked "Excellent" and 50 "Pass." This year 78 students were examined, and of their exercises 15 received the mark "Excellent," for which prizes were awarded, and 29 the mark "Pass," for which the students receive certificates. Whilst the number of successful exercises, therefore, is less than last year, the number of prizes is greater. Had not the classes been interrupted by the closing of the school the total number of successful papers would probably have been still greater. Five of these successful students have obtained "full certificates" for having passed in the four subjects of the second grade examination, whilst last year four such certificates were awarded. Free scholarships entitling the holders to attend the evening classes for a year without the payment of fees, have been awarded to five students. The school obtained the same number last year.

The Church of St. Mary, Old Linslade, near Leighton Buzzard, was reopened on Thursday week, after restoration from the designs of Mr. Lawrence, architect. The works are said by a local newspaper to "partake more of durability than artistic effect." They include the whitewashing of the walls, laying a new flooring, erecting a substantial stonework north porch, the blocking up of the south entrance, and rearrangement of the churchyard.

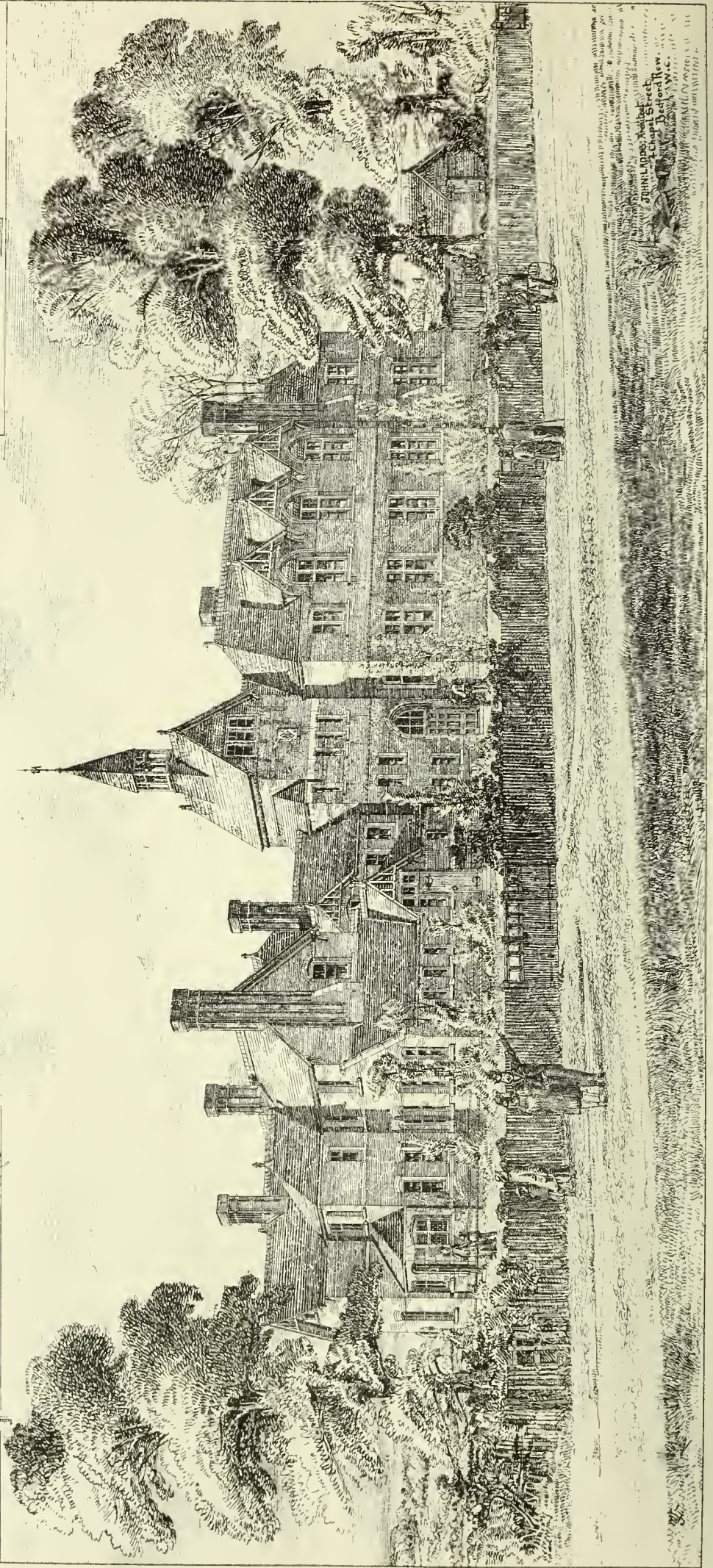
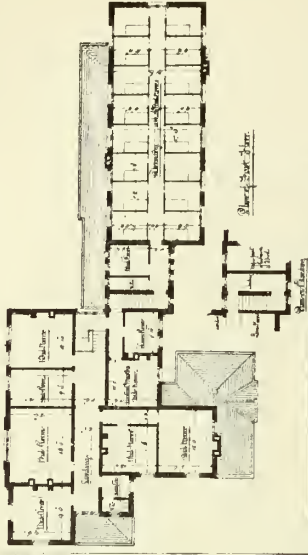
At a vestry meeting, held at Wallingford, on Thursday, the 6th inst., it was decided to enlarge the parish church of St. Peter by the erection of a chancel and vestry. The plans are being prepared by Mr. Stevenson, who was the architect for the grammar school.

Allhallows' Mission School, St. Paul's, Bedford, was opened on Wednesday week. It consists of a principal room, 62ft. by 28ft., with hammer-beam roof, ceiled between the principals, and two classrooms, each 20ft. by 18ft. It is built of red Bedford bricks, and roofed with plain tiles. Mr. Day, diocesan architect, furnished the design, and Mr. Samuel Foster, of Kempston and Bedford, carried out the contract, which amounted to about £1,000.

The Town Commissioners of Kingstown have applied to the Local Government Board of Ireland for sanction to borrow £1,000, for asphaltting the footpaths in the township.

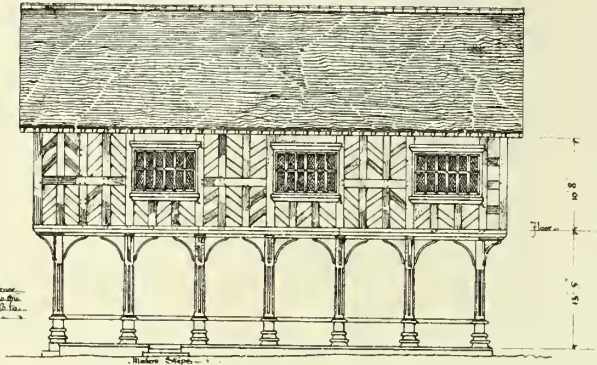
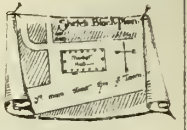
THE BUILDING NEWS, DEC 14, 1877.

NEW GRAMMAR SCHOOL, AVONKIMBOLTON, HUNTS.

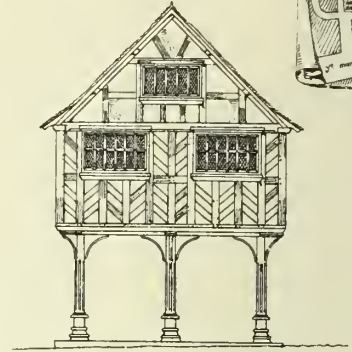


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The Market Hall of Leicestershire.

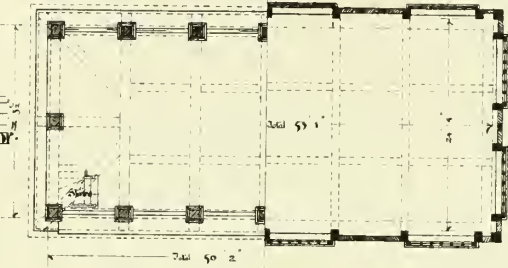


West Elevation.

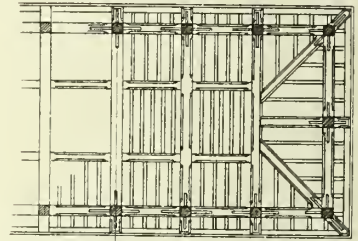


South Elevation.

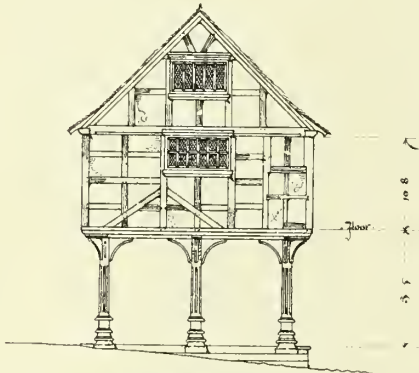
Half Plan Ground Floor.



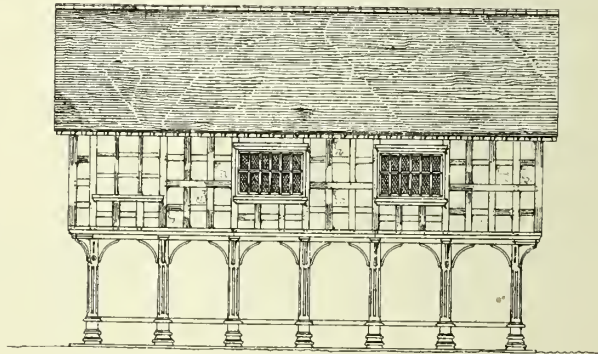
Half Plan First Floor.



Half Plan of Floor Timbers looking up.

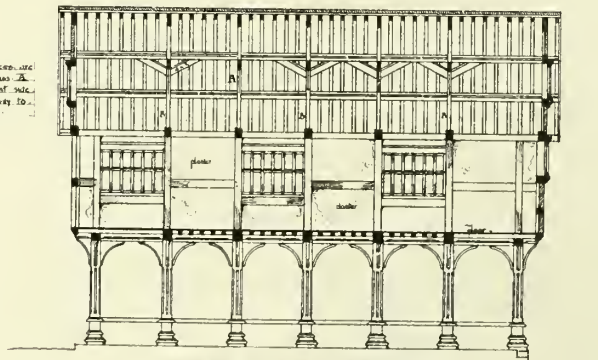


North Elevation.



East Elevation.

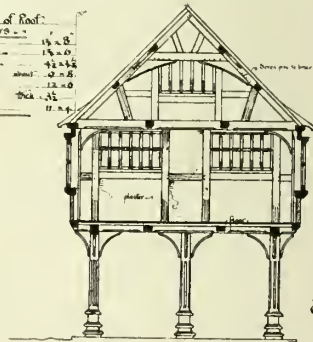
The wall-braces are
taken from those in
E of the East side.
They occur every 10
braces S. D.



Long Section looking West.

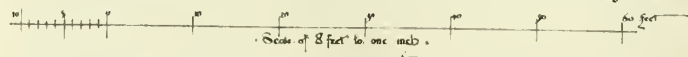
Scaffolding of Roof.

Joists	14 x 8
Plates	14 x 0
Principal Rafters	14 x 0
Commons at	4 1/2 x 4 1/2
Purlins	10 x 8
Collars	12 x 8
Braces E. side	12 x 8
Struts	11 x 4



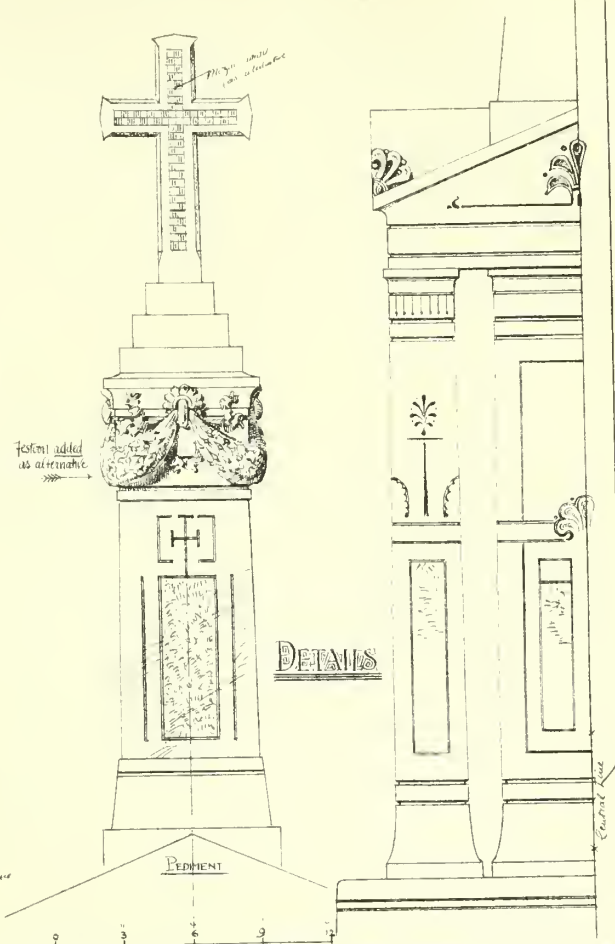
Cross Section looking S.

Ed J May
mens et del.



BUILDING NEWS DESIGNING CLUB
 A MONUMENT in Marble

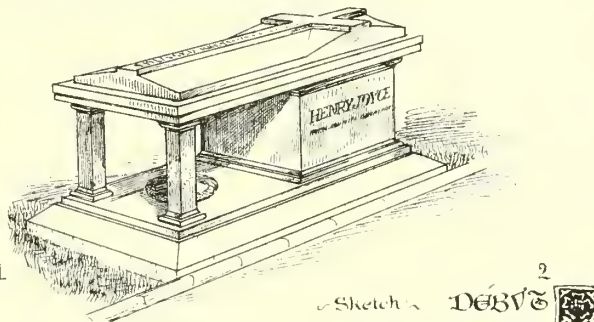
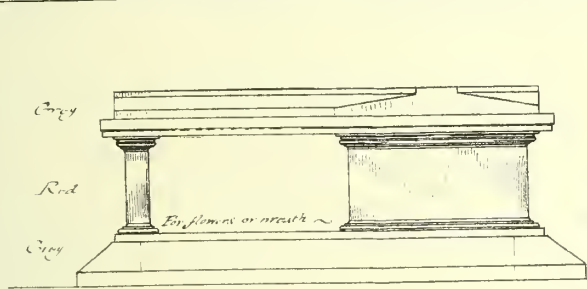
Source on Pearl



1

SCALE 1" = 1' 0"

1" = 1' 0"



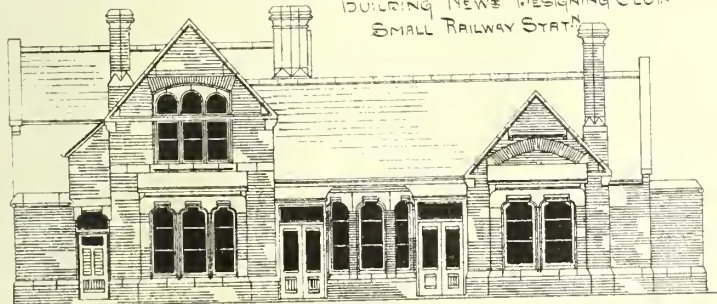
Elevation

Sketch DEBVS

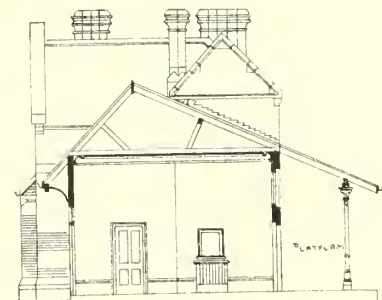
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Building News Designing Club A Graveyard Monument

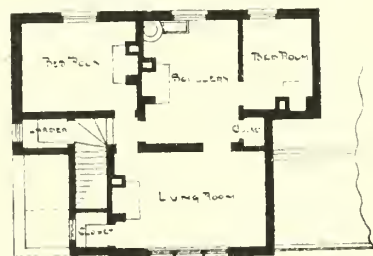
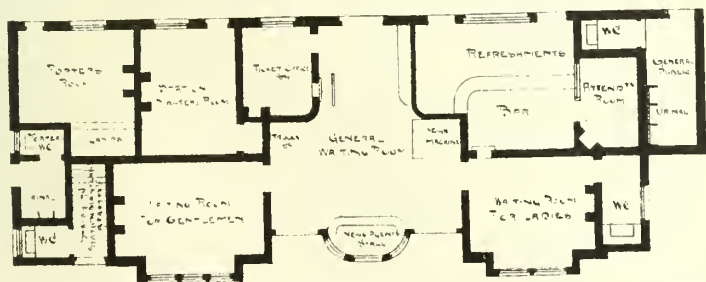
BUILDING NEWS DESIGNING CLUB
 SMALL RAILWAY STATION



FRONT ELEVATION

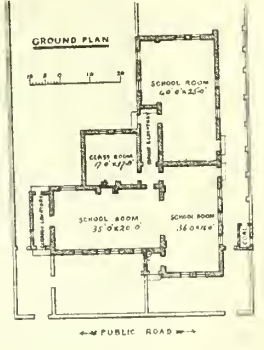
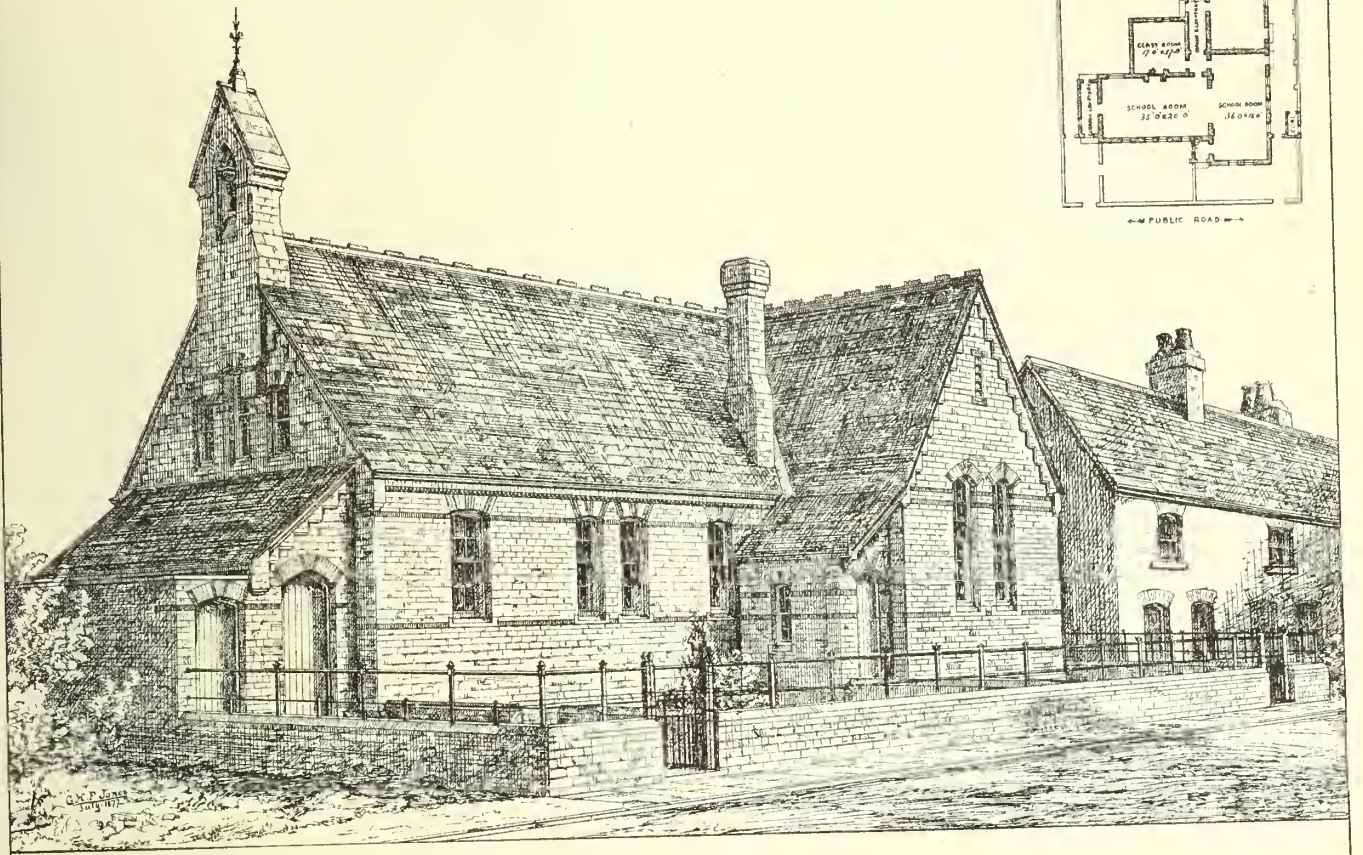


SECTION



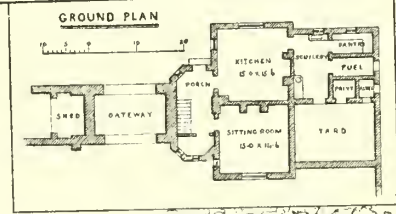
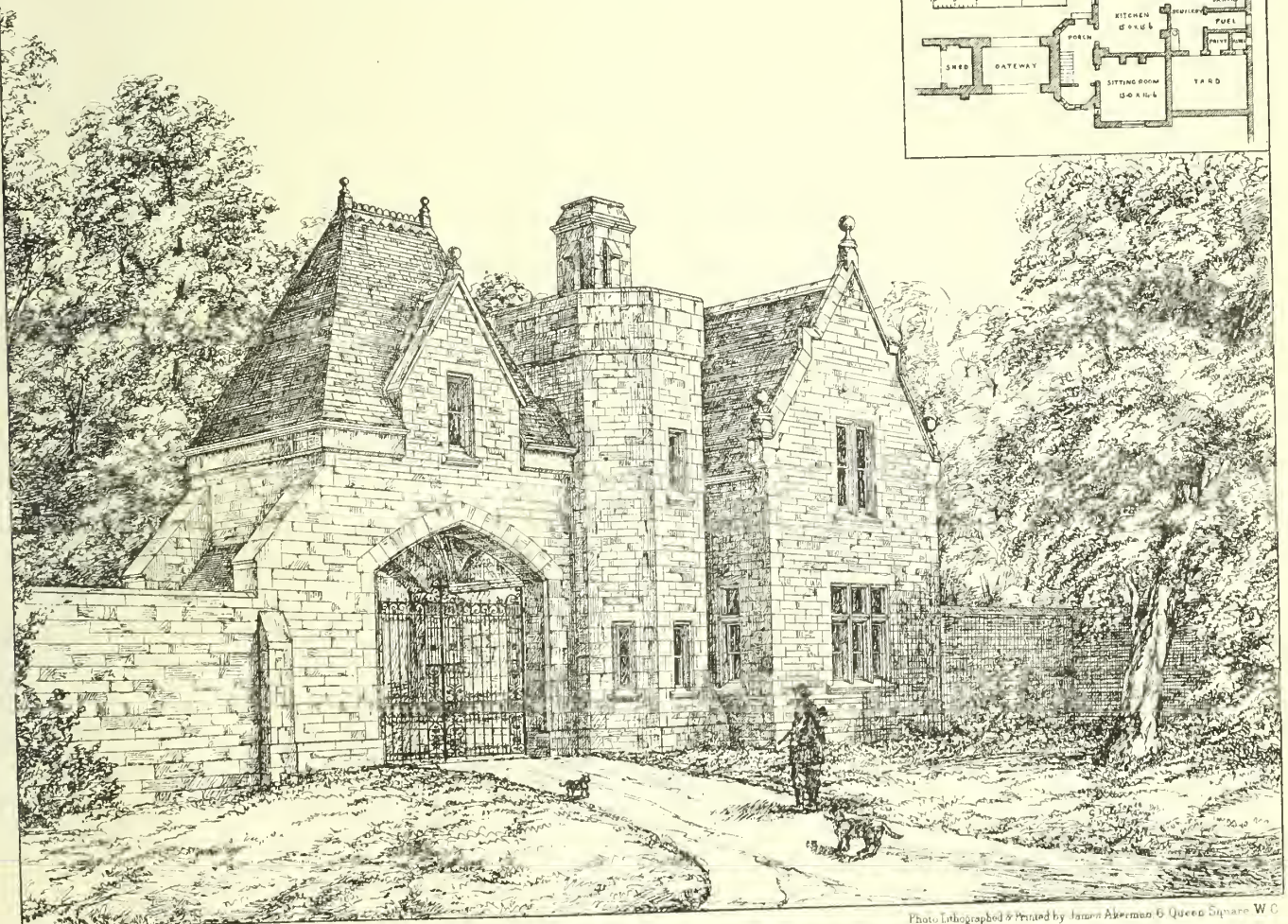
FLOOR PLAN FOR SECTION

PREP.



CHURCH OF ENGLAND SCHOOLS. AT HEWORTH. N^o YORK

M^{rs} FOWLER JONES, ARCHT. YORK.



ENTRANCE LODGE. MOUNT ST JOHN. N^o THIRSK.

MESSRS. J. & W. L. L. ARCHT. YORK.

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THE BUILDING PEWS, DEC 14, 1877.

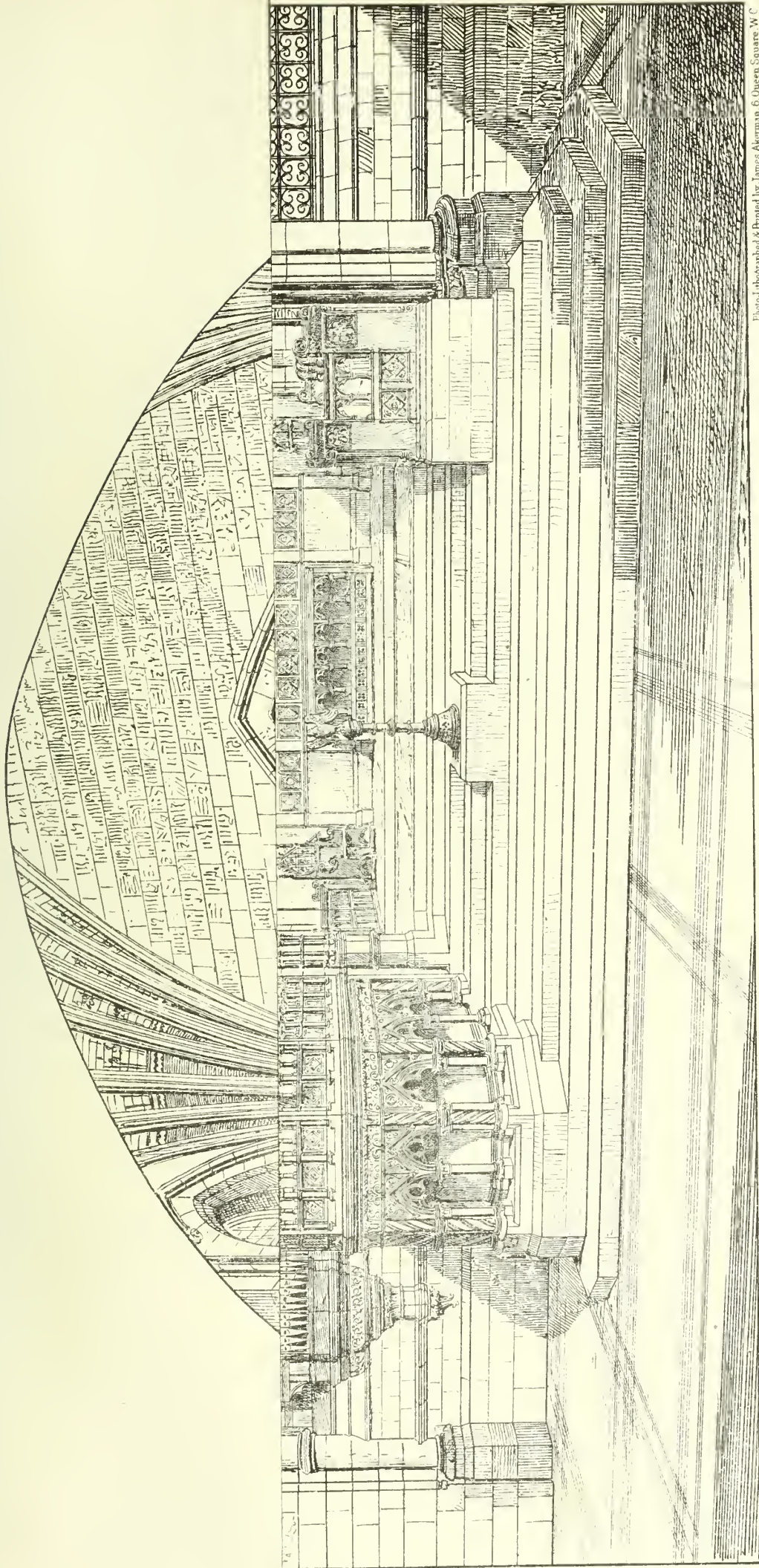


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VIEW OF APSE (WITH REREDOS) CHRIST CHURCH, WESTMINSTER BRIDGE ROAD
PAULL & BICKERDIKE ARCHTS



Photo Lithographed & Printed by James Akerman, 6, Queen's Square, W.C.

VIEW OF APSE (WITH REREDOS) CHRIST CH. Westminster Bridge Rd
PAULL & BICKERDIKE ARCHTS

ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association took place on Friday evening; the President, Mr. B. A. Paice, in the chair. The following were elected as members: — A. Burnell Smith, F. J. J. Whitwell, E. C. Newmarch, Ellis Mawland, H. W. Booth, E. A. Mason, J. P. Cutts, F. Baldwin, W. F. Keen, E. H. Abbot, H. Rose, H. Ainsworth, C. C. Wilson, F. Barrows, and W. F. Essex. Five others were nominated for election. On the motion of the President the presentation by Miss Jones of a framed portrait of her late brother, Mr. Owen Jones, was directed to be acknowledged with thanks.

GOTHIC ARCHITECTURE.

Mr. J. J. STEVENSON read a paper on the "Development of Gothic Architecture," the subject being illustrated by a number of drawings in water colour and pencil, executed by Mr. H. W. Brewer. The lecture was of an elementary character, and, as the author intimated in his prefatory remarks, was substantially identical with a paper published some time since. The development of Gothic architecture could, he said, be best traced in France,

vaulting almost immediately adopted. But the arches opening between nave and aisles and those of the windows were still round. Attempts, again from a desire for fireproof construction, were soon made to build domes. Gothic had once a chance of becoming a domical

(Fig. 6). Then the roofs all stone were not watertight, and it was found necessary to make the vault merely an inner ceiling, protected outside by a simple wooden-framed roof. Gothic, as we know it, developed in the north of France, in the Royal Domain. At first, their churches being large, the builders confined their fireproof constructions to the side aisles, for they were unable to vault over the wider central portion, nor could they afford to lose the clerestory which lighted this central part by raising the side aisles so as to make them abutments to a waggon vault. But by dividing the continuous waggon vault of the nave into square compartments, and running another vault across each compartment, so that the two vaults intersected, as the Romans had done, they concentrated the thrust on the four angles of the compartment, where it was abutted, at first ineffectually, by tall buttresses, but with larger experience completely, being carried down to the ground by half an arch—a flying



FIG. 7.

style of architecture. If a square were supported on four arches, and carried a dome (Fig. 3, plan), the bottom of the dome being quite inside the angle pillars, must be supported from them by four spherical triangles (a a, Figs. 3, 4, and 5) whose points rested each on one of the pillars, and whose bases, turned uppermost, formed together the lowest ring of the dome. These triangles resting on their points, their tops a quarter of a circle, their sides each half of one of the supporting arches, were called pendentives. Now, if the arches whose curves their sides followed were pointed (Fig. 5), the pendentive would be longer than

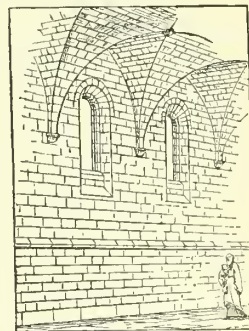


FIG. 11.

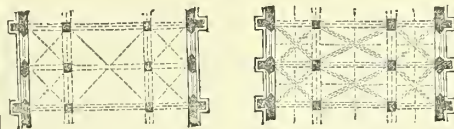


FIG. 8.

FIG. 9.

if the arches were round, and, the projection being the same, would not slope so steeply forward; while, if the arches were round, the top part of these pendentives must project actually level, and thin away to nothing. Consequently a dome was more easily placed on pointed arches than on round. Neither of these styles of Gothic was ever developed. In them the windows and openings always remained round. The domical style with the means at the command of the builders was suited only for small churches. The style with waggon vaults was suited only for the south, for churches so constructed were difficult to

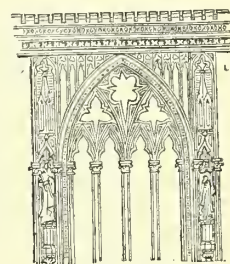


FIG. 12.

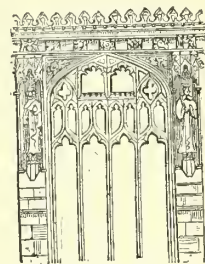


FIG. 13.

buttress above the aisle roofs. An arched space was thus left clear in each compartment of the nave above the aisle roof in which windows could be opened. These improvements are shown in Fig. 7. This form of vaulting was called groining, in contradistinction to the continuous waggon vault. To vault both nave and aisles at the same time, using only the Roman round arch, was a problem of some difficulty. For, if the width of the nave was taken as the size of the square of vaulting, the vaults of the narrower aisles became oblong in plan, the arches across the aisles only half the size of those into the nave (Fig. 7), and the vaults rising from these lower arches to the higher ones had an awkward domical appearance. If, again, the aisle vaults, as well as those of the nave, were made square in plan, each square of the nave corresponding with two squares of the aisles on each sides (Fig. 8), the thrust of the nave vault was brought on every second pier only. Again, if only semi-circular arches were used, the windows under the diagonal vaulting could be as high as the

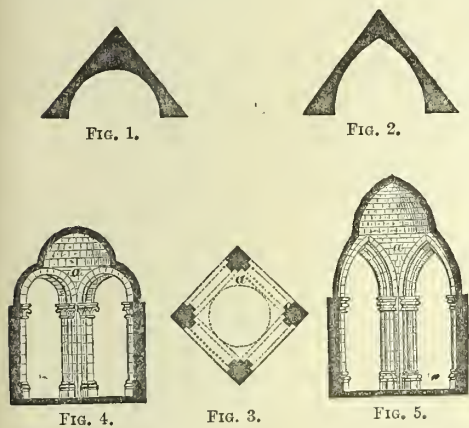


FIG. 1.

FIG. 2.

FIG. 4.

FIG. 3.

FIG. 5.

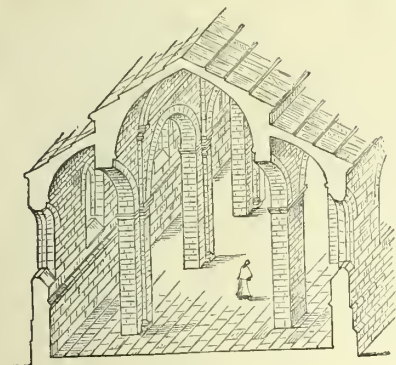


FIG. 6.

in which country it was adopted earlier than in England. It sprang from an imitation of the palaces, baths, aqueducts, bridges, basilicas, and villas left by the Romans in every part of Gaul. After the departure of the Romans the land was invaded by German barbarians, who gradually occupied the greater portion of the country, and anarchy reigned for centuries. When, with rising civilisation, about the 10th century, churches or monasteries and towns began to be built, architecture had to be commenced afresh. Roman buildings remained everywhere, but none knew how they had been constructed. These buildings they copied as well as they could, making up for miserable construction by lining them with marble and gaudy painting. As models for their churches they reproduced the old halls of justice, or basilicas, but made the roofs of wood. As the churches were frequently burnt attempts were made to render the roof as well as the walls incombustible. In the South of France this was attempted—without the use of wood—by a plain waggon vault, covered with solid masonry in the ordinary form of a roof (Fig. 1). But for this a round arch was very unsuitable; a pointed one saved weight on the apex, and had less thrust (Fig. 2). And the pointed arch was for

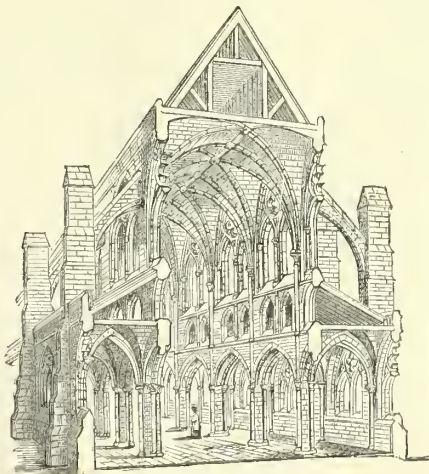


FIG. 10.

light. To form an abutment for the massive central vault the lower side aisles had to be carried up to its springing, thus abolishing the clerestory and preventing any light getting into the central nave except from the side aisles, leaving the central vaults dark caverns

centre of the vault, and thus light was lost. By the use of the pointed arch all those difficulties were got over, for by breaking the round arch into two parts, attached by a point at the top, the arch could be widened or narrowed like a pair of compasses, and arches of different span could be made of the same height. Thus the determination to render churches fire-proof by means of vaulting produced the Pointed style of architecture. For some time after the discovery of the pointed arch the width of the nave continued to be taken as the size of the square of vaulting, the aisles also being vaulted in square compartments, two to each square of the nave on each side. The defect of the thrust of the nave vault coming on each second pier only was partially obviated by springing a subsidiary rib from the intermediate pier, thus dividing the vault into six parts, instead of four, whence this method was called sexpartite vaulting (Fig. 8). Taking the aisles' width as the size of the square of vaulting, which the use of the pointed arch rendered possible, obviated all difficulties (Fig. 9). The central nave vault became thereby oblong, its length the width of the nave, its breadth the width of the aisles, and the arches across the nave twice the span of those against the clerestory walls, which, springing from the same piers as the nave arcade, were of the same span (Fig. 10). The clerestory windows were raised to the full height of the apex of the central vault, sometimes even higher, and the thrust of the vault was equal on each pier. Even after the vaults became pointed the windows under them continued round-headed (Fig. 11). But a round arch under a pointed one leaves a space something like an arrow-head in shape between them, which it was soon seen could be made available for lighting. The windows were therefore made the same shape as the vaults, and the same form was, from the principles of harmony, carried out throughout the building. A new impulse was given to the art of vaulting by the invention of vaulting ribs. The Gothic builders, even while still using the round-arched style, made the angles of the groin strong arch ribs, which form the skeleton of the vaulting, filling-in the spaces between these ribs with light flat arching, or even, where the distance between the ribs was short, with long stones resting from one rib to another. These ribs were made to spring each from a separate slender column, one of a cluster. As the style developed the columns and the vaulting ribs coalesced, the capitals dividing them became absorbed, the ribs in Late Gothic rising without break from the base of the building to the crown of the arch. The development of the style was doubtless influenced not only by the mechanical requirements, but by the sense of beauty in the mind of its inventors, and by the environment in which they found themselves placed. If, in the problem which they had to solve, they had been guided purely by mathematical principles, they would have found a more perfect solution, not in the pointed but in the elliptical arch. But in the light of art the result would have been far less beautiful, and even if they had possessed mathematical knowledge sufficient for working out their problem by the use of the elliptical arch, their instinct as artists would have prevented them from adopting it. At first the windows were small, leaving large surfaces of wall to be decorated with colour and painting, and the decoration was carried out over the windows also by the use of stained glass. This latter mode of decoration was felt to be so brilliant and charming that it ruled the development of the style. The object of every change was to reduce the surface of masonry, and give more space for stained glass. The small windows were put closer together, and the masonry between them reduced to mullions, narrow on the face, but deep across the plane of the window, so as to give as much opening as possible for glass, at the same time retaining strength. Openings shaped like flowers, of three or four or more leaves, were placed above them; the corners left between were pierced; the stone between these openings was reduced to bars bending round the foliated forms; and thus at last one great window was formed, which filled the whole space under the vault. These mullioned and traceried windows were

one of the most charming features of Gothic architecture, so beautiful in themselves that they have been used even when the causes which led to their adoption do not exist. For large windows such a division of the surface would always remain one of the simplest and most admirable means of producing architectural effect; as windows of all sizes could thus be brought into harmony with each other, an immense advantage in domestic architecture. The form of the stone bars naturally partook of the constructive lines of the architecture. Under vaultings mullions were curved, but in ordinary domestic architecture the straight form was simpler and more suitable. Gothic architecture had a magnificent opportunity of development in the construction of the great cathedrals, which, in France, were all built or rebuilt at the end of the twelfth and beginning of the thirteenth centuries. Their architects were laymen, for the most part, as in several instances we know from their names, and the representations which occur of some in the lay dress. In fact, the regular clergy disliked the movement, and continued to practise still their own old round-arched style. In France the cathedrals were rebuilt in the new (the Pointed) style. In England, in accordance with our spirit of compromise, our cathedrals were generally monasteries or minsters as well. The main characteristics of Gothic were its system of pointed vaulting and traceried windows, filled with stained glass. The style possessed also a beautiful and vigorous style of carving, founded on natural foliage, and truthful and admirable modes of metal work. The style thus developed was, of course, used for other purposes than churches. Castles and houses were built in Gothic, and the mouldings and minor ornaments were the same as in churches. Pointed windows and tracery it was found necessary to modify; while between vaulted floors when height was valuable, flat arches, segments of a circle, were adopted. Very few specimens of Gothic houses remain anywhere. During the middle ages the style of living was poor, and even miserable, as is proved by the general prevalence of leprosy, testified to by the necessity everywhere felt of establishing lazaret-houses. The disease has ceased in every European country except Norway, in parts of which the people are miserably fed. The houses, except in the rich cities of Italy, were generally poor and small, but many of them were built of wood, and in the course of centuries got out of repair; and almost everywhere the more comfortable style of living in every class of society which the Revival brought with it, caused them to be rebuilt. In Nuremberg, though it possesses two noble Gothic churches, there is scarcely a house older than the 16th century. Here and there, in places where prosperity had departed, and where the people were too poor to rebuild, Gothic houses still exist. Everywhere in great halls built for civil and domestic purposes, pointed vaults, and consequently pointed arches, were used, although the windows were flat-headed. During the highest development of the Pointed style, while the pointed arch was used for all decorative features, it was frankly abandoned in the windows, where the form would have been impracticable. It may be urged against the statement that vaulting is an essential of Gothic architecture, that Gothic churches as well as domestic buildings, in England especially, frequently had wooden ceilings, and then not always from economy, but even, as in St. Stephen's Chapel at Westminster, where the wealth of English art was lavished. This, however, does not disprove the fact that the Pointed style arose from vaulting necessities, and, indeed, to the use of wooden roofs in England may be traced the abandonment of the pointed arch, and the adoption of the flattened perpendicular form, while in France, where the use of vaulting was continued, the pointed arch also was retained to the last. Till the end of the 13th century the development of Gothic architecture was similar in France, England, and Germany. There are some slight national differences, but every advance of the art was common to the civilisation of those countries. It was even carried as far as Norway, where the Cathedral of Drontheim, built in the 13th century, is in the ordinary style of the period. It is built of

stone, not in the national wooden mode of construction, which the Norwegians did not abandon for their other churches. The style of their carving in wood, which had always been a national art, prosecuted during their six months of continual night in winter, became, and continues still, thirteenth-century Gothic in character. This similarity of style in the different countries of Europe was due greatly to the organisation of the great monastic orders, who sent missionaries to found new houses and establish religion in outlying districts. The new inventions of architecture were thus carried everywhere, as those of engineering are at the present day. During the fourteenth century, each country where the style was established took it into its own hands and developed it into a national style of its own. It is absurd to call these latter styles degraded, as has been the fashion of late. Each of them, if studied without prejudice, will be seen to have developed characteristic and interesting, and often noble qualities of architecture. One common quality characterised them, as compared with the earlier style, greater lightness and elegance in construction, more window in proportion to wall, giving an effect of space and height and light in the interior, which is the glory of Gothic. This was attained by more scientific construction and greater mechanical skill, which enabled the builders to dispense with the masses of material necessary in the earlier style. So far as practical convenience is concerned, one of these great Perpendicular churches, unencumbered by massive columns, with its feeling of space, is more suitable for our congregational purposes than those built in what is considered a more perfect period of Gothic. The name "Perpendicular," as expressing the true character of style, is—like "Gothic" itself, "Queen Anne," and some others—a misnomer. The main lines of the style, as compared with those of any other style of Gothic in England or elsewhere, and the disposition of its masses, which gave it its character, are horizontal, in sympathy with the cornice, which, Mr. Stevenson thought, determined its origin. Perpendicular architecture loses the tendency which every other form of Gothic had to increase the height of the building by high-peaked roofs, which specially characterise contemporary styles in France, where the roofs became steeper than ever. The roofs are flattened to a lower pitch than that of a Greek temple. In domestic architecture, the low level lines of the Tudor house, in which the roofs, often so low as to be concealed by the parapet, are in direct contrast to the tall peaked roofs of the French chateau of the period. It has been the fashion to abuse our English Perpendicular churches, and much beautiful work in the style has in the last few years been destroyed, though it had three centuries of antiquity to boast of, because the clergyman or his architect disliked it, and preferred a modern imitation of an earlier style. The dislike of Perpendicular architecture, in which we have all been trained has arisen from our judging it from the modern imitations of the last generation. For a like reason it is possible the earlier styles may find little favour with the coming generation. But one only needs to look at the Perpendicular style in its genuine productions to appreciate its high artistic qualities. By its common sense and severity it saved English architecture from the looseness and degradation into which Gothic fell in other countries. In few styles of architecture has there been a truer sense of proportion, or greater skill in the disposition of the masses than in Perpendicular. In the grandeur of its towers it is unsurpassed, and the appearance of height in these is increased by the low roofs and the prevalence of the horizontal lines, for which there is the authority of Greek architecture. This explanation of the development of Gothic led to the consideration of its suitability for our domestic architecture. It has been asserted that the style was gloomy and dark, and did not give sufficient light. But one of its chief characteristics was that it was all window—that the main aim in its development was to reduce the surface of the wall, and increase the space for stained glass. No doubt old Gothic castles had little window-light, but that was no essen-

tial of the style. Again, it was called a barbarous product of the dark ages, when the people were serfs. On the contrary, it was the product of the revived intelligence of the people, the outcome and sign of their civil freedom, and it gave evidence of a development of art, of skill and refinement and grandeur in building, such as we are incapable of furnishing. It was said to be a style purely ecclesiastical, and it was just as much civil. It was, in fact, in its origin, the lay style of architecture, as distinguished from the religious or monastic. Is there, however, the lecturer asked, anything in the Gothic style which makes it more suitable than any other for our modern houses? For this, it is not sufficient that it may appear to us more beautiful than any other. No architecture can be satisfactory, even from an artistic point of view, whose forms are not founded on use. Of the various characteristics which make up Gothic architecture, its system of vaulting does not suit our ordinary domestic requirements. In a building divided into stories, as our houses are, a pointed vault is a disadvantage, and if, in special buildings, we want fireproof construction, we can get it conveniently and cheaply by means of iron and brick, or concrete, in the usual thickness of a floor, without the loss of space which would be involved between the springing of the vault and a level floor over its crown. In the modern revival of the style, however, the attempt has rarely been made to revive the vaulting. In fact, in the application of Gothic to house-building, from the earliest period the pointed arch was dispensed with. Numerous instances occur where the pointed arch is retained over the windows, but the window openings are square. The glass was set in wooden frames so as to open like shutters, and the architects were too sensible to attempt to make these in such an awkward form for wood construction as a pointed arch. In another form of window common in old domestic Gothic, the pointed arch is purely ornamental, carved on a simple straight lintel. Even when in great halls, built for civil and domestic purposes, the lower lights of pointed windows being arranged to open for air and view, were always square-headed. Yet our architects and builders think they are working in the Gothic style when they stick a pointed arch where it is not wanted, and means nothing, while the whole construction and details of the house follow the ordinary Classic traditions. Old Gothic has always the merit of truthful and apparent construction. But this also, to some extent, unfits the style for modern use. It involves, unless when money could be lavished in decoration, an appearance of severity which does not accord with our modern feelings. Moreover, truthfulness of construction cannot be eluded among the excellences of modern Gothic. The copiers of the style, after the manner of copyists, are very apt in their zeal for its forms to neglect its spirit. As illustrations of this the pseudo-hinges on oak caskets, the fire-dogs of Gothic grates, and the corona form of gasaliers, were mentioned and denounced by Mr. Stevenson as contrary to the spirit of the style. The new Midland Hotel at St. Pancras Station is a splendid example of the modern Gothic style, but it cannot be said that the specially Gothic features in it, such as the pointed windows filled with tracery, are the outcome of any modern hotel requirements. Pointed windows are inconvenient for blinds and curtains, and reduce the light at the top, where it is of most value for lighting the room. The tracery further obstructs it, and it is scarcely sufficient justification for it that the circles in it are utilised as ventilators. The beauty of the architecture may be sufficient compensation for the inconvenience and expense which the use of the style involves, but when applied to modern domestic use it has not the justification which is claimed for it, that its features are the outcome of use and convenience. To the old Gothic architecture belonged the almost singular merit of perfect truthfulness. When a form ceased to have meaning, it was frankly given up; people did not weakly cling to the dead carcase. This evidenced a freshness and independence of thought rare in the history of humanity, and a wealth of artistic conception employed in making every new necessity beautiful, which few races have possessed.

If we could but do likewise, we should have no pointed windows, and quatrefoils, and buttresses which receive no thrust. We should not have in stonework chamfer stops at the angles of windows simulating wooden framed work, and all sorts of ugly and unmeaning notchings, and roofs so steep, that they endanger men's lives. Could it be said that the Gothic revival had exhibited these signs of the true Gothic spirit? On the whole, certainly not; and he feared that such vices as appeared in it were almost inseparable from the attempt to apply a thirteenth-century style to nineteenth-century use; that the Gothic style was, in fact, the artistic expression of an obsolete mode of construction.

In the discussion which ensued Mr. R. PHENE SPIERS said, Mr. Stevenson was looked upon as the apostle of the later style known as Queen Anne. He had been puzzled by the first part of the lecture, but a glimpse of Mr. Stevenson's purpose at length dawned on him—that he was reading a funeral oration over the Gothic style. Beginning by observing the rule *de mortuis nil nisi bonum*, Mr. Stevenson had shown them how truthful the style was, but he gradually warmed to his subject, and explained how the forms became debased. He had brought them down to the modern revival, and predicted that within the next 20 or 30 years we should give up copying the very earliest examples as we had done the later ones, leading his hearers to the inference that more attention would be given to the style in which he was a chief leader. He was a little disappointed in the paper. He believed Mr. Stevenson was about to publish a work on the history of architecture, and this might explain some of its features. True, one must necessarily in a history re-write some things that had been treated of by others—one must use a portion of the facts; but it was to be regretted that he had confined himself almost solely to M. Viollet-le-Duc, and that he had entirely neglected fan vaulting, a most important question to Englishmen. Mr. Stevenson had said that the development of Gothic architecture was very much the same in England, France, and Germany, but there were, in fact, very important differences in principle. In French vaulting the web stones followed the line of the vault, producing a slightly domical effect. In English work they were set falling, leaving an awkward filling-up to be made. To hide this the ridge rib was introduced, diagonal ribs were added and multiplied, and a different mode of construction was thus brought about, and the four-centred arch introduced. He would recommend Mr. Stevenson to study Professor Willis's theory of fan vaulting, which he believed to be correct, as it was of great importance to the English student. He wished to propose a vote of thanks to the lecturer.

Mr. BREWER disagreed from Mr. Spiers, and even from Professor Willis, as to the fan vault being the origin of the four-centred arch, because he had found that those churches in which the fan vaulting was most perfect had no—or but slightly marked—four-centred windows. Instances of this were the Lady Chapel, Peterborough Cathedral; King's College Chapel, Cambridge; and Henry VII.'s Chapel, Westminster Abbey. He believed the use of the four-centred window arose from the desire to fill up with as much light as possible the space below the wall-plate. In the fourteenth century, and even now and then in the thirteenth, the clerestory windows were often square-headed, and in some cases a flat segmental arch was used. The name Horizontal would certainly be a better name than the Perpendicular for the style of the fifteenth century. He had recently examined the churches of Norfolk and Suffolk, and was struck by the fact that the transoms, squarely-cut off towers, and chief features evidence horizontality rather than perpendicularity. Even in King's College Chapel the vertical lines were broken at the plate line by a series of enormous shields borne by angels.

Mr. MAURICE B. ADAMS could not agree with Mr. Stevenson's wholesale condemnations. The discussion, as so often was the case, appeared to have become a battle of the styles. A true artist would make a good building in any style, so long as it was tolerably pure. They had reason to be proud of the Gothic

works of the present century, many of which were of great beauty, and thoroughness of spirit. It remained for the workers in the present style to produce buildings of equal merit and picturesqueness. If we were to have good works we must have good artists. As the skillful tailor could make a good coat out of almost any material, so the clever artist could produce a good building in almost any style. As artists must necessarily be few, so good buildings would be correspondingly rare.

Mr. FLORENCE seconded the vote of thanks to Mr. Stevenson, which was carried by acclamation, a similar compliment being paid to Mr. Brewer for preparing the illustrative drawings.

In replying, Mr. STEVENSON mentioned that in deference to the time of the members, he omitted some portions of his paper, including the part dealing with fan vaulting. Immense difficulties were encountered by the architect of the Perpendicular period in the endeavour to keep these vault-surfaces flat, and the only reason for it that he could see was that the architects of the Perpendicular period were impressed with the effect of horizontality, symmetry, and length. Replying to Mr. Florence, he would admit that, as living in a feeble age, he should be quite willing to put up things, because they were beautiful, and try to find a use for them, such as turrets, affording an opportunity for looking up and down a street; but such a defence of modern Gothic as they had had was a sad come-down from its old pretensions—that it alone was true in construction, whereas Classic was false. Although one might to a certain extent use old, undeveloped organisms, no longer necessary, it was a greater evidence of mental power to do as did the old Gothic builders, and boldly throw a feature away when no longer needed; but this required the exercise of enormous skill and art. In engineering works they saw that the best results were obtained when a work was put up in its native roughness, with no attempt to apply ornament. At one time he had great enthusiasm for Gothic, but more study showed that it was unsuited for modern requirements; that a Gothic building to be grand must be vaulted, otherwise it would be a more or less unsatisfactory attempt. Modern Gothic buildings were as insipid as the play of "Hamlet," with the part of the Prince of Denmark omitted.

COMPETITIONS.

KILMARNOCK.—The exhibition of competing models for the proposed Burns statue attracted a large number of visitors on Saturday. There are in all twenty-one models. In a few cases the features of the Nasmyth portrait have been followed with considerable success, and one or two are considered admirable likenesses. The greater number, however, fail to convey any accurate idea of the poet, and there are some truly ludicrous specimens. For the second best model a prize of £50 will be given, and the third will secure a prize of £25. Voting papers have been provided for the use of subscribers to the statue, with the view of eliciting their opinion as to the best models—the final decision, however, resting with the committee.

READING.—We understand that the competition drawings for the erection of a new town hall at Reading will be on view in a few days. We are informed 30 sets have been received, and out of these 8 have been selected by the committee, and sent to some architect at Brighton (?) to adjudicate upon. The existing building is a very good one by Mr. Waterhouse, and the proposed buildings will be attached thereto, forming one whole. The cost is to be £25,000. We trust shortly to notice the designs sent in.

SHEFFIELD.—The competition for the new district church, Ecclesall-road, Sheffield, was decided on Friday last in favour of Mr. J. D. Webster, F.R.I.B.A., of Sheffield, and the work will be proceeded with at once. There were 9 or 10 competitors, some of whom submitted designs which at least would take double the amount named in the instructions issued by the committee, and the unfairness of such a procedure is obvious. When a sum is named competitors, at least, should endeavour to provide a design which could fairly be executed for

the amount given, else those whose designs are prepared with this view stand at an undue disadvantage. The church above mentioned is to cost £5,000, and to seat 700 worshippers.

SOUTHPORT.—At a meeting of the Southport Town Council, on Tuesday, the following report was read from Mr. Waterhouse on the designs submitted in competition for the erection of the new covered markets:—"Having been honoured with your instructions to examine and report upon the 25 designs submitted in competition for the proposed new covered markets, I beg to say that I have visited Southport for the purpose, and have made a careful inspection of the designs, and of the site which the new buildings are intended to occupy. It appeared to me that the essential points for consideration were the following:—

1. The cost of each design.
2. Its value as a source of revenue considered from two points—(a) the extent of accommodation provided, and (b) the quality of that accommodation (such as the means taken to direct the stream of public traffic to all the stalls equally).
3. The isolation of the fish market, and its contiguity to the yard.
4. The treatment of the basement (especially as to its lighting and modes of access), so as to make it worth the cost of its construction.
5. The appliances for lighting and ventilating the markets themselves.
6. The suitability of the designs to the general architectural character of the town.

As might have been expected, I looked in vain amongst the competitive designs for one which embraced the whole of the good points which appeared to me to be desirable; but, though such was the case, I do not find it difficult to mention three designs, the authors of which are, in my opinion, entitled to the three premiums. Those designs are: "Iron," to which I would assign the first place; "Southport," the second; and "Regardez Moi," the third. The desirability, or otherwise, of shops fronting the street appears to be a moot point, and though I think there cannot be a doubt as to their cheerfulness (especially desirable towards Eastbank-street), nor as to their proving an additional source of revenue, I have not allowed that consideration to influence my recommendation. It has appeared to me that it would be of considerable importance to secure an entrance to the markets at the corner of Eastbank-street and Upper King-street, and another of more imposing character in Eastbank-street immediately opposite the end of Chapel-street; also, that the principal lighting of the markets should come from the northern and eastern slopes of the roofs, and that the unloading from cart bottoms should take place at the level of the floor of the markets. These points are to be found carefully carried out in some of the designs which I have not considered to be equal in merit, on the whole, with the three to which I have made particular reference. The competing architects, I fear, have all laboured under some disadvantage in having their limit of expenditure fixed at too low a figure. An assessor would ordinarily exclude from a competition all designs which manifestly could not be carried out for the sum mentioned in the instructions; but in this instance I think the competitors may be pardoned if, providing only the amount of accommodation asked for with no useless features nor excessive ornamentation, they have assumed that the work could be carried out for the figure mentioned. The committee will not be disappointed, however, if the tenders exceed the amount of this estimate.—**ALFRED WATERHOUSE.**" A lengthy discussion ensued, and an amendment was proposed to the effect that the instructions not having been complied with, the recommendation of the committee as to the adoption of Mr. Waterhouse's report be not approved. It was, however, ultimately resolved to adopt Mr. Waterhouse's report. The authors of the premiated designs are as follows:—"Iron," Coe and Robinson, Furnival's-inn, London; "Southport," Bell and Roper, London and Manchester; "Regardez Moi," Mellor and Sutton, Southport, and John Dence, London.

STAFFORD.—Last week, at the meeting of the Town Council, a letter was read from Messrs. Beaumont and Bare, architects, Manchester, with reference to the recent award of premiums

for the competitive plans for the market extension. The letter stated that the setting aside by the council of the recommendation of the markets-committee caused the firms some surprise. After examination of the premiated designs they submitted that the verdict of the committee was fair and impartial, and they would have been quite willing to have bowed to the decision arrived at so carefully, whether they had been placed first or second; but considering that there was an evident doubt as to whether "Staffordshire Knot" or "A. B. C." was most entitled to the first premium, they respectfully suggested that they were entitled to some consideration for the time and money expended for the benefit of the borough of Stafford. They felt sure that if the decision of the council was fairly considered it would be felt that a special premium might be awarded to the designs under the motto "A. B. C." Mr. Day moved that the letter be referred to the works committee. Mr. Kelsall thought the question might be settled now. Mr. Nixon moved that the council proceed to the next business. This was seconded by Mr. Kelsall, and agreed to.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The second meeting of the session was held last Wednesday; Mr. Thos. Morgan, F.S.A., V.P., in the chair. The completion of the most pressing repairs to uphold the ruins of Denbigh Castle was announced. Notices were made of the discovery of various traces of the old Priory of St. James, Derby, by Mr. A. Wallis. The discovery of three Roman villas was reported, in addition to the important excavations at Templeborough. The first of these is at Abinger, near Dorking, in a district not hitherto remarkable for Roman remains, notwithstanding the proximity of the Stane-street-road. Traces of several chambers with tessellated pavements have already been met with. The second is at Itchen Abbas, Hants, and Dr. Stevens reported that some trial excavations have shown the existence of two tessellated pavements, and a system of heating almost perfect. The uncovering of these buried remains promises results of interest. Dr. Stevens, in a paper read by Mr. Previté, gave a fully detailed description of a third villa at Preston, near Brighton. Here several apartments were opened, and various antiquarian relics found, many of which are now in the Brighton Museum. Mr. J. S. Leader, F.S.A., described the exploration of the Roman Castrum at Templeborough, near Rotherham, which is being excavated by local subscription. Traces of two, if not three, occupations have been found, and the area of a large building has been opened, remarkable for a peritico of four columns to the south front, and a long colonnaded range to the east of smaller columns. The bases only remain, but one shaft 9ft. long was found entire, in one stone. This building had evidently been ruined and afterwards rebuilt, for the bases were found walled up in later Roman work. Several of the bricks were inscribed "C IIII G" (Cohors IIII Gallorum). This body of auxiliaries has left several records of its presence along the great Roman wall, but this is probably the first indication of its presence elsewhere in Britain. A discussion followed, and Mr. Loftus Brock, F.S.A., who read the paper in Mr. Leader's absence, pointed out that the columns could only have supported a timber superstructure, rather than stone, since the columns were 22ft. apart. A large number of plans and photographs of the remains were exhibited.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At the usual fortnightly meeting of this association, held on Wednesday week, a paper was read by Mr. J. W. Small, architect, on "The Scottish Woodwork of the 16th and 17th Centuries," illustrated by measured drawings and full-sized details of old woodwork from a forthcoming volume on that subject by Mr. Small. He discussed the question of the authorship of the woodwork remaining in Scotland of this period; went into the question of date, the peculiarity and distinctive characteristics of its construction, mouldings, carvings, inlaid work, and metal work; and concluded by

advocating the measuring and sketching of old examples as the best way of obtaining the true knowledge of any style of woodwork.

HOUGHTON-LE-SPRING.—At a meeting of the Newcastle Society of Antiquarians last week, the Rev. Canon Greenwell gave an account of the opening of a barrow at Houghton-le-Spring. He said that the occurrence of barrows in the county of Durham, such as that he was going to describe, was extremely rare. He knew scarcely any remains of ancient British times in the county. There were very few bronze or stone implements found, a fact which was inexplicable; for Yorkshire was full of remains of all kinds, and so was Northumberland. Though Durham possessed the same opportunities for early occupation, yet there was a great want of any indication of it. The places that had been occupied seemed to have been more or less in the valley of the Wear. A sepulchral mound of no great extent—something like 60ft. long by 5 or 6ft. high—within a mile of Houghton-le-Spring, attracted his attention some years ago. He, however, did not attempt the opening of it until this year, when, with the aid of Mr. Robertson, another member of the society, he examined the whole of it, and it turned out to be one of the most interesting mounds he had ever had an opportunity of examining. It was of a round form and he at first expected that it would turn out to be a barrow of the period after bronze was introduced; but on commencing operations, he found that it had a much earlier history, and belonged to the time when only stone was in use. Wherever mounds of that period had been found they had been oblong and of the proportion of 4 in length to 1 in breadth. They were generally placed east and west, the higher and wider end being towards the east; and in that end, generally, the interments had been found. The space thus occupied was but a small part, generally speaking, of the whole mound. A very few feet would be found to constitute the entire burial space in a mound nearly 200ft. long by 50 to 60ft. wide. Whether this mound near Houghton-le-Spring had originally been oblong he could not say. It might have been so, and might have been altered by later burials, several of which he found in it. The early Britons buried their dead sometimes after burning them, and sometimes without that. In the North of England by far the greater number had been after burning; and this at Houghton-le-Spring contained the burials after this fashion. The bodies found in these mounds appeared to have been seldom buried entire; and the idea had suggested itself to him that they had been buried first in some other place, and afterwards removed to these barrows. In addition to these early interments there were found at Houghton burials of a much later date. They found, quite outside the line of burning, what seemed to have been an addition to the original mound, a small chamber containing the body of a child. They found also three or four other bodies, one of which had been buried along with a good flint implement. Other implements were also found. On the summit of the mound was found a small grave, made with stones set on edge, which contained a body buried at full length—a position which led him to conclude that the body was that of an Anglo-Saxon, buried probably in Christian times, the general position in earlier graves being a contracted one, with the knees drawn up towards the chin.

Temple Bar is absolutely coming down at last, orders having been definitively given to Messrs. Mowlem, Burt, and Freeman, to remove the structure before the end of the year. On Wednesday afternoon the work was commenced; the frames were taken out of the windows looking up and down street, from the gaping voids scaffold poles soon projected, and a substantial stage is thus being formed on either side. It is believed that the demolition will be carried out during Christmas week. Ten days, at the very outside, will be sufficient for the operations, and such a force of men will be put upon the work that the street traffic will not be stopped for more than two or three days. The stones are all being numbered, and will be placed for a time on a vacant space of land in Farringdon-road, until some definite place is fixed by the Court of Common Council as a new site for the Bar.

The subscriptions for a new church to replace that recently destroyed by fire at Lamerton, near Tavistock, has been taken up spiritedly, and already exceeds £2,300.

Building Intelligence.

BUILTH.—The block of buildings, forming public hall, market-house, and assembly-room, erected at Pound Well, on the banks of the Wye, in Builth, by a limited liability company, were opened on Friday. The market-house is 63ft. by 33ft., with triplet-span roof, constructed of iron and glass, and having a side entrance for supply by trucks. Around this are nine lock-up stalls. The basement story has two shops next the front street, and store cellars and the usual conveniences. The ground floor story has four shops on the principal front; whilst on the Station-road front are a wine merchant's office and two shops. At the angle is a broad staircase leading to the large public hall over the whole. This hall is 70ft. by 30ft., and 23ft. high, with a platform or orchestra, to which are attached two retiring-rooms. Over the entrance end is a spacious gallery. Accommodation is afforded for 400 persons on the floor level, and 100 in the gallery. The roof is waggon-shaped, with curved ribbed principals. The façade is executed in local stone masonry, with free stone dressings. The roofs are covered with Broseley tiles. In the centre is an effective clock campanile. The works have been carried out by the contractors, Messrs. D. J. and D. Davies, of Cardiff, at a cost of less than £3,500, from the designs and under the direction of Messrs. Haddon Brothers, of Hereford, Great Malvern, and London, whose designs were selected in public competition.

CHELTEMHAM.—The first section of the winter-garden and aquarium project for Cheltenham—the skating rink—has been completed, and was opened on Tuesday week. It covers an area of 15,000 square feet, more than half of which is under cover, laid by the Limmer Asphalte Company. In the centre and side-wings is a ball-room, and at the lower end a small winter-garden. The surface can be flooded within five minutes from a tank containing 3,000 gallons of water, and is to be thus washed down nightly. A band platform and seats are provided, and the covered part is lighted by a double row of lights; retiring-rooms and lavatories are provided for both sexes. The main building, which is a cruciform structure of yellow bricks, with an oval glass roof, will be finished in about three months time. The architect (selected by competition) is Mr. J. T. Darby, and the brick and woodwork are entrusted to Messrs. Scammel and Walkerdine, and the ironwork to Messrs. Vernon and Hewens. The contractors are Cheltenham men, and the plan followed throughout is to employ local labour. The total cost of the scheme will be about £23,000.

EDINBURGH.—The new Heriot School for the Stockbridge district, erected from plans by Mr. Chessar, architect to the Hospital, will be opened on Monday next. The building, which is two stories in height, consists of a central block, with two large projecting wings. Its style resembles that of the parent hospital. The schools are calculated to accommodate 200 infants and 400 juveniles of both sexes. The cost, it is estimated, will be £5,800—or £9 13s. 8d. per head, exclusive of feu-duty.

GRANTCHESTER.—The parish church of Grantchester, near Cambridge, was reopened by the Bishop of Ely, on Wednesday week, after enlargement and restoration. A south aisle, of rubble work, with stone buttresses, has been added, opening into the nave by new columns and an arcade of Bath stone. A new roof of Baltic timber, covered with Staffordshire tiles, has been placed on the nave, the floor of which and that of the aisle have been laid with wood bricks in pitch, pine, and oak. The seating is now of open pine benches. A brass lectern has been presented, and the font has been moved from near the organ gallery to the new aisle. The building is warmed by Porritt's air-warming underground stove, but lighting will still be effected by candles, new standards for which have been set up. Mr. A. Blomfield, M.A., was the architect; Mr. G. M. Bates, of Stevenage, the builder; Mr. H. Edgcomb, foreman and manager of works. The expense has been £1,740, exclusive of special gifts of about £500 in value.

HOLCOMBE REGIS.—The parish church of Holcombe Regis has been restored under the care of Mr. J. Mountford Allen, of Crewkerne, and the works generally have been carried out by Mr. James Yellen, builder, of Holcombe Regis. The floors are laid with Maw's encaustic tiles, and the new parclose screen, on the south side, and the stalls, as well as the altar-rail and holy-table, are of oak. The walls have been plastered, and are of a warm cream colour. The principal feature in the restoration is the new reredos, which is made principally of Caen stone and Devonshire and other marbles. Its construction and erection were entrusted to Mr. Harry Hems, of Exeter.

LONDON SCHOOL BOARD.—On Wednesday this board accepted the tender of Mr. B. E. Nightingale, of Albert Works, S.E., for the erection of a shopkeeper's house next the school buildings in Ann-street, Clerkenwell, for which he is the contractor. The works committee were authorised to expend £805 10s. upon erecting an infirmary on enclosing additional land recently acquired next the Brentwood Industrial School; and to expend on supplying necessary furniture and fittings £384 3s. 1d. for the school in New North-street, Shoreditch, recently enlarged by 467 school places; and £787 10s. 2d. for the new school in Portman-place, Globe-road, E., which contains 1,172 places. The same committee recommended for adoption the amended tender of Mr. E. Lawrence, of Wharf-road, City-road, for erection of a school (756 places) in Gillespie-road, Highbury Vale, but this (which was at the rate of £10 5s. 9d. per head for buildings alone) was referred back for further consideration. Some months since the tender of Mr. Nightingale was accepted for new schools in King-street, Soho, but after operations had been commenced the site was scheduled by the Metropolitan Board of Works for the construction of the new street from Charing-cross to Hart-street. The board now decided to pay Mr. Nightingale the sum of £2,568 10s. in full settlement of his claim for the abandonment of the contract. An estimate from Messrs. Atkinson and Co., of Westminster-bridge-road, amounting to £317 15s. 8d., for furniture for the new truant school, was received, and the expenditure sanctioned.

METROPOLITAN BOARD OF WORKS.—This Board, at its weekly meeting on Friday, received a deputation from the Lewisham District Board, who presented a memorial asking permission to effect a loan for paving new streets. In speaking to the memorial, Mr. Thompson stated that the paving was absolutely required in consequence of the rapid increase of streets and buildings, and remarked that during the last three weeks the district had been granted between 400 and 500 applications for permission to erect houses. The memorial, as well as others from the Lewisham and Plumstead District Boards, relating to the construction of a sewer from the Broadway, at Deptford, to Lee-bridge, were referred to the works committee. That committee submitted drafts of bills prepared by them for the purchase of the interests of the Metropolitan Water Companies, and for providing a new supply of water for potable, fire-extinguishing, and other purposes. After a long discussion the drafts were approved, and referred to the parliamentary committee. In reference to the proposed railway from Chelsea to Charing-cross, the clerk was directed to reply to Mr. Russel Aitken, that the Board could not undertake to keep Northumberland-avenue free from buildings till next year, as requested. The sanction of the Board was given to the borrowing for sewerage works, by the vestry of Hampstead, of the sum of £1,966 18s., to be repaid by 30 annual instalments, together with interest, at 5 per cent.

NEW VAGRANT WARDS, KENSINGTON.—The guardians of St. Mary Abbott's, Kensington, are about to erect vagrant wards on the cellular plan at Mary-place, Notting-hill. The plans have been prepared by Messrs. A. and C. Harston, architects, and they provide for 40 sleeping cells for males, each with a work cell attached, and 20 sleeping cells for women, eight of which are double cells, for women with children. Each cell is warmed by means of hot-water

pipes, and has electric communication with the attendants' room. A feature in the building will be the great use which is to be made of concrete for floors, roofs, sills, window-heads steps, &c. The contract, which includes a solid foundation of concrete over the whole of the site, and also all fittings, has been taken by Messrs. Lathey Brothers at £4,620, and will be carried out under the superintendence of the architects.

RICHMOND (SURREY).—The new mortuary chapel in the cemetery was consecrated by the Bishop of Rochester on Tuesday week. It has been built from the designs of Mr. Arthur Blomfield, M.A., and is in plan a Latin cross, with small central spire. It is of Kentish rag with Bath stone dressings. Over the west door is an inscription from John xix., and above it a niche containing a figure of Joseph of Arimathea, carved by Messrs. Farman and Brindley, of London. The reredos is in gold and mosaic work, executed by Mr. Daniel Bell, and represents angels in the act of adoration of the cross, which forms the centre of the panel. To the right of the communion table are a sedilia and credence table. The three stained glass windows over the reredos are the work of Messrs. Heaton, Butler, and Bayne, and depict events in the life of our Lord. Mr. G. Sims was the contractor for the chapel.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published December 14 contains articles on Manchester and the Thirmere Water Supply Scheme, The Water Supply of our Towns, Roads and Streets, Hospital Hygiene, The late Mr. J. E. Geatorex, Overcrowding in Whitechapel, The late Dr. Trench, Intemperance and Insanity, Germ Life and Surgical Operations, The Manchester and Salford Ladies' Association, Arrow Poison, Profitable Philanthropy, The Thames and the Sewage, Public Health Reports, Legal Intelligence, Water Supply and Drainage, Correspondence, Intercommunication, Public Health Patents, The Editor's Table, Cleanings, &c. Price 2s.—31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—D. and H.—L. B.—H. and G.—J. G. and Son.—E. B.—Montreal.—B. M.—L. C. F.—S. and P.—H. and Co.—Rev. B. G. Soffers.—W. and Co.—J. D. and Co.—G. H.—J. S.—M. A. E. G.—F. H. H. and F. H.—H. B.—W. H. H.—G. H. G.—J. C.—H. and B.—H. W. B.—G. A.—G. E. G.—W. Barlow Morgan.

A VICTIM. (There is no protection for architectural drawings of the kind you mention.)—S. J. COLES. (Certainly you have a claim—not for the premium, but for your drawings. Perhaps a letter from your solicitor would be the best thing to teach the School Board courtesy.)—M. F. (We should be glad to see the drawing.)—A CONSTANT SUBSCRIBER. (The clerk of the works is the architect's servant, but the architect is bound to supply all details.)

NOTE.—The Designing Club having now concluded its assigned course, we shall consider our award, which we hope to publish shortly.

"BUILDING NEWS" DESIGNING CLUB.—Drawings received: "Jag." (The design under this motto had just turned up, it having by some mishap not been given us. We express our regret to the author. There are points of merit in the plan which we shall take into consideration, though nothing that will make a reconsideration of the plans published necessary.)

Correspondence.

THE NEW LAW COURTS.

To the Editor of the BUILDING NEWS.

SIR,—The eastern or Bell-yard front of the New Law Courts is now sufficiently near completion for its architecture to be clearly judged. The whole building was exhaustively described in the numbers of the BUILDING NEWS between October 13th and November 3rd, 1871, and I need not, therefore, describe, or in any way take up space with a description of, the interior arrangement of this Bell-yard block.

The subject of the style selected has been so often discussed that we may leave it now to take care of itself. It is the style approved by the judges, and is one of which Mr. Street is master; and we are the more concerned, therefore, in seeing how far he has shown all the beauties and adaptations of which the style is capable. Although there are certain evidences in the front we are dealing with, not altogether innocent of ecclesiastical architecture, still the detail generally is as secular as perhaps is possible. The front to Bell-yard is contained, we may say, between the great tower at the south-east angle of the entire block and the tower at the north-east angle, next Carey-street, and is broken up on plan by an entrance tower nearly in the centre of the façade, with on the south of it an attached turret, a large square bay projection, a range of windows interrupted by two smaller square bays, then a recessed portion containing a bay with canted sides, and we are at once on the northern face of the great tower, and by an extension further westward with two oriel windows forming the return of the Bell-yard front this part of the elevation south of what may be termed the central tower is completed. Northwards of the tower the front is composed of two double-gabled projections, with between a long range of windows, interrupted by two square bays; then a recessed portion, with a bay and chimney-stack breaching it up, and then the northern angle, with a gabled front to Carey-street, the tower behind it forming, as before stated, the northern extremity of the front.

If we start at the great south-east tower we note at once its picturesque effect behind the oriel windows before-mentioned; these oriels are in themselves of good design, but the parapet of one is very playful and very heavy. At this point the treatment of the internal angle is unsatisfactory—there is confusion in the parts and want of breadth. Passing on to the central tower, there is little to find fault with (except the bays and top story, of which I shall hereafter speak), and very much to admire. The roof, however, of the attached turret need not have been so crushed into the tower, and the termination of the tower is too abrupt. The first and second-story windows of the tower, with the segmental arches, are extremely weak-looking, compared with the other portions of the front, and are, I should say, out of style, but the detail of the entrance to this tower is simply exquisite.

We now come to the southern double-gabled feature, which is similar to the northern one, except in the satisfactory omission of the recesses at side of third-story windows, and in a little more projection to the one than to the other—in order, I suppose, that it should not be said that the two are alike. These two features, as a whole, are dignified, remarkably beautiful, and will break up the long line of ridge to main roof. The stretch of façade between these features is only broken by two slightly-projecting square bays, and at once proves that, if there had been more of this treatment, the front would have been more imposing. Another recessed portion, with a bay awkwardly crushed up in the angle, and we are at the extremity of the front, with the return gabled projection next Carey-street; this gabled block is finely treated, and, excepting as to centre line (of which I shall hereafter speak), and that the farther the work recedes from the eye the richer it becomes, the whole is, I think, a very fine composition.

There can, I think, be but one opinion as to the variety and beauty of the detail of this Bell-yard front, exhibiting, as it does, such refinement and such a thorough knowledge of

the style, and that without a slavish following of it in any particular. The chimney-stacks, in particular, are exceedingly picturesque, and most cleverly treated.

The square bays throughout the front are huge blunders—they are quite insignificant, but they do not by that give predominance to the other parts; the ornament is by no means good, except as a receptacle for London soot, the parapets or terminations are utterly weak, and the whole are excrescences.

I cannot at all understand how the top windows to this front came to be placed where they are; they are, with the intermediate columns, far too heavy, even had they been used in the basement story, but at top they crush entirely those below. The detail is at variance with every other part of the front; they are expensive errors.

But the crowning defect in this front is one to which too much blame cannot be attached. It is a maxim in architecture that solids should not be over voids any more than is necessary—that is, speaking constructively—hut, apart from this, no good effect can be expected if centre lines of fenestration are ignored. Throughout the front Mr. Street has disregarded this maxim in the top range of windows and in the gabled block at the angle next Carey-street, and where the windows occur over the bays the collapse of the design is secured. Nothing can excuse or palliate this treatment; it will remain the damning incident of the design.

The parapet along the whole main front is well moulded, but I doubt the wisdom of bringing the lead up the gutter, and returning it over on to the front of the parapet with an scalloped edge; apart from the rain washing down over the front in black counterparts of the scalloppings, I fancy the sun will turn up the points of the lead. The heads of the rain-water pipes are too heavy—in fact, I should have thought that Mr. Street had by this time concluded that all ornamental heads to rain-water pipes are fallacies, and that swan necks and gratings over the outlets in gutters are proper, and avoid all the objections of the rain-water heads.

I have now to refer to the item as regards the interior. In my opinion, the corridors and staircases, and some other parts of the building, will be insufficiently lighted. I need not say that if I am right the finest exterior in the world would not condone the fault—it means utter failure; and I do not think Mr. Street would be putting himself to unnecessary trouble if he caused all openings—such as doors, &c.—where no light can pass through from the windows of the rooms, to be hoarded up, and he could then pretty well guess the result when the building is finished; and, should there be insufficient light for the future occupants of the building, he could adopt means to bring in more, and thus prevent another public building from becoming a direct injury to the architectural profession.—I am, &c.,

WM. WOODWARD.

UNION CHAPEL, ISLINGTON.

SIR,—A good deal of criticism appears to have been called forth, and very naturally called forth, by the amazing combinations of colour in the marble work on the gallery parapets of this building. May I therefore be allowed to say that this marble work, as it now stands, is simply the result of an extraordinary mistake in the manufacture? The panels were directed to be of green and other marbles, on white onyx spandrels; they arrived with spandrels of all the colours and materials that one could find in a museum of marbles; and there was no time to correct them. As soon as the opening services are over the mistake will be set right, and the present patchwork-quilt appearance, I hope, get rid of.—I am &c.,

JAMES CUBITT, Architect.

MAIDENHEAD COMPETITION.

SIR,—I cannot see how the minutes of the Privy Council regarding infectious hospitals, published in your columns some time ago, can be reconciled with the provisions embodied in the premiated plans. The Privy Council state that 144ft. floor space and 2,000 cube feet are necessary for each patient, whereas the plans

selected by the Town Council of Maidenhead affords only 78ft. of floor space and 858 cube feet to each patient; but probably a knowledge of these matters goes for naught against party interest and influence. My plans were based entirely on the instructions issued by the Privy Council, combined with a rigid regard to cost—viz., £800.

Will you please correct my name from "Brownlow," as the author of "Light and Air?"—I am, &c.,

JOSEPH BROMILOW.

Liverpool, 8th December, 1877.

PRESERVING AND RESTORING ANCIENT BUILDINGS.

SIR,—Allow me to express my astonishment, and to offer an indignant protest against the action which the "Society for the Protection of Ancient Buildings" has taken. The profession will thank Mr. Hugh Roumieu Gough for the publication and exposure of the correspondence, and I think every architect will have ground for rebuking this unwarrantable interference with professional duty. It seems a pity to me the society, composed of men excellent in their motives and sentiments, should not have put their organisation into force against the spoliation and destruction of greater objects. Why not have championed Temple Bar, for instance, now on its last crutches? But this, I suppose, would have been too formidable a task to undertake.—I am, &c.,

G. H. G.

Intercommunication.

QUESTIONS.

[5219].—Coloured Spectacles.—Having occasion to draw for a considerable time in the evenings by gaslight, I find that my eyes become inflamed and painful. I should be glad if any one, having used coloured spectacles under like circumstances, would say if they are efficacious in preventing what I complain of, and if so, which is the best colour for the glasses—green or blue, or a pair of each colour used alternately?—BLIND BAT.

[5220].—Roofs.—Would some of your reader recommend a good book on modern roofs, giving directions for construction, scantling, &c.?—A SUB.

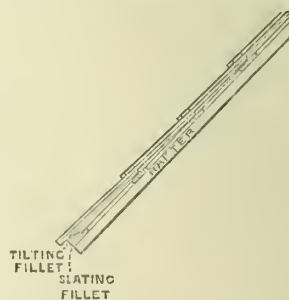
[5221].—Ceilings.—Would some of your reader give simple directions for making ceilings in Parian or Keen's cement, stating the lathing, &c.?—A SUB. SCRIBER.

REPLIES.

[5191].—Inaccessible Heights.—Take two stakes, differing considerably in length, and place one some distance from the foot of object to be measured. In a straight line through the object, and first stake—which should be the longer—move the other until its top is in line with top of other, and top of object. Both stakes should be held vertically, and not driven into ground; also the line of the soil should be selected of uniform slope, though not necessarily horizontal. Let the height of first stake be A; of second, B; measure between stakes, and call this distance C; and finally measure from stake nearest object to object itself, adding as nearly as possible the distance which its highest point falls within its edge. Let this whole latter distance equal D. The formula for height is then $H = \frac{D}{C} (A - B) + A$. If the shapes are 10ft. by 5ft. long—which is convenient for use—then $H = 5 \frac{D}{C} + 10$, or

multiply the distance from tallest stake to object by 5, divide this by distance between stakes, and add 10. The stakes should not be placed too near the object to be measured. For an object about 30ft. high place the taller stake about 40ft. from it, the two stakes would then be about 10ft. apart.—N. L. DERBY, New York.

[5214].—Tilting Fillets.—The reply of "H." is misleading. The *raison d'être* of the tilting fillet is constructional. Its use is to lift the lower edge, or "tail" of the eaves courses to such a height as to



make them be parallel with the planes of the other courses of stakes above them, all of which lie at a lower angle than the plane of the roof boarding or slating fillets, as shown in sketch below.—L.

Our Office Table.

THE city of Pesth has almost accomplished the task of obtaining an unlimited supply of nearly boiling water, which will be available for public and private use. The ready-heated fluid is obtained from a deep artesian well, from which, when completed, the water will issue in a mighty fountain to the height of nearly fifty feet. The deepest artesian well in the world has hitherto been that at Paris, which measures 1,794ft. in depth. The Pesth well has already attained a depth of 3,120ft., and will, when bored the required depth, more than double the depth of its Paris rival. The water now issuing from the bowels of the earth, three-fifths of a mile below the surface, has a temperature of 161 degrees Fahrenheit, and the work will be prosecuted until a warmth of 178 degrees Fahrenheit is obtained. The meaning of these figures will be better understood when it is remembered that the temperature of a hot bath is 98 degrees; while that of boiling water is 212 degrees. The daily supply is already 175,000 gallons—a quantity which will be greatly increased at the enhanced depth. The work progresses at the rate of 50ft. a month, and recent improvements in the mechanical appliances render possible a still more rapid rate of working. This remarkable undertaking is being carried on partly at the expense of the city, and partly at the expense of the engineers, Messrs. Zsigmondy.

THE decision given on Tuesday in the High Court of Appeal in the case of Lewis v. Brass, which is reported at length in another column, will probably surprise some people. Nobody, however, can question its justice, and, henceforth, builders and contractors will do well to be more cautious in sending in tenders, remembering that they are liable to be bound by them, in spite of any mistakes on their own part. Very few respectable builders will feel themselves aggrieved by the decision—they will rather congratulate themselves on the practical exclusion of a class of tenderers who could afford to be as bold as they were unscrupulous, and who embarrassed architects, builders, and the public alike. The new question raised in the Court of Appeal by the defendant—viz., that the tender of the defendant had not been accepted "pure and simple," but with an additional term intimating that a contract would be prepared by the plaintiff's solicitor—was at once dismissed by the judges, who pointed out that the added condition was a usual and proper one, which did not in any way affect the validity of the contract created by the tender and its acceptance, and that the defendant, if he chose, might have rejected the proposed condition, and taken his stand upon the terms of his tender. One thing is evident, that in future great care should be exercised by all concerned in drawing up the "form of tender" furnished to the builder, and the latter should be certain of its meaning before filling up and sending in what, it is now decided, is a binding contract, leaving no loophole for withdrawal.

AT the twenty-third Annual General Meeting of the Society of Engineers, held on Monday last, the 10th December, Mr. Thomas Cargill, President, in the chair, the following gentlemen were balloted for, and duly elected as the council and officers of the society, for the year 1878, viz.:—As President—Mr. R. P. Spice; as Vice-Presidents—Mr. C. Barnard, Mr. J. Bernays, and Mr. T. Porter; as other members of council—Mr. J. Church, Mr. F. E. Duckham, Mr. F. W. Hartley, Mr. C. Horsley, Mr. A. Rigg, Mr. J. Walker, Mr. S. Outler, and Mr. L. Perkins; as honorary secretary and treasurer—Mr. Alfred Williams; and as auditor—Mr. W. H. Bennett. It was announced by the president that the following premiums had been awarded by the council for papers read during the year—viz., to Mr. J. W. Pearse for his paper on the Mechanical Firing of Steam Boilers; to Mr. Alfred Le Grand, for his Paper on Tube Wells; and to Mr. Ralph H. Tweddell, for his paper on Direct-Acting Hydraulic Machinery. Votes of thanks were unanimously accorded to the president and council for 1877; to the honorary secretary and treasurer, Mr. Alfred Williams; to the acting secretary Mr. Perry F. Nursey; and to Mr. T. H. Martin and Mr. W. S. Wilkins for acting as scrutineers of the balloting lists.

A MUCH-NEEDED improvement of Western London is said to be in contemplation. For years people have wondered how it happens that the row of houses in the Knightsbridge-road, the backs and gardens of which reach up to the most fashionable part of Hyde-park, should remain in the same insignificant condition as when they were originally built. Lord Beaumont, the owner of the freehold, is only now coming into possession of the property by the gradual dropping in of the leases, and he proposes to take advantage of his opportunity by widening the road and building houses worthy of the outlook. Up to the present time the two blocks of buildings which flank Albert-gate have been known as Malta and Gibraltar, names which were given them when those strongholds were first taken. Over one of these houses an unlucky spell seems to reign. George Hudson, "the Railway King," was its first tenant; then followed the Counts Walewski and Persigny and other representatives of the French Empire; and the character of its occupiers has hardly been raised by a recent tenant—the Duc de Broglie.

LEGAL INTELLIGENCE.

ACCEPTED TENDERS.—Lewis v. Brass.—This case was tried before the Supreme Court of Appeal on Tuesday. The case raised a question of great importance to builders and contractors—viz., whether the acceptance of a builder's tender in writing amounted to a contract between the parties. The plaintiff, desiring to make certain alterations to his premises, had sent to a number of builders bills of quantities, as they are called—that is, statements of the quantities of materials required to carry out the work, with envelopes entitled "tenders," for them to return with the price for which they would undertake the work, and in answer thereto the defendant sent a tender in these terms:—"I hereby agree to execute complete, within the space of 26 weeks from the day of receiving instructions to commence, the whole of the work required to be done in alterations and additions to above premises, with the best materials, in strict accordance with the drawings and specification, and to your entire satisfaction, for the sum of £4,193." The plaintiff's architect accepted this tender in these terms:—"I am instructed by my client, Mr. John Lewis, to accept your tender of £4,193 for works as above referred to. The contract will be prepared by Messrs. Underwood and Colman, Mr. Lewis's solicitors, and I have no doubt it will be ready for signature in the course of a few days." The defendant, however, found that he had made a mistake in his estimate, and withdrew his tender. The plaintiff had the work done by another builder for a large sum, and sued the defendant for the difference. At the trial before Mr. Justice Hawkins, he left it to the jury whether the parties intended that they should be bound by the document as a contract. The jury found that they did, and gave a verdict for the plaintiff. Three Judges of the Queen's Bench Division (Mr. Justice Mellor, Mr. Justice Lush, and Mr. Justice Field) upheld the verdict, and the defendant, the builder, appealed from that judgment. The case was argued on the 7th inst., Mr. Herschell, Q.C., and Mr. Horace Smith appearing for the plaintiff; Mr. Charles, Q.C., and Mr. Edwyn Jones for the defendant. In the course of the argument, Lord Justice Bramwell observed that he did not doubt that the parties thought that they were bound by the acceptance of the tender. At the close of the arguments, the Court took time to consider their judgment, which they now delivered as follows, dismissing the appeal:—Lord Justice Bramwell: We are of opinion that this judgment must be affirmed. There certainly was evidence to go to the jury that the parties were doing more than negotiating, and I think the verdict of the jury was right, that a contract was made, and not that certain steps in a negotiation had been made. I agree with the opinion of the Court below for the reasons there given when the appeal to them was made. But a point was made before us that was not mentioned in the Court below, and it was this—that the tender of the defendant had not been accepted "pure and simple," but with an additional term. And that contention was founded upon this—that the letter of the plaintiff's agent, after saying, "I am instructed by my client, Mr. John Lewis, to accept your tender of £4,193 for works as above referred to," went on and said, "The contract will be prepared by Messrs. Underwood and Colman." It was said that meant, "I don't really accept your tender as you have made it; but I accept it with this additional term, that a contract shall be made between you and my client by certain professional gentlemen." I don't think that is so. We must take into account that it is a matter of common knowledge that in works of this magnitude there generally is a formal contract drawn up between the parties, knowledge which we are justified in bringing to bear upon this case, as the defendant does not take any exception to this matter in the letter; and I think that the right construction to be put upon that is to read the words as though they were, "Of course, a contract will be desirable, and that will be prepared by Messrs. Underwood and Colman," not

making the contract an addition to the terms agreed upon, but simply intimating what in the opinion of the writer was a convenient way to carry out the intentions of the parties. If that be so, the acceptance was pure and simple, and not in any way qualified or one containing any additional terms. Lord Justice Brett: I am of the same opinion. It seems to me the first question raised by Mr. Herschell was whether the parties intended to contract. The jury found that they did, and the moment the answer is given in the affirmative the question becomes a matter of construction for the Court. Upon the construction, therefore, of the tender and the letter of acceptance it seems to me that those documents made a contract embodying the specifications and plans. The moment that letter was written there was a contract made and complete. The latter part of that letter, speaking of a contract, speaks of a contract already made; that would be drawn up in the usual form, and presented for signature. Therefore, I am of opinion the decision below was right in every respect. Lord Justice Bramwell: I intended to say that it is very likely that the formal contract, when drawn up, would have contained terms not in the specification and letter. I mean such terms as this—that the money was to be paid by certain instalments, or that one part of the work should be begun before another; but, in my opinion, either party would be at liberty to say, "I will not agree to those terms;" and they would have had to go on with the best contract they could make without them. Lord Justice Cotton agreed that on the construction of the documents, there was a binding contract between the plaintiff and defendant, the acceptance in the letter not being rendered subject to the condition that a contract was to be agreed to and signed by the parties, and quoted certain decided cases in support of his opinion.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. Papers by James Neale, F.S.A., "Architectural Notes on St. Alban's Abbey," and Locock Webb, Q.C., "On the Law of Easements;" 7.30 p.m.
 "—Society of Arts. Cantor Lectures No. IV., by William Arnott, F.C.S., "The Manufacture of Paper;" 8 p.m.
 WEDNESDAY.—Society of Arts. Ordinary meeting at Freemasons' Tavern, Great Queen-street. Professor Graham Bell on "The Telephone;" 8 p.m.
 FRIDAY.—Architectural Association. Paper by J. D. Sedding, on "The Revival of the Latest Styles of English Gothic;" 7.30 p.m.

SLATES — SLATES — SLATES.—Bangor, Portmadoc, and Importers of American Blue and Green Slates, a large stock of which can be seen on the premises.
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Trade News.

WAGES MOVEMENT.

LONDON.—Last Saturday saw the termination of the 20th week of the masons' strike, and no prospect of the ending of the dispute. At the Law Courts nearly the same number of men are now at work as turned out on strike. The strike committee assert that they have now 1,600 masons at work at 10d. per hour, and only 600 men out on strike. The returns from their local levies last week were the highest on record, having realised £320, the average in former weeks being about £250, and the highest on any previous week being £270. The married men were paid on Saturday at the rate of 20s. per man, and the single men 18s. Out of about 80 American and Canadian masons whom the strike committee induced to leave work only about four now remain on the strike roll, the remainder having been either sent away or found employment. The total amount received by the strike committee from outside sources in aid of the struggle was up to Saturday £762.

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TENDERS.

BETHNAL GREEN.—For construction of road and sewer at Mansford-street, Bethnal Green, for J. Remington Mills, Esq. Messrs. Farcrother, Ellis, Clarke, and Co., surveyors, 5, Lancaster-place:—

Hiscock	£1,890 0 0
Anderson	1,840 15 0
Nowell and Robson	1,652 10 0
Culverhouse	1,599 0 0
Killingback (accepted)	1,500 0 0

ASCOT.—For new house at Ascot, near Windsor. Mr. W. Jeffrey Hopkins, architect, quantities by Mr. Lewis Sheppard, Worcester:—

Table listing construction costs for Ascot, including items like Warns, Patrick and Son, Carter, Williams and Son, Silver and Son, Terry, Wood and Sons, Kimberley, Braid and Co., Clavidge, Shapley, Watson, Boyce (accepted), Harris, Norris, Inwood.

CLAPHAM.—On the 6th inst. 12 tenders were opened by the Wandsworth and Clapham guardians for alterations to the infirmary. These ranged from £1,860 to £1,385. The contract was divided—that of Messrs. Newton and Triggs, of Clapham Common (£895), being accepted for one portion, and that of Mr. H. Wagner, of Buckingham Gate (£453), for the other, these being the lowest received.

CLERKENWELL.—For a schoolkeeper's house on the school site in Ann-street, Clerkenwell, for the School Board for London. Mr. E. C. Robins, architect to the Board:—

Nightingale, B. E. (accepted)... £347

CORBY.—For alterations and additions to vicarage house and stabling for the Rev. Charles Farebrother, Mr. Ernest W. Farebrother, A.R.I.B.A., architect:—

Storey and Son ... £400

DERBYSHIRE.—For carrying out the Tupton additional main drainage scheme for the rural sanitary authority of Chesterfield. Mr. Firth, engineer:—

Oxley, C., of Grassmoor (accepted) ... £106

HIGHBURY VALE.—For the erection of a school for 756 children in Gillespie-road, Highbury Vale, N., for the London School Board. Mr. E. C. Robins, architect:—

Amended tender: Lawrance, E. ... £9,573

HADDINGTON.—Accepted tenders for new Board Schools at Haddington, N.B.:—

Ormiston, T., Haddington (mason work) ... £5,000 0 0

Wightman and Tod, Edinburgh (joiner work) ... 1,990 0 0

Brown, J., Haddington (plumber work) ... 579 0 0

Anderson and Son, Edinburgh (slater work) ... 457 18 7

Aitken, J., Haddington (plasterer work) ... 251 0 0

LONDON.—The Chambers, corner of Savoy-street, Strand, for George Rees, Esq. Messrs. A. and C. Harston, architects, 15, Leadenhall-street:—

Howard and Co. ... £12,399

Bangs and Co. ... 11,900

Sheffield and Prebble ... 799 15 0

Kirk and Randall ... 11,340

Oliver ... 11,140

Nightingale (accepted) ... 10,980

LOUTH.—For new house and conservatory for Mr. W. Walkington. Mr. Ernest W. Farebrother, A.R.I.B.A., architect:—

Clark and Son ... £1,075 0 0

Harrison, Samuel ... 963 0 0

Harrison, James ... 799 15 0

Smith, Robert (accepted) ... 795 19 0

LOUTH.—For alterations and additions to the King's Head Hotel for Mr. Nimrod Long. Mr. Ernest W. Farebrother, A.R.I.B.A., architect:—

Clark and Son (accepted) ... £187 10 0

NORWICH.—For the restoration and enlargement of St. Bartholomew's Church, Norwich. Mr. R. Makilwaine Phipson, F.S.A., architect:—

Newel ... £2,920 1 1

Cornish and Gaywer ... 2,589 3 6

Wilkin ... 2,519 10 0

Downing ... 2,516 5 2

Grimwood ... 2,315 0 0

Rust ... 2,285 0 0

Hawes (accepted) ... 2,160 0 0

Curtis ... 2,156 0 0

PLUMSTEAD.—For 8 houses at Plumstead for Mr. Hunter, of 487 and 489, Oxford-street, Mr. Dovey, Manchester, architect:—

Table listing construction costs for Plumstead, including items like Tongue, Vickery, Wagner (accepted), Hall.

STANLEY-CUM-WRENTHORPE.—Accepted tenders for Board Schools at Lingwell Gate, for the Stanley-cum-Wrenthorpe School Board. Mr. Wm. Watson, architect, Wakefield:—

Table listing construction costs for Stanley-cum-Wrenthorpe, including items like Wilson (excavating, brick, and stone-work), Stewart (slating), Eastwood (plastering), Cheesborough (carpenter and joiner), Johnson (plumbing, glazing, and iron-work), Turner (painting).

[94 tenders were received for the above, the highest for the whole work, £1,507 3s. 9d.; the lowest, £652 7s.]

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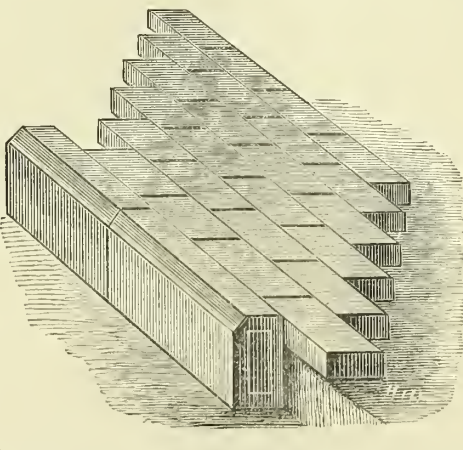
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THE BUILDING NEWS.

LONDON, FRIDAY, DEC. 21, 1877.

DR. SCHLIEMANN'S DISCOVERIES AT TROY.

OF the many archaeological exhibitions of the last few years that of Dr. Schliemann's, now on view at the South Kensington Museum, must be pronounced to be the most deeply interesting. A private view of the collection has enabled us to present to our readers some account of the valuable specimens of the earliest historic art discovered on the hill of Hissarlik—the site of Homer's Ilium, during the years 1871-1873. We have on a former occasion (see Vol. for 1875) given the outline of Dr. Schliemann's labours as recorded in Mr. Philip Smith's interesting narrative of them, to which we refer our readers for a connected view of the discoveries. We may, however, just recall to the reader's memory that four successive strata, representing so many Troys, were discovered at Hissarlik, the earliest remains found indicating those of the Aryan race, proved by the symbols, and especially the "Suastika," or symbol of sacred fire, which appear on many of the prehistoric whorls exhibited at the Museum. These strata of débris and remains are over 50ft. in thickness, and repose upon a solid rock; they represent four successive nations preceding the veritable Greek Ilium. In this accumulation, it may be as well to remind the reader, Dr. Schliemann discovered ruins of houses one upon another, and the remains he has now brought together were found at various depths, and therefore belong to different periods. Let us take the cases of remains as we find them classified. It is perhaps to be regretted that the objects were not arranged in the order or depth of the successive strata, even at the risk of mixing up pottery and examples of different kinds. Though this would not necessarily have been chronological, it would have been approximately so. The first case we come to is filled with a curious kind of symbolic art entitled "pre-historic whorls," of terra-cotta, varying in size from half-an-inch to two or more inches in diameter, adorned with various symbols (supposed to be Aryan), which, Dr. Schliemann says, were confined to the pre-Hellenic people. These whorls are of circular top-like form, perforated in centre, and many of them are illustrated in Mr. Smith's work. On some of them we see geometrical flower-like incisions. Some are marked with altars, others with signs and symbols of the sacred fire; some are like balls, others discs or flattened of spheroidal shape, with stars engraved upon them. The devices are most varied, all incised, and it is thought these curious products were used in sacrificial rites or worn as amulets. Generally they represent the sun in the centre, with stars or rays round. These whorls were found at various depths, from 6ft. to 60ft. On some of them we find animal representation, hare hunts, &c. Passing to a second case we find a remarkably interesting collection of bone and flint implements, including needles for net-making, knives, saw knives of silex, sling shots, tube-shaped bones (flutes), lids of vases, incense stands, axes, hammers, discs. These were found at varying depths from 13ft. to 45ft. The vertebrae of sharks show the existence of the animal. Thousands of implements have been found, and a few of copper, crystal, and alabaster, &c., are exhibited. One of the most instructive cases contains a variety of terra-cotta moulds assigned to the third or fourth century B.C. These moulds are of baked clay, though some are cut out of calcareous

stone, mica-schist, &c., and it is clearly obvious for what purpose they were used. Many were moulds for casting battle-axes, arrow heads, and we saw one small cut stone intended as a mould for jewellery. Crucibles and funnels of baked clay of various sizes (some very small) are seen, very curious, and corresponding with many of the types of copper implements and ornaments. Thus we are brought from the stone age to that of copper. Many of these indicate weapons and implements of an advanced civilisation, and the axes, lance heads, nails, &c., to be seen are extremely interesting. We may say also that the stone implements show different degrees of workmanship. Some are of a very rough make, but those dug out in greater depths show considerable improvement in manufacture. It is somewhat remarkable that Dr. Schliemann found the signs of a higher civilisation at the lowest depth.

The remains from the first Troy are, perhaps, save the treasure, that of deepest interest. Here we have pottery, in the shape of dishes, bowls, urns, vases, &c., with tubular holes in the sides, but we especially note the tubular perforations, or means of suspending. One vase is especially noteworthy. It is a small red terra-cotta, partially glazed, of a cup shape, with one handle, found at the depth of 48ft., or within a few feet of the native rock. A similar kind was, we understand, found at Mycenæ. Two hand-made tripods, about a foot high, with handles to them, are noticeable. In one was found a skeleton of a human embryo, about 6in. in height, which is also to be seen in the same case. Other specimens of Trojan vases and cups are shown, with necks having the mouth shaped like a bird's bill. These vary greatly in size, and are generally of red or grey terra-cotta, with no painting. We must not forget to mention too, the owl-faced pottery found in various strata. These sacred Minerva vases, as they are called, have owl heads in the necks, with two small handles. The Minerva idols are very curious remnants of early superstition. A small suspended ball, about 1½in. diameter, shows incised representations of an owl with two hands rising to heaven. On the right is a wheel symbolic of the sun, on the left is a smaller one representing the full moon, and below a rising star, while on the reverse side a few rough strokes indicate the hair of the Ilian goddess. One splendid brown-coloured vase, about 2-ft. high, has also the features or owl-face of the goddess in the neck marked with breasts in the wide part of the body, with a necklet and an engraved band or girdle round. This fine specimen of pottery was found in the King's or Priam's Palace at a depth of 26ft. It was broken, like many other of the vases, the result of exhuming it, but the fragments have been carefully put together. Another variety of pottery exhibits animal-shaped vessels, some in the form of pigs or hedgehogs; some of these are incised with signs and symbols of the sun-god; but the most unique is the Homeric "Amphikypella" classical-shaped vessels of trumpet shape, with long handles, which are incapable of standing, and therefore could not be put down when filled. The forms of terra-cotta goblets are also chaste, and put us in mind of Etruscan forms. A case of perforated and incised ware, ornamented with rough dots geometrically disposed, call for attention. The hunting bottles (terra-cotta), similar to those discovered in Egypt, are curious.

The bronze weapons, &c., found at different depths, are exceedingly instructive examples. The needles from lin. to 5in. long, are singular, and, though much discoloured, are clearly defined in form. Some painted objects found on the site of Heracon, near Mycenæ—namely, a Juno idol of agate, a lentoid gem of porphyry representing

Phœnician gods holding lightnings, and another of serpentine—are to be seen in the same case. Copper hair-pins, ornamented with gold, and other implements may be noted. We must not overlook, also, a small collection of horned serpents of terra-cotta—a curious instance of superstition—and there is still an idea that these horned serpents, if brought into contact with persons, will cure diseases, and especially epilepsy, and Dr. Schliemann—to whose kindness and explanations we are indebted—told us of a case in which a workman had stolen one or two under that idea.

But the central attraction of the exhibition is the treasure found 23ft. deep in Priam's Palace. The case before us contains the copper cauldrons, a bottle of gold of globular form with short neck, a gold cup weighing 600 grammes, bearing marks of fire, with two handles at the sides: the latter about 7in. long and the same broad, and in the shape of a double-mouthed pap-boat, one mouth being small. It is by Dr. Schliemann thought to be the Homeric "depas amphikypella," and is of cast gold, the handles being fused on.

In the same case we note also some silver vases, showing marks of fire, two head-dresses of gold, with idol-shaped pendants, found in one of the silver vases, and another with 61 chains, formed of fine hammered gold leaves, strung to chains of the finest workmanship.

We have no space to describe more fully the articles which crowd upon the visitor's attention, but simply call the architect's notice to a huge jar used as a substitute for a cellar, found at a depth of 6-12ft.; a "stele," or memorial pillar, found on the site of the Temple of the Ilian Minerva, dated about the third century B.C., with Greek inscriptions, and a beautifully-carved metope of white marble from the Doric temple of Phœbus Apollo at Ilium, representing the god and his horses. Mr. Newton, we believe, thinks this metope, found near the surface, to date from end of the fifth century. It is about 7ft. long and 3ft. high.

THE BARROW-IN-FURNESS TOWN-HALL COMPETITION.

IN response to the advertisement of the Barrow-in-Furness Town Council in July last for designs for a new Town Hall, there were about 140 applications for instructions, and in October last 20 sets of plans were received. Of these seven are Gothic, viz., "Rath-haus," "Esse Quam Videri," "Lismore," "Black Star," "Ima," and "Jamais Arrière." Two are Venetian Gothic, viz., "Venetia" and "Time is on the Wing." Four are Renaissance—viz., "Fortis," "Red Star," "Cavendo," and "Theta." Seven are variations of Classic—viz., "Experientia," "Excelsior," "Omega," "Fair Trial," "Aries," "Furnesii," "L.A.G.B." and "Certo." Aries also sent in a Gothic alternative design. We will take the Gothic designs first. "Ima" (author unknown, but who we suspect will be found on the other side of the Irish Sea) excels all competitors in arrangement and fitness for the wants required. Taking the old Town Hall as one side of a square the competitors would naturally put their new buildings on the other three—nearly all have used the hollow of square for various offices or yards; but "Ima" has cleverly formed a pleasant quadrangle in the centre of the block. The junction of the Cornwallis-street wing with the existing Town Hall is happily conceived. The elevations are very slightly drawn, and the perspective is the barest pencil outline, but there is enough in it to show good composition and well-controlled picturesqueness. The general description of this design would be incomplete if reference were not made to the poor

character of some of the detail—viz., the pumpy dormers, the want of reveal in the windows, &c. No matter how much we may admire the outlines or the plan of arrangement, the details fail to please the eye our feelings of regard for any building lose depth and interest. "Black Star" (Mr. E. W. Godwin, London), gives the idea of having been designed and drawn in a hurry. The perspective is in brown tint, and owing to its being simply washed in, has a quite ghostly look. The upper part of the design is the best. The archway of the principal entrance is very poor, and unnecessarily low. "Jamais Arrière" (Mr. Brade Kendal), is Gothic. Another design with central tower. Its effect is much marred by a want of repose. The perspective is well etched. "Rath-haus" (Messrs. H. Perkins and G. B. Bulmer, Leeds), consists of nine drawings. The etched perspective exhibits a well-balanced design of the ordinary arrangement of a tower in the centre of the façade; the lower story has an air of strength. There are two Venetian Gothic designs. The first by "Venetia" (Mr. Curzon, London), has novelty, both in plan and elevation, to arrest the attention. The Cornwallis-street elevation, shown in the etched perspective, is very successful as a study for an original treatment of a subject with stereotyped forms. "Time is on the Wing," claims to be Venetian, but the resemblance which the central tower bears to a water-works tower destroys all effect of style. Coming to the Renaissance designs "Fortis" (T. E. Colcutt, London) is quite the leading design of the Renaissance group. It is well illustrated; there are five perspectives, including two etchings; and three pencil drawings, all excellent and full of good work. The principal front to Duke-street is the weakest though most ambitious portion of this design. The principal entrance just escapes the look of a secondary door. Recessing the central part of front by an arcaded gallery is a mistake, with a north aspect and no sunshade; the idea reminds one of the Chateau de Madrid. The dormers over this arcade stand so closely together as to suggest making them at once into one simple wall-face. We turn with real pleasure to the Cornwallis-street or side elevation. One of the pencil sketches does full justice to this view, and gives full effect to the dignity of the great tower. The plan arrangement is good, but we suspect that the placing of the Boro'-court in the centre of the quadrangle, far away from the side streets, has been fatal to the chance of first place. "Red Star" is, we believe, by Messrs. Bell and Roper, and has a central tower very much after the same model as the great tower in "Fortis's" design, but not treated with so much power or grace. The general character of the architecture is Renaissance. This design is unaccompanied by a perspective view, and consequently is to some disadvantage, as all the principal ones are illustrated by at least one exterior view. "Theta," Jacobean Renaissance. A good etching shows this design; but it would be seen to better advantage in a wooded park than in Barrow. "Cavendo" is another Renaissance design, but with much of the best Jacobean feeling. It is illustrated by excellent etchings of interior and exterior views. The principal entrance is good, and, although there are weak points—for instance, the market façade—taken all round this is one of the front-rank designs. Arriving at the Classical designs, "Aries" (Mr. Macintosh, Barrow), comprises twelve drawings, including tinted perspective view. The design is Classic, and the elevations display power and merit in draughtsmanship, the etching being exceptionally good, and evidently done by a thorough artist. We should think a French hand was in this work. The elevation taken towards Duke-

street is good in treatment, but the tower above is strikingly weak. An interior geometric drawing of the council chamber shows powerful artistic work. This design, so well drawn in elevation, gains nothing by the heavily-tinted view which gives it perspective. "Aries" sends in also an alternative design in Gothic, for which the New Law Courts have been laid under contribution. The Classic is the better design by far. "Experientia"—Classical and practical-looking neat drawings explain this design. The side elevation is the best, and comes out well in the exterior view. The manner in which a pediment hood is put over two coupled windows is painful. A well-etched perspective enhances the design.

THE READING TOWN-HALL COMPETITION.

ANYTHING new is worth notice, even in connection with competitions, and the conduct of the Reading Town Council with respect to the competitors for the erection of the new Town Hall, Library, and Museum building has a novelty about it that by its absurdity and injustice at once arrests attention. The Building Committee appointed by the Town Council have expressed their opinion that none of the designs submitted are entitled to the premiums in consequence of non-compliance with the conditions laid down, but that, "nevertheless," they have selected three, and having added the premiums together have divided the total amount in equal shares among these three competitors, awarding them the sum of £108 6s. 8d. each, on condition that their plans become the absolute property of the Committee. We gave last week currency, with an expression of our doubt on the matter, to a rumour that the plans had been submitted to an architect at Brighton to report on. If this extraordinary award is the result of his advice, we should say his services will be greatly in request by committees who wish to act unfairly and in the most ridiculous fashion. Nothing seems clearer than the fact that, if no competitors observed the conditions, none of them deserved the premiums, and to select three of their number for better treatment is a piece of favouritism of which the less fortunate competitors may reasonably complain. We strongly suspect, however, that a job has once more been perpetrated. We are assured, indeed, that more than one local architect abstained from competing, in the conviction that one of the three fortunate competitors, who has been mixed up with the museum in an official capacity, would ultimately erect the new buildings, and that, in fact, he was mainly the author of the instructions to the competing architects. We trust that this assertion is not correct, and that the Town Council will yet see their way to a more honest and sensible decision. We have only been able this week to inspect the three premiated designs. Next week we shall notice the others. The requirements of the published conditions were rather vague. We find a hall, including orchestra for 260 to 300, was asked for, capable of accommodating 1,500 persons seated, or 2,000 partially seated; that the principal entrance to present Town Hall was to form one means of access; and that the new hall and offices were to be arranged so that both halls might be used *en suite*, though so separated as to be capable of being utilised for different purposes. Competitors might also—so it was stated—show alternative positions. We accordingly find the authors show alternative positions—some placing the axis of their halls north and south, and others east and west. The first design we come to is "Plan," by Messrs. Alexander and Henman, of Stockton-on-

Tees. We find the hall placed east and west—its end or entrance abutting on Blagrove-street, and its location adjoining the old hall being at right angles thereto, but separated by a small area from end of it. The hall has a central entrance and a side corridor entrance for the use of the artistes and others, and a spacious groined vestibule, and the dimensions shown are 81ft. 6in. by 52ft. on the ground floor; but including the gallery, which extends over half the vestibule, the length is 119ft. The orchestra is at the east end. The dimensions are, perhaps, rather small for the accommodation required. The library and museum occupy a block between the hall and the angle already built upon. It has a front entrance, rather narrow (6ft.), leading to an inner hall, from which the reading-room (34ft. by 21ft.), the library (24ft. by 30ft.), and the reference library (27ft. by 22ft.), are reached. Behind the hall is a ladies' reading-room. A small court separates this from the schools behind, which have a frontage towards the new street, with a distinct entrance. The ground-floor is devoted to a lecture-room, lighted from court and three class-rooms facing the street. Over school we have a laboratory the painting and class-rooms, while the museum is over the reading and reference libraries in front. We notice that the hall is partly isolated by the side corridor, which is desirable, and there is much to be said in favour of the compactness of the arrangement. In elevation the authors have assimilated their design with the existing structure, designed by Mr. Waterhouse. The hall gable is, by the arrangement, recessed a little, so as not to overpower the present building, and the carrying on of the lines of Mr. Waterhouse's work makes a happy blending of the two. The gable of hall is seen above the roof of entrance, however, with campanile-treated shafts. The Gothic interior of hall, shown in perspective, with the flimsy iron arcade, and spandrels, detracts much from the merit of this design. "Be Strong" is another design, submitted, we believe, by Messrs. Brown and Albury, of Reading. The authors place their hall north and south. It is 110 × 63ft., its main end entrance being towards the newly-formed street. Intervening between its south end and the old hall is a crush-room, an octagon of 32ft. diameter, by which the halls may be used together if necessary, with a distinct entrance from Blagrove-street. The entrances and exits are cleverly-managed. A front entrance in Blagrove-street leads into a spacious vestibule, 25ft. × 13ft., opening on the left being the reading-room and the right the museum. The former is 45ft. by 30ft., and is at the corner, while the latter is 55ft. by 27ft. 6in., and is lighted also from the front. The school of art is on the first-floor, the advanced painting-room being over the reading-room, and the elementary room over the museum. A second floor gives laboratory and class-room. The plan is compact, and the hall is spacious, and occupies a position that does not interfere or crush by its proportions the old hall. Externally the style selected is Gothic, freely rendered, but expensive in treatment, and open to the objection, perhaps, that it does not harmonise in style with the existing work, if this is thought necessary. The façade in the new street lacks connection with the hall behind, the roof of which will be seen. "Grosvenor" (Mr. Sams, of Conduit-street, the architect of the Grosvenor Gallery) places his hall, which is 127ft. 6in. by 54ft. 6in., in centre, its axis being north and south, with entrances from the new street and Blagrove-street, low corridors being obtained on both sides, thus isolating the hall from the other departments. The hall is stated to be capable of holding 1,700 seated persons. The school

and class-rooms occupy a block in the rear, the elementary and advanced departments being over the school. The block facing Blagrove-street comprises the reading-rooms for males and females on each side of entrance, and above is the museum, lighted by a clerestory and glazed ceiling. The style selected is Queen Anne, rather heavily handled; the side gables seem to crush the composition. An arched open porch, with side flights of steps, forms the central feature.

The other designs we shall refer to in our next. We note here "Brick and Terra Cotta," "Apt," "Triangle," "As You Like It," "Utility," "Plan and Purpose," "Lux," "Progress," "Economy," "Boz," and some others. In the meantime, we once more hope the Corporation will pause before they fully determine to commit an act of injustice to the competitors, who have devoted so much labour and thought in the preparation of designs upon the faith of the advertised conditions. We understand that the name of the "Brighton Referee" is Mr. Lainson. We have not seen his report, but we should like very much to do so.

LATE GOTHIC—SHALL IT BE REVIVED?

THOSE who anticipated a sensational paper from Mr. Stevenson last Friday week, at the Architectural Association, must have been disappointed. There was a generally preconceived idea that Mr. Stevenson was going to enter the arena of controversial æsthetics, or to favour his hearers with some reasons for dissent from the architecture of the nineteenth century. Instead of this, however, the lecturer contented himself with giving his audience a brief elementary discourse on the development of Gothic architecture—a *réchauffé* of an old article, admirable in its way, but scarcely complimentary to some of his hearers, who were supposed to have already made themselves proficient in this part of their training. From our report of the paper last week it will be seen that Mr. Stevenson took a general view of Gothic architecture, tracing its origin to France, and forcibly drawing attention to the necessities of vaulting as the primal motive of the pointed arch. The chief aim of the author apparently was to show that Gothic was not a style indigenous to the middle ages only, but that its development lasted down to the latest style—that it was as much a domestic as an ecclesiastical style, and that the style we call the "Perpendicular" was the outcome and final result of the system, and not, as we have been in the habit of regarding it, a symptom of degradation or decline. In short, Mr. Stevenson endeavoured to lead up to the latest and flat-arched Gothic to show that it was as much a development as the thirteenth-century style, to which architects have been looking for inspiration, and which they have placed before them as the acme of perfection. Now, no one will be so rash as to dispute many of the inferences the author drew—some of them, in fact, are familiar enough. Viollet-le-Duc, Fergusson, and many other writers have, before Mr. Stevenson, shown the genesis and development of Gothic architecture—that the twelfth, thirteenth, fourteenth, and fifteenth centuries each produced a style as appropriate and as suitable to its age as it could be, and that with the decline of the ecclesiastical and the rise of the secular power the Domestic Gothic was evolved—a style in many respects as truthful, honest, and as characteristic of its age as any that had preceded it. But no logical mind could ever have come to the conclusion that if we want a bank, a town hall, or a habitation, we must go to the Gothic of the

thirteenth century. It is true many architects have acted on the principle that Gothic must be early or nothing at all, and probably Mr. Stevenson was referring to them, but he fell into the error of assuming all acted upon this principle. It is very clear that the author wishes to redeem the latest of the Gothic styles from the reproachful epithets of "debased" and "degraded;" he desires that it shall share the same regard and reverence as its predecessors, and that future restorers shall bestow upon it the same honour as the earlier styles have received. But to establish for it this regard it must be shown that the style has the intrinsic merit of its predecessors. Although the thirteenth-century style is little adapted to our modern wants, it represents the Gothic system in its perfection, and we must acknowledge that if Sir Gilbert Scott or Mr. Street builds a new church, or restores one of mixed style, he is justified (*cæteris paribus*) in adopting the phase that presents the most undoubted advantages of the Gothic style. Albeit for our secular or domestic wants we have protested as much as Mr. Stevenson against the employment of Gothic of an early type, and the absurdity of introducing sharply-pointed arches in domestic buildings for every small window and doorway. At the same time we are not prepared to accept the Perpendicular as our starting point. It is perfectly true that the style "arose with the growth of modern thought," but it was the last effort of a system to adapt itself to domestic and secular uses, it was far from being the ideal of the system. And we must not forget that the growth of modern thought rekindled the art of Greece and Rome.

There was an ulterior aim in the author's paper. Just as we anticipated, it was necessary for Mr. Stevenson to prove that the so-called debased Gothic of the sixteenth century was a pure style, as he and the party of anti-restorationists he represents were bound to show that the work of the Tudor and Stuarts had as much claim to preservation and protection as the earlier work executed when England was under foreign influence. Less easy, however, was it to account for the prevalence of the Perpendicular, or, as the author called it, "Horizontal style," on the supposition that the pointed arch became obsolete with the disuse of the vault and with the introduction into the style of the timber roof. This was certainly not the case, as that style was brought about by the evolution of the vaulting system, the necessity of increasing the intercolumnar spaces for light at the same time as the entailment in the height of the structure. As Mr. Spiers said, too, the author had overlooked the fan-vaulting and its exigencies. We know, and Prof. Willis remarks, there are no Continental examples of fan-vaulting; it is a specially English development to which the Tudor or flat Gothic was mainly due. This style was undoubtedly the result of the endeavour to economise material and to reduce the points of support. And we are not slow to give to that style its due for the marvellous effects the ingenuity of its architects produced; above all we admire, as much as Mr. Stevenson, its fine flattened vaults and spacious interiors. But with this avowal it was yet a style in decline; the principle of the system was in reality being lost or contravened; the greater effects and apparent economy attained was at the expense of prodigious propping, the thrusts were infinitely greater—in fact, the equilibrated construction found where the vaults and arches were of higher pitch was being gradually lost sight of. It was to the architecture of Normandy, from which our greatest mediæval works are to be traced, that we owe all that is best in Gothic. Severe, methodical, and scientific, as Viollet-

le-Duc observes, "it bears the stamp of the practical mind of the architect, a strong regard for principle unrestrained by traditions; while in the Ile-de-France this architecture becomes refined and pliant, characterised by the reserve of a cultivated taste."

We are now in a position to consider the suitability of the depressed or Tudor Gothic to modern buildings, which was the burden of Mr. Stevenson's discourse; or, in other words, how far we may consider it to be the most perfect form of the Gothic development. We have shown that the Gothic of the Tudors or Stuarts is not the representative or most pronounced form of the system, but rather the endeavour to adapt its forms to social and domestic requirements. He might have traversed the question with more effect without going over the ground he did, or referring to the earlier history of the style, by bringing a few practical examples and details to show the undoubted advantages of square-shaped openings and flat-topped windows. We consider the revival of Classic helped considerably towards the result, and in England, the later Stuart was an amalgamation of the two styles—Jacobean certainly was. The Tudor was a costly mode of construction—it necessitated the use of mullions and tracery, panelling and carving. No one will deny that a mullioned window is a great deal more costly than a plain square opening, and that the simpler forms and construction of Renaissance give us all the facilities of the horizontal system of building. It gives larger openings for light, horizontal floors and lintels upon the only logical principles, and the mullion and visible arch, which in the Late Gothic became secondary and ornamental, were now abandoned to the lintel and breastsummer. Another costly feature of Late Gothic was the panelling; the interest in the style still centred in the vertical line, not in the wall surface, and in spirit the style was essentially a vertical one, though it assumed the horizontal character. In short, the depressed Gothic, or Perpendicular, whatever merits it had, was not a constructive style in the sense that the thirteenth century Pointed or the Classic was; its wide openings and horizontal divisions were not the result of any principle, but the effort to stretch the Gothic beyond its limits. We perfectly agree with the dictum that if we worked on the same principles, as the old Gothic builders, we should have something very different from pointed Gothic; and, we may add, also something very different from flat Gothic. Mr. Stevenson said we should have no "pointed windows, quatrefoils, and buttresses, which receive no thrust, nor chamfer stops simulating wooden framed work, ugly and unmeaning notchings." Certainly not; yet, strange to say, the Late Gothic is full of these conceits. Let any one enter any late sixteenth-century church; let him examine a shrine, or a chantry—he will see the false buttresses, quatrefoils, unmeaning chamfers and notches by the hundred. The lecturer, in his concluding sentences, condemned the very style he was advocating. What is the vernacular style of which we hear so much? Is it not precisely that which the builder and workman find it easiest and best to work in? What is the architect's duty? Is it not that of giving to these vernacular ideas an expression in accordance with them, without reference to any previous style or preconceived archaeological sentiment? Is it not, in truth, the grammatical construction, so to speak, of the forms and materials that we are most accustomed to—the rendering in architectural language of those everyday wants and constructive expedients by which it has been our fortune to be surrounded? A hint was given that the educated minds of the last thirty years have

been hopelessly attempting to supplant the vernacular. Has the attempt not proved futile for the same reason that the Gothic revival has failed—the attempt to copy features and styles rather than to originate them to circumstances? But the last course—that recommended by Viollet-le-Duc and the greatest minds in the profession—has now been declared modern, and therefore not architectural. Is not the vernacular style as much Classic as Late Gothic? What, in short, does this argument point to? Is it not an attempt to revive Late Gothic, as we have nearly had a satiety of Queen Anne? It must be remembered, however, the Perpendicular has been tried, and it soon gave way. It was tried for one great public building. Our churches, schools, and public institutions once revelled in quatrefoils, false buttresses, parapets, and pinnacles, but it was soon found costly and ill adapted to the climate. Since then we have tried French and the earlier developments of the style, which for civic and domestic structures have been pronounced equally ill suited. The seventeenth century Classic has again risen in popular estimation; buildings are now rising in it, and we have to await the verdict of the public. We have seen two Classic revivals; shall we see another Gothic revival?

MECHANICS OF ROOFING.—II.

THE hammer-beam roof, which we find in common use in buildings of the fifteenth century, affords a familiar illustration of the mechanical principles which we discussed in our previous article.*

The figure given is intended to represent the general outline of a hammer-beam roof, having a pitch or angle of inclination to the horizontal of 45° , which angle was called θ . The hammer-beam $A I$ carries at its outer end a vertical strut $I B$, which acts as a support to the rafter at the point B , taken in the present instance at one-third of the length of the rafter $A V$, so that $B V$ is twice the length of $A B$, and the load L at M is twice the load W at C . Drawing the lines to represent the several forces as in the former paper, and taking $K N$ to represent the load L , we have $B K$ representing the horizontal thrust T at B , acting outwards; then $D C$ is the load W at C , producing the thrust $E F$ or H at B and A , and the vertical pressures $F C$ or Q at B , and $F D$ or P at A .

The total vertical pressure on the strut $B I$ is $L + Q$, represented by $K N + F C$. Draw a vertical line at A , and measure $A Y$ thereon equal to $K N + F C$; then since $A I$ equals $B K$, which was shown before to represent the horizontal thrust at A , the line $I Y$ will represent in magnitude and direction the resultant of all the forces acting upon the hammer-beam $A I$. If a raking strut is fixed in the direction of this resultant, the whole of the forces will be conveyed to the point Y , and the length $I Y$ will represent on scale the compression down the strut, which will then act as if it were a vertical pillar. By this means the horizontal thrust is thrown much lower down on the wall, and consequently its tendency to push the wall over about its base is proportionately diminished.

If the strut abuts against the wall at some point J between A and Y , then by drawing $Y O$ perpendicular to $I J$ we shall have the compression down $I J$ represented by the line $I O$, and there will also be a transverse strain on the strut, the amount of which is measured by the length of the line $O Y$. This latter force also acts at I perpendicularly to $I O$, and tends to cause the outer end of the hammer-beam to drop by producing a leverage about the point J , a circumstance which is often observed in

old roofs of this kind where the strut has been fixed at too high an angle with the wall. Moreover, by placing the strut at J instead of at Y we have the horizontal thrust T acting at a greater distance above the base of the wall, and therefore producing a more powerful influence in tending to overturn it.

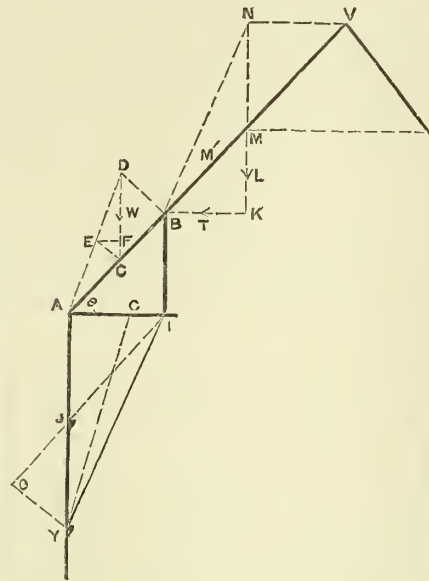
If a horizontal tie or collar is placed across the rafters at M , which is half-way between V and B , it will reduce the horizontal thrust at B by one-half, and in a greater or less proportion according as it is nearer to or further from B . With the collar at M the horizontal thrust at B will be

$$\frac{1}{2}(T - H),$$

and that at A will be

$$H + \frac{1}{2}(T - H), \text{ or } \frac{1}{2}(T + H).$$

Representing this thrust by the length $A G$ we have the line $G Y$ as the measure of the resultant of the forces acting on the outer end of the hammer-beam.



When the collar is placed at any other point (say M') where the ratio of $B M' : B V$ is that of $1 : n$, the horizontal thrust at B is

$$\frac{1}{n}(T - H),$$

so that when the point M' is at B we have $\frac{1}{n} = 0$, or there is no horizontal thrust at that point. The only horizontal thrust at A is H in this last case.

CORRECTIONS.—In the former article on this subject the fourth number from the top of the third column in Table I. should be “41,” and not “45,” as printed. The heading of the second column of the same table is “ $\tan \theta$,” the “ θ ” having dropt in printing. In the twenty-third line from the bottom of the first column on page 558, the letter “t” between “A” and “teuding” should be omitted, and a comma substituted.

ARCHITECTURAL STUDIES IN FRANCE.*

THE completion and publication in one handsome volume of Mr. W. Galsworthy Davie's Sketches will be welcomed by many in the profession as a sort of supplement to the more comprehensive works of Messrs. Johnson, Nesfield, Shaw, and others. While going over different ground, Mr. Galsworthy Davie has collected a few of those typical examples and details of Transitional and Early French architecture, which his predecessors gave in more

* Architectural Studies in France. By W. GALS-WORTHY DAVIE, Architect, Gold Medalist, R.A., and Soane Medalist, R.I.B.A. London: B. T. Batsford, 52, High Holborn.

general form, and has produced them to a large and workable scale. The sketches, some of which have been noticed by us already, were all made by the author during the years 1874, 1875, and 1876, and were nearly all plotted on the spot—a recommendation that will enhance greatly the practical value and reliability of Mr. Davie's labours. Another important consideration is, that the mouldings, which to our minds form by far the most valuable portion of the work, have been given to a much larger scale than we ordinarily find in architectural books—the main portion of them being full-size, half full-size, and a quarter and one-eighth, while the author informs us that the smaller scale mouldings have been reduced from full size drawings. With this assurance we can open the pages of Mr. Davie's work with confidence; and the student will feel that he has all the advantages to be derived, or as much as he could obtain, from a study of the actual mouldings themselves.

Opening the volume before us we find some well-executed coloured plates, representing enamelled work and stained glass in Auxerre Cathedral and Museum, painting at Bayeux Cathedral, and stained glass, tapestry, and encaustic tiles from Bourges, Laon, Noyon, and Sens. We may mention the enamelled pyx and chasses from Auxerre Museum, interesting examples of Early design and colour, drawn full size; also some quaint encaustic tiles with chocolate ground of geometrical and conventionalised patterns; some stained glass in rich colours, from choir of Auxerre Cathedral, a collection of grotesque tiles from Laon Museum, and a specimen of tapestry from Sens. But it is upon the lithographic outlines we set most value. We have, in one or two previous notices of the work, referred to some of these, and shall only here note a few of the striking plates. Mr. Davie has picked up a few of the details from great French examples that other explorers have overlooked. Thus we have some interesting detail from Amiens; we note especially some pure work in an Early style from the south-west entrance of the cathedral, and a very fine jamb and arch moulding given half full-size. From Le-Grand Andeley an exceedingly nice jamb of the west doorway is given, in which are eight detached shafts in two ranks, the outer rank supporting the arch moulding, and the inner an arcade below the stiff-leaved capitals of the first row. We do not admire the doorway at the west end of aisle in the choir of Auxerre, though it is a singular instance of a combination of segmental arch and straight luted openings. The full-size details of caps shown exhibit some good carved foliage of the thirteenth century to be found in the choir, whilst the almost incomparable Lady Chapel and chevet of Auxerre are represented by a detail of one of the windows. The detail from Bayeux is interesting, if not beautiful, while the circular transept windows of Beauvais are peculiar. A number of plates is devoted to the illustrations of St. Georges-de-Boscherville, an unique Transitional example, the groined chapter house in three bays, fully detailed in Mr. Davie's book, being the most interesting instance. The west arcade or front is thoroughly Romanesque in spirit, and the details are instructive as exhibiting the development of the style. Another strong feature of the work is the crypt of Bourges Cathedral, to the illustration of which several plates are given. It may be remembered that the plan of Bourges is unbroken by transepts, which gives to it a length and grandeur of effect not known in the northern cathedrals. Its semi-circular apse and double aisles of different heights perhaps make Bourges a model of symmetry. Mr. Galsworthy Davie has contented himself in giving us figured drawings of the plan of crypt, showing the double groined aisles

* See BUILDING NEWS, Dec. 7, page 557.

under the circular apse, and a section taken through the outer aisle, shown expanded or stretched out with the capitals and groin ribs. The carved bosses, caps, and piers are extremely good examples of early work. Passing some details from Chartres and Coutances, we come to some choir seating from Gassicourt Church, near Mantes, with some quaint carvings from the elbows of seats. We have also the Church of St. Martin, Laon, illustrated in some interesting iron hinges, of peculiar workmanship; details of Mont St. Michel, showing the Salle-des-Chevaliers (illustrated by us); some choice ironwork from Noyon Cathedral and Sens, and various scraps from Rouen, Chartres, Rheims, and Angers. Some of the capital foliage and ironwork are excellent, and we consider the author has exhibited some discrimination in selecting details of a useful and adaptable type. It would have added to the interest of the book if the reputed dates were given with some of the detail, and descriptive notes had accompanied it: however, for all practical purposes the notes affixed furnish needful information. The mouldings are drawn in bold outline. On the whole, we can cordially recommend Mr. Galsworthy Davie's "Studies in France" as a valuable repertoire of Early French detail, in which the student may find much suggestion. The drawings have been carefully printed by the lithographers, Messrs. Newbery and Wilday, Holborn, and the "get up" of the volume reflects credit on the publishers. We observe that the work is dedicated to Mr. W. Butterfield, the well-known Gothic architect.

NOTES FROM EDINBURGH.

THERE is no slackness in any department of the building trade here, and a great amount of work in additions and alterations is still proceeding, without showing any symptoms of having reached the beginning of the end. The results are chiefly apparent in the number of streets and tenements erected for the working classes. But there have been considerable additions also to the villa residences and houses of the better class. Drunshuegh-gardens contain only first-class houses, the largest in the city, and when finished will be architecturally by far the best addition in the fashionable west. On the other hand, in the same quarter, one of the noblest sites that Classical architecture could desire, unfettered by few charters, or the fear of being built out of view, has been hopelessly sacrificed by the greed or senselessness—or both combined—of the speculative builder. This site crowns the banks and overlooks the nobly-wooded valley of the water of Leith, and commands a splendid prospect of the valley of the Forth and the hilly country far beyond it. The street built here, and approaching completion, is a long continuation of Magdala-crescent, some houses in which have been sold for fabulous prices. With such good prospects of a ready sale, the builder might have invested a small percentage in providing a design of some architectural beauty for such a site. On the contrary, the whole of Magdala-crescent and this Douglas-crescent have been built from one, or at most two, designs; both of them bad for anything but semi-detached villas. A monster doorway and a huge bow window are repeated *ad nauseam*, exhibiting in an extreme degree the bow window nuisance, and the ugliness of plate glass, unrelieved by good proportions or astragal divisions. Had the builder left his roof alone, or built his masonry a story higher, in the plainest style, the attic rooms would have been better, and the design more pleasing. But his bow window reappears with stunted side lights in the roof, and the effect of these arrangements, as tested by their architectural aspect from the other side of the valley, is irredeemably bad. Commendation must be given to the praiseworthy desire of the speculative builder to make the working class tenements ornamental to the city. The great bulk of these additions are built in four-story tenements, and have generally ashlar fronts, with

more or less of architectural detail. Leith-walk, the widest thoroughfare in the city, is fast being built up with shops and houses of good accommodation. The same external appearance may be found, however, in houses where the rental varies from £15 to £30, all depending on the manner in which the floor space is divided—into four houses with two rooms each, three houses with four rooms, or otherwise. No new ideas, economical or sanitary, have been produced in any of these designs. In all, with the exception of a few built expressly for the Improvement Trustees, the w.c. arrangements are as they have ever been, in the heart of the structure. The cost of placing them in immediate contact with the air outside is too great, and the only connection with the outer air provided is, in most cases, little better than an evasion of the law. A shaft with 2ft. or 3ft. of sectional area, is provided for some tenements, but the greater number trust to a 3in. pipe carried to the roof. Nothing has been done to get at the root of the evil by ventilation of the public sewers, and it was only the other day that a lecturer was enlarging on the efficacy of traps of his own devising. This method of fighting the common enemy in detail seems to be the only one practicable when people are afraid of making all the sewers practically open by apertures all along their line. In this kind of protection for sewer gases, Mr. Beattie, of this city, has designed a very simple and effective apparatus, the cost of which is not above £15 for a large tenement. The principle is the same as that of Mr. Buchan, lately illustrated in the BUILDING NEWS; but it is not, apparently, so complete in its arrangements. By means of a 3in. iron pipe, and Haworth's or other ventilator, a current of air is kept perpetually passing upwards, and any pressure of sewer gas finds immediate relief, and so readily that no discharge from the upper floors disturbs the water in the cesspools of w.c. below. By an ingenious arrangement of glazed apertures in the pipes, as fitted up on his own premises, any one interested can satisfy himself as to the working of the apparatus.

Notwithstanding all the sewer gas, and unusually sunless weather of the past summer and autumn, Edinburgh has been exceptionally healthy, and the average mortality has been probably about 15 per 1,000. This looks encouraging for the Improvement Scheme, which is probably a factor of some moment, having let fresh air and light into many parts of the city where they were unknown before. Architecturally their operations are making but tardy progress. The Jeffrey-street thoroughfare, below the North Bridge, is nearly completed. A large tenement is building in this new street, which will effectually hide the ugly side of the New Trinity College Church. This edifice which, like most street churches, has the back part shabby, but a good Gothic front, is not what it ought to have been, as party spite prevented the sum realised by sale of the old church being spent upon the new one. But it has been opened at last, and the church in which the congregation had worshipped for many years is left in the hands of the Town Council, the parish having been suppressed. This church is one of the three into which St. Giles's is divided, and consists of the south transept and its aisles. It is interesting as having been witness to many stirring incidents of the national history; and it is proposed to restore it as much as possible to its original appearance as part of the Collegiate Church. It was here that Jenny Geddes discomfited the Dean of Edinburgh with her "cutty stool." Dr. Begg and others affirm that it is a "fell creepie" still; but to all appearance its occupation here is gone, whatever need there may be for such missiles across the border at Hatham. We are putting in stained windows, as richly dight as those which our ancestors knocked out when they drowned St. Giles himself in the Nor' Loch. The choir of the church has been fitted up at great expense with carved stalls, a Royal pew, and benches of oak. We have erected a reredos and pulpit of Caen stone, not perhaps in the best of taste with its surroundings, but still a reredos. This reredos contains niches for statuettes (sadly wanted architecturally), and which some wealthy citizen will soon provide. The choral service

is led by instrumental music, and one of the best choirs in the city; the incumbent intones the prayers with good effect, and is at liberty to use as much of the once hated Mass-book as he pleases; and in every way possible there is a desire to atone for indiscretion in the past, and make confession that Edinburgh went a little too far in her hostility to art and ancient liturgies. It is generally felt that this spirit of hostility has been too long permitted to stand as a plea for disguising the revolting contrast between splendour in the dwelling and scrimping in the church. It is poverty and not the will that now consents to rear a shabby church. The contrast between Prelatic and Presbyterian Gothic in Edinburgh has for long been very sharply drawn, but it is not so very obvious as once it was. Architects, to be sure, are still expected to design something very fine for £5 a sitting, and thus it is that there is hardly any Presbyterian Gothic here which does not in some way or other murder the proportions or details of the edifice. The only city churches on which money has been, if not very wisely yet lavishly, spent, are Classical in the design. St. Stephen's is externally the finest; and nothing can excel the skill with which the contour and proportions of its mouldings have been studied by Playfair. In this respect it is a great contrast to St. George's, which, however, has its dome; and St. Andrew's has one of the finest spires which Classical architecture has produced.

The cathedral church of St. Mary is now making good progress towards completion of the nave, which has been roofed in, or nearly so. The central tower is not yet up to level of the apex of roof, and the choir is farther behind. This edifice will undoubtedly fulfil all that is expected from it as ornamental to the city, and will open the eyes of the public as to the quality of Gothic architecture, which is too frequently a muddle of incongruous detail and infamous proportion. There are some very good specimens of carving on the south transept doorway, quite equal in stone to what Sir Noel Paton, the prince of fairy painters, has produced on canvas.

HARMONIC PROPORTIONS OF MUSIC HALLS.

MANY speculations have been broached upon the correct proportions of concert-rooms, but without any agreed result. The following dimensions are those of a few of the most celebrated music-halls in this country, and may be suggestive of desirable proportions. The Birmingham Town Hall has been justly celebrated for its acoustical properties, and musicians all bear witness to its excellence. The music-hall is stated to be 111ft. 6in. in length, 76ft. in width, and 70ft. in height. Including the two galleries it accommodates 1,840 persons. The Leeds Town Hall is 162ft. long, 72ft. wide, and 75ft. high, with circular roof. The Liverpool Philharmonic Hall accommodates 2,300 persons, is 106ft. long by 68 wide, and 68ft. high. The St. George's Concert Hall, Liverpool, by C. R. Cockerell, holding 1,100 persons, is 77ft. long, 72 wide, and 37 high-oval. Exeter Hall (3,000 persons), 138ft. long, 76ft. wide, and 54ft. high. St. James's Hall, 139ft. long, 59ft. wide, and 59ft. 6in. high. The Albert Hall (8,000 persons), 320ft. long, 305ft. wide, oval on plan. Referring to the *Dictionary of Architecture*, Part 10, from which we have quoted these dimensions, little information is afforded us, though the harmonic proportions of 2, 3, and 4 for the height, width, and length, are quoted—that is to say, in a moderate size room, the dimensions would, according to this proportion, be 16ft. in height, 24ft. in width, and 32ft. in length. The writer observes, "Theorists suppose that by this means a harmonious concordance of sounds is secured; a mere approximation to such proportions, however, is said to be worse than a total disregard of them; and the room must on no account be comparatively lofty, as this allows the sound to be lost in the waste space above." Curved end walls are said to prevent reverberation, and a ceiling slightly arched, or flat and coved, is, from experience, found to be desirable. Plain walls are found to produce a disturbing echo,

and boarded surfaces are better than plaster walls as productive of resonance. A long room—say a double square—is generally bad acoustically, though a lofty room is much worse. The angles of all rooms are best cut off, and any unpleasant echo can be obviated by boarded screens placed across the corners, or, if the apartment is high, by a boarded ceiling placed below the roof. Sometimes we have observed that drapery screens or curtains placed along the sides of a room destroy any disagreeable reverberation that may arise in a room barely stocked with people, but a felt carpet on the floor frequently produces the desired correction. A great deal depends on the furniture of an apartment, and especially in the amount of deadening material like carpets, cushioned seats, curtains, &c. Unpleasant resonance or reverberation can generally be cured by a well-stocked audience, but as this is a very fluctuating element, other methods must be resorted to. Covings and cantings of the angles of walls and ceilings often produce the desired acoustical effect, the principle being to confine the sound undulation, and not to impede its free transmission through the auditorium. By excessive height of apartment the sound is lost in the space above. To correct this, the shape of the auditorium, if possible, should be diminished in sectional area as it recedes from the source of sound. This is sometimes done by raising the seats at the extreme end, and the isochronic curve has been suggested. By confining cross the section of room the sound is intensified, and the effect generally improved. There can be no doubt that the high-pitched timbered roof is inimical to sound transmission, and as a rule we have observed lofty Gothic naves very trying to the voice. The subject is one that has not engaged the attention of architects as it deserves, but if the observations of experienced musicians, speakers, and vocalists were collected, and data of the best acoustic buildings obtained, the profession would be enabled to lay down for their guidance some more approximate rules than they have now, while the public and the musical profession would be gainers.

GRAPHICAL STATICS.

THE use of the equilibrium polygon to determine the reactions at the supports of roof trusses has generally been confined to those cases where the loads are supposed to be symmetrical and vertical. Now, it so happens that this is seldom the case in practice, roofs and trusses being exposed to a variety of loads and strains in all directions, as when subject to wind pressure, &c. Mr. James R. Willett, architect, lately read a valuable paper before the Civil Engineers' Club of the North-west, Chicago, in which he explains how, by means of the polygon, the reactions may be obtained graphically when the loads act in any direction. The author refers to Bow's "Economics of Construction," Von Ott's, Greene's, and Du Bois' works on graphical statics as explaining the general theory, and adopts Bow's notation. Now, it may be observed that the force polygon of vertical loads is a straight line—that is to say, the loads are laid off on the same line, since all are vertical, and the closing line overlies all the loads. This line gives the sum of both reactions, and the question arises, How much is borne by each support? In Bow's and other works on graphical statics this is shown. Let us try to explain the method. By assuming a point or pole, and drawing lines from it to ends of the several loads, A, B, C, &c., we get a series of converging lines; then, parallel to these are drawn in another diagram, under the beam, lines forming an equilibrium polygon, each line being terminated by prolongations of the vertical loads on beam. When these are drawn—an arch-like diagram being the result—a straight line joins the extremities; this is the closing line, and forms with the others a closed polygon. Then, by drawing a straight line from the pole to the vertical load line parallel to this last closing line, a point is obtained which is the dividing point of the vertical line scale, A, B, C, &c. If our readers have been able to follow us so far without the aid of a diagram they will understand the principle upon which Mr. Willett

proceeds to determine the cases of unequal loads acting in various directions. It is obvious that the load polygon, instead of being a line, will be a real closed polygon when the forces act in different directions on the beam, and that the closing line of the figure will give the sum of the reactions at both supports. Assuming, again, a pole, converging lines are drawn to it from the different points, and next the equilibrium polygon is drawn as before. There is only one little inconvenience that may arise—sometimes and that is, the different directions of the loads on the beam, if prolonged too far, cross each other, and some little care is required in recognising the lines. But it is only necessary, as the author says, to "draw the lines of the polygon from the direction of one load or force to the direction of the load or force which is next adjacent at the beam, although in so doing you may cross the directions of other forces." In all cases the closing line will be found to be in the same direction, and it is the direction of this line, or one parallel to it through the pole, which will give the division of the reactions, as we have said. If the letters are placed in alphabetic order between the forces at the beam, the lines of the equilibrium polygon may be drawn in the same order.

Another case is illustrated—that of a common roof truss subjected to forces acting more obliquely on one side than the other, a very ordinary condition under the action of wind pressure. In this instance we have, as before, the polygon of forces to be treated as in the former case, after which the equilibrium polygon is drawn precisely as before, and the closing line gives the dividing point of the reactions at the supports. It is impossible, without diagrams, to make clear to those who have not studied graphical statics, the means adopted, but we refer them to any of the works we have mentioned above. Mr. Willett has at least proved the capabilities of the very useful and elegant properties of the equilibrium polygon, and its application to the most diverse and opposite forces. He has especially shown what no other writer on this subject has done—the means of obtaining, by a simple geometrical process, the effects of wind and other sources of irregular pressure, which, as a rule, have been generally disregarded, though they have equal claims on the architect's consideration. In adopting graphical analysis the only difficulty arises in the confusion of the lines in complex constructions; but this can be diminished by resort to a simple notation, such as that indicated by Mr. Willett, to whom much is due for explaining the system.

THE ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS AT DARTFORD.

THIS association held a meeting at Dartford on Saturday last, for the twofold purpose of discussing the model bye-laws recently issued by the Local Government Board, and of inspecting the works near their outfall of the West Kent Main Drainage scheme, now approaching completion.

The discussion took place at Messrs. Hayward's offices in the morning, under the chairmanship of Mr. F. Ashmead, borough surveyor of Bristol, president. It was opened by Mr. LEWIS ANGELL (West Ham), who said the bye-laws are practically silent on the matter in which the members of that association were most interested—the manner in which those who carry them out are to be recompensed. Their very numerous clauses will necessitate a great deal of supervision of building operations and the laying out of streets, which will press very heavily on the officials of the smaller towns. He therefore moved "that the Local Government Board be memorialised to obtain Parliamentary powers which will enable local boards to charge, as in the metropolis, such reasonable fees as will provide the necessary supervision for the enforcement of the model bye-laws." This was seconded by Mr. JOSEPH HOPE (Colchester), and unanimously agreed to. A general discussion took place on the question as to whom these proposed fees should be paid—whether the metropolitan plan of payment to the district surveyors

should be followed, or whether the money should go to the exchequers of the local authorities. It was agreed without dissent that the latter was the only course by which the surveyor could preserve his independence. Broad hints were thrown out that urban authorities, if they find their revenues largely increased by fees, will be induced to deal liberally with the officers who bring them in, and it was also suggested to the Local Government Board, who largely increase the duties of borough and local board surveyors, ought to be asked to subsidise them from the national exchequer, as they now do medical officers of health and inspectors of nuisances. This, it was remarked, would induce urban authorities, as in those cases, to largely augment the salaries paid, and thus a better class of men would be attracted to perform the duties.

The members then proceeded to discuss the model bye-laws themselves, or rather those in Vol. IV., relating to new streets and buildings. These were complained of as generally too stringent, although in some points it was considered they do not go far enough. The provisions as to the width of new streets and the open spaces required to be left clear of obstruction at the rear of houses were denounced by Mr. ELLICE CLARK (Hove) and others as certain to immensely depreciate the value of building land by imposing needless restrictions on its laying out. The concrete or asphalt foundation was, it was pointed out, quite necessary in some towns, but not in those on rock or chalk strata, and the glaring inconsistency between the requirements for a damp-proof course 6in. above the ground, and for the lowest timber being kept 3in. above this and the layer of concrete (as stipulated by clauses 56 and 17) was exposed. The regulation that no wood shall be inserted into a party wall was referred to as needlessly severe, as a 4½in. thickness of brick ought to be, as it is considered in the metropolis, ample protection against fire. Mr. CHAS. JONES (Ealing) and Mr. ELLICE CLARK pointed out that a Gothic architect will not be able to add barge boards to his house unless it is 50ft. from any other, but must put up a 3ft. high parapet of brick or stone—the very thing of all others he dislikes. Nor can he erect a turret or dormer on his roof, except it is of incombustible materials. Mr. ANGELL and others urged that bye-laws are useless unless consolidated into an enactment; but others considered that they have their advantages in the elasticity with which they can be varied to suit special requirements of exceptional districts. On the motion of Mr. ELLICE CLARK, seconded by Mr. ANGELL, it was unanimously resolved "That the council be requested to report to the Association as to the practicability of carrying out the model bye laws recently issued by the Local Government Board, and that a copy of such report be forwarded to the members to lay before their respective boards."

After an adjournment for luncheon at the Bull Hotel the members visited the West Kent Main Sewerage Works, under the guidance of Mr. Alfred Williams, C.E., the section inspected being that between Joyce's-green and the outfall. The present scheme, which was devised in 1874 by Sir Joseph Bazalgette, C.E., consulting engineer, provides for the construction of a main intercepting sewer from Beckenham, forming an outfall for the sewage of Bromley, Chislehurst, Bexley, and Crayford, a sewer in the Cray Valley, from Orpington to Crayford, forming a branch to this main outfall, and both uniting at Bourne Bridge, Bexley, into one sewer discharging into a reservoir situated on the Dartford Marshes at Long Reach—a point about seven miles below the outfalls of the Metropolitan main sewers. The contract drawings were prepared by Mr. Alfred Williams, the engineer, under the supervision of Sir J. Bazalgette, and the contract was let to Messrs. John Neave and Son, the well-known sewer contractors. The works were begun towards the end of 1876, in the neighbourhood of Halfway-street, near Sidcup station, on the North Kent Railway. There have been 18 shafts sunk down to the level of the sewer of from 40 to 65ft. below the surface, and four others are also being sunk, which will soon be down to that level. The sewer excavated in tunnel is about 5,600ft. in length, and a further length of about 10,000ft.

has been constructed eastward of Penhill Bridge, in open cutting, at depths varying from 9 to 25ft. below the surface. The main sewer is for the first section of about 6 miles, egg-shaped in section, and 6ft. by 4ft. internal diameter. It then changes to a circular barrel, of 5ft. diameter, which is enlarged to 5ft. 6in. on the marshes, and continues of this dimension to the outfall. A length of about 1,800ft. of the Cray Valley branch sewer has been constructed between Bourne-bridge and Bexley. At the outlet works a length of about 2,500ft. of sewer is made, the floor of the reservoir and filters is in a forward state, and the works in river below low water are in progress. An important feature is that the sewer is being constructed of Portland cement concrete, (except in the egg-shaped portion, where some brickwork is introduced), and thus considerable saving is effected on the ordinary cost. The concrete is in the proportion of 6 of ballast or washed gravel to 1 of cement. The works on the marshes, visited on Saturday, are about 10ft. below the surface, and are constructed in bratticed cutting, and then covered in. There is a layer of excellent gravel pierced in the work, which is turned to account in the forming of concrete. We were unable to ascertain the average cost per yard. The members descended into the sewer, which is here 5ft. 6in. in internal diameter, and explored its course for a considerable distance. The walls are of 9in. concrete, not rendered on the inside after the centres are struck, but the thickness is gradually increased to the outlet, to which there is a fall here of 3ft. to the mile, but an average one of about 15ft. per mile. Here the sewer was nearly dry, but considerable difficulty has been met with from the influx of water into the tunnel works. Beneath the Dartford Creek the sewer has been carried on the siphon principle in two 4ft. iron pipes, laid side by side, and having a slope of about 45° in the fall, and a vertical rise to the old level beyond the Creek so as to facilitate cleansing operations. The manholes will be left gridded, and open for ventilation wherever practicable. The reservoir, now being constructed, will be 500ft. in length and 10ft. 6in. deep, divided into three longitudinal chambers and several transverse ones. Here the sewage will be screened, and so far purified as to meet the requirements of the Thames Conservators, and then discharged into the Thames at low tide from below the level. The total length of sewer now completed is about 3½ miles, and the contract is being actively carried forward. After the inspection of the works—the intended visit to the reservoir had to be abandoned on account of the lateness of the hour—Mr. Williams again exhibited and further explained the maps, plans, and sections, showing the projected extension westwards towards Croydon, and perhaps ultimately to the Thames Valley, near Kingston, and added that it is probable that Dartford and other places will negotiate to be connected with the system. Some discussion took place as to the means of flushing, cleansing, and of protecting the works from influxes of water, on the best qualities of connecting stoneware pipes, &c., and at the close of the visit Mr. Williams was cordially thanked for the facilities he had offered for inspection.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LEEDS ARCHITECTURAL ASSOCIATION.—On Thursday week a paper was read by Mr. H. P. Holt, C.E., giving a description of a combined iron and timber roof construction, which he has used largely in the neighbourhood of Leeds and other parts. Mr. Holt stated that the object he had in view when designing this type of construction was to use the least possible amount of the cheapest, and at the same time the most suitable, materials to resist the various kinds of strains, and to give the requisite strength in such a form as to entail only a small amount of machine work and low-priced labour in manufacturing the several parts of the construction, and also that only unskilled labour should be required in its erection. For moderate spans, say from 25ft. to 50ft.—exceeding which this type of roof is not specially intended—the parts in compression are formed of timber, usually Memel fir, except when

wrought, in which case pitch pine is used. The parts in tension are made of wrought iron or steel, and those in which a cross strain occurs, as at the junction of a compressional and tensional member, in cast iron or steel.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fourth meeting of the present session was held on the evening of December 12th, the President, Mr. J. M. Hay, in the chair. A discussion took place with regard to the council having issued their report on the model bye-laws of the Local Government Board to the public before it was adopted by the society at a general meeting, thus compelling the society to pass a resolution adopting the report, in order to support the dignity of the council, whose action in the matter was by many considered premature; and finally Mr. Nugent gave notice that he would propose at the next meeting, to be held January 9th, 1878:—"That the resolution adopting the report of the council on the model bye-laws issued by the Local Government Board be rescinded, and the whole matter more thoroughly discussed." The designs submitted by the student members for a country church, to seat 400, period fourteenth century, being the first subject on the syllabus for this session, were exhibited. Mr. T. Mellard Reade, C.E., architect to the Liverpool School Board, then read a paper on the "Liverpool School Board Truant School, Hightown." Mr. Reade explained that the Liverpool School Board, like other boards, was met by the difficulty of dealing with truant children, but in Liverpool it was probably worse than in other places, owing to its seafaring character and the extent of its docks, which gave great scope to the truant propensities of the children. After long and anxious deliberation the board effected a compromise between opposing views, and it was decided to divide the schools into two sections—one for Protestants, the other for Roman Catholics—and also to erect them at Hightown on about two acres of ground. Being an entire novelty no precedent in planning could be referred to, and the plans which were displayed as illustrations had to be thought out from first principles, strict attention being paid to economy. The building will accommodate 136 children, 68 in each section. It consists of a main block, 165ft. by 38ft., principally in two stories, the central portion being carried up one story higher. On the ground floor in each section are the office, taskmaster's room, with an inspection bay commanding the corridor, ten separate dormitories, kitchen, and other offices, and superintendent's parlour. A staircase affords communication between the three floors in the central block. The dining-room and school, with lavatories, are in wings, forming one-story annexes. The laundry, wash-house, and drying-rooms form a central story annex, and can be used alternately by each section. At the south end of the plot are good workrooms, made out of the movable wooden schools from Walton-lane. A plunge-bath and small bath, heated by the kitchen boiler, are in the main block in each section. On the first floors in each section are two parallel dormitories for 29 boys each, both commanded from the superintendent's bedroom by an inspection bay; rooms for linen and Sunday clothing are provided, together with the necessary bedrooms for officers and servants. On the second story are situated the sick wards, with nurses' rooms and bath-rooms, &c., isolated from the rooms below. The site provides also for playgrounds and kitchen garden space. The whole building is thoroughly warmed upon Harlow's system, and ventilated by Messrs. Potts and Co., the contractors being Messrs. Boardman Bros., of Leigh, and the work is rapidly approaching completion. In conclusion Mr. Reade expressed a fervent hope that the scheme would prove a success, as it was undoubtedly conceived in a spirit of Christian charity for the reclamation of those unfortunates who, without discipline and control, otherwise from vice to vice go backwards to perdition.

LIVERPOOL ENGINEERING SOCIETY.—On Wednesday evening, the 19th inst., this society held its last meeting of the year, and, after the election of the officers, the retiring president, Mr. Graham Smith, A.I.C.E., delivered an address on the "Status and Prospects of Engineers." He commenced by quoting from the

daily press, with a view of conveying some idea of the public opinion concerning the profession, and after considering at some length Lake Mœris, which, he said, according to Dr. Lepains, was a vast reservoir for irrigating purposes, and the Pyramids of Gizeh, constructed 5,000 years back, he said the profession is undoubtedly of ancient lineage. Tubal Cain was a worker in metals, and, according to George Smith, the great discoverer of the Ancient East, the title of "master of works" existed in Assyria 700 B.C. He said the remains of works were to be found all over the world, clearly denoting that the ancients possessed men answering to the description and filling the position which the engineer of the present day occupies. He then proceeded to say that the heads of the profession are totally unrecognised by the British Government, and that titles are sparsely distributed to engineers, but he thought they could dispense with them, as an engineer by his own work may gain more distinction and honour among the inhabitants of the civilised world than it is in the power of all the crowned heads of Europe to bestow. He defined the profession as the art of controlling the force of the winds and falling waters so that they may be made to grind corn and weave cloth to feed and clothe man, the making and perfecting of machinery for the purposes of cultivation, and the construction of roads, railways, canals, and bridges for the collection and distribution of the products of the earth; the construction of docks and harbours for the convenience and safety of ships bringing raw materials from foreign lands to provide employment for millions, and carrying back the products of vast industries; the ventilation, warming, and draining of the habitations of these people, and the bringing of the pure water of the mountain rill to their very feet; the inventing and perfecting of machinery with which to mine into the bowels of the earth for hidden treasures, and render them convenient to the uses and wants of mankind; and the performing of a multitude of other useful offices. He said the remuneration on entering the profession is small, but that, after a young engineer has thoroughly mastered the details of his profession, he may depend upon obtaining work of one kind or other at all times. He pointed out the difficulties facing a young engineer about to start in private practice, and said he could fully appreciate them himself as he was just about to face them. In conclusion he pointed out various works as instances of the scientific progress of the profession, and said they would long remain to immortalise such names as Lesseps, Sommeiller, Grattoni, Eads, and Fowler.

NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.—The thirty-second annual meeting of this society was held last week. Mr. Parker was unanimously elected honorary member. The treasurer's report showed the receipts to be as follow:—Cash in hand September 30, 1876, £110 12s. 8d.; subscriptions and arrears, £70 10s.; interest on deposit account, £7 10s.; repayment by the Leicester Society, £35s. 10d.; total, £191 18s. 6d. The payments—postage, printing, expenses of St. Alban's and Oxford meetings, rent of rooms, books bought, &c.—amounted to £86, leaving a balance of £105 18s. 6d. The deposit account amounted to £250. The officers, on the motion of the Rev. T. C. Alderson, seconded by the Rev. T. Richards, were unanimously re-elected, and a sub-committee was appointed, with power to add to the committee. The Rev. T. C. Beasley then read a paper on "Town Churches."

A new drill-hall for the use of the 9th Surrey Rifles was recently opened at Richmond. It is of well-seasoned deal, and is 120ft. by 50ft., and 30ft. high. The floor is to be asphalted. Mr. Brewer, of Richmond, was the architect, and Messrs. McTear and Co., of Belfast and Manchester, the contractors. The cost has been £500.

By the will of the late J. Durham, A.R.A., F.S.A., Mr. Raemaekers, of Pimlico, London, has been left to complete his unfinished works.

The foundations of a Board school have been laid this week at Penelawdd, for the Llanhydian Higher School Board, from plans prepared by Mr. J. B. Morgan, New-road, Llanelly.

A new iron and wood church, at Stechford, was dedicated on Tuesday. Mr. W. Tadman Foulkes, of Birmingham, is the architect.

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ILLUSTRATIONS.

VILLAS AT TURNHAM GREEN—NEW CATHOLIC CATHEDRAL, QUEENSTOWN—THE QUADRANGLE MUIR COLLEGE, ALLAHABAD—HOLLOWAY COLLEGE, EGHAM—OLD OAK SCREEN, MIDDLE TEMPLE HALL—THE BEAUCHAMP CHAPEL, WARWICK—ST. MARY'S CHURCH, SOUTHAMPTON—ROYAL ARCHITECTURAL MUSEUM SKETCHING CLUB EXAMPLES—ART FURNITURE—LANCING COLLEGE CHAPEL.

OUR LITHOGRAPHIC ILLUSTRATIONS.

CHURCH OF ST. MARY, SOUTHAMPTON.

This large church, from designs by Mr. George Edmund Street, R.A., is unusually interesting from the fact of its erection being intended as a memorial to the late Bishop Wilberforce, of Winchester. The plan shows a rather novel arrangement of vestries, which are approached by steps leading down on either side of the sacristy, and divided from it by a screen. This feature is illustrated in the plan we give. The view is taken from Mr. Street's autograph drawing, exhibited in the Royal Academy this year.

OLD OAK SCREEN, MIDDLE TEMPLE HALL.

This beautiful example of decorative carved woodwork is in a good state of preservation in the Middle Temple Hall. The screen supports the music gallery, at the east end of the hall, and forms a passage from the porch to the Temple offices. Two orders of Roman architecture are introduced into the design, as well as caryatides and fauns, and the screen is otherwise elaborately ornamented with panels and carving. The drawing which we publish was made under the direction of Mr. J. P. St. Aubyn, architect to the benchers of the Middle Temple, by Mr. Charles Grieve, it being intended as a record of the screen should it be destroyed by fire or otherwise. It would be well if other bodies and their architects would follow the benchers' example by having similar drawings and records made of such remains under their care.

BEDFORD PARK ESTATE.

We have already published, during the past few weeks, the working drawings of these semi-detached and detached villas, now building at Turnham-green. To-day we give a general perspective prospect of one of the roads. The houses are from the designs of Mr. R. Norman Shaw, R.A., architect; and the decorations of the interiors are being executed under the supervision of Mr. J. Aldam Heaton, of Bloomsbury-square.

ART FURNITURE.

The drawings which we publish to-day among our lithographic plates are selected from those which we reviewed at the time of their publication*, leaving little to remark now. The designs are by Mr. E. W. Godwin, F.S.A., prepared by him for execution by Mr. William Watt, of Grafton-street. The author has taken Japanese forms as the basis of his productions, which have been prepared with a care for English wants. The designs will explain themselves, and will be found suggestive.

INTERIOR OF NEW CATHOLIC CATHEDRAL, QUEENSTOWN; HOLLOWAY COLLEGE, EGHAM; AND THE BEAUCHAMP CHAPEL, ST. MARY'S CHURCH, WARWICK.

DESCRIPTIONS of these illustrations have not yet come to hand. We hope to publish them next week.

LANCING COLLEGE CHAPEL, SUSSEX.

This chapel is being built both for the use of the college of St. Mary and St. Nicholas, Lancing, and its upper class school, and also for the use of the several middle and lower middle-class schools connected with the college, to be assembled together at certain great annual gatherings. The first stone was laid in 1868, and since then there has been steady but slow progress, for it was discovered that, although the college buildings stand on solid chalk just under the surface, there was no solid foundation on the site of the chapel nearer than at about 50ft. below the slope of the hill. It became, therefore, necessary to sink to this depth, and to carry up great piers of concrete for the internal pillars and for the buttresses, between which the external walls are carried on arches. There being a difference of about 25ft. from west to east, owing to the fall of the hill to the east, this was utilised by the formation of a crypt or lower chapel, which includes the space occupied by the apse above and four bays westward, including in its width both aisles. This lower chapel was completed in 1875, and is used for service. The central space is divided into two naves, and has an apse forming a complete octagon common to both, the result of which rises as a dome to a height of 24ft. from the floor; the two naves are vaulted, and rise 18ft., as do the aisles. At the east end of the south aisle is "The Founder's Chapel," screened off from the sanctuary and body of the chapel. The great piers for the columns of the upper chapel are carried up in brick in cement, faced with chalk in the lower chapel; the arches and groining ribs are all of yellow sandstone, and the walls are lined with white chalk; the filling in of the groining is of white and grey chalk. The walls are faced externally with sandstone from the neighbourhood of Hayward's Heath, filled in with flint and ballast concrete. The upper chapel, shown in the view, has now been raised at the eastern end—and for five bays westward, including the two eastern towers—to an average height of 30ft. from the floor; this is the level of the springing of the three-light windows of the aisles. The outer wall is being built first, and is faced with stone ashlar, and filled in as the walls below. It is intended to carry up the chapel very gradually, keeping the east end works always the highest portions, so as to groin and roof in the apse and sanctuary, while the western end is in progress. The inside walls of the upper chapel are of sandstone. The height from the floor to the under side of the vault will be upwards of 90ft.; the total inside length is 217ft., the total inside width 63ft. There will be a direct communication from the ante-chapel above to the north aisle of the lower chapel. The works are being carried out by the college workmen, without any contractor, from the designs of Mr. R. Herbert Carpenter, and Mr. B. Ingelow, the architects to the college.

ROYAL ARCHITECTURAL MUSEUM SKETCHING CLUB.

SHORTLY before this club was started we published* some particulars with reference to it. To-day, in obedience to a promise then made, we give the first of the series of plates, which we propose publishing, selected from the drawings prepared by members of the club, which is now in active working at Westminster. Country members may contribute sketches of examples from their local buildings, but the drawings for the most part will be from casts and specimens in the museum. Of these, Mr. T. Frederick Pennington contributes to-day from sketches of carvings from Southwell Minster, of 14th century date, which are characteristic of the more naturalistic treatment of foliage peculiar to the style, and suggestive to those who wish to employ a similar feature. The two earlier caps from Jedburgh are drawn by Mr. Jesse F. Scott, who has sent us the following few particulars:—The chancel of Jedburgh Abbey is of rather earlier date than the nave, being pure Norman, and it probably formed the original church. It is conjectured that when the present nave was built the old nave arcade (which runs rather lofty) was partly filled up to form a triforium, and to secure an

abutment for the new arches; some curious corbelling was inserted in the old piers, an example of which is shown. That this alteration occurred at the time of the enlargement is evident from the fact of the abacus of both caps shown being of the same moulding, though to a different scale. The unusual bar of stone left in caps to nave pier, illustrated, is peculiar, and without apparent purpose, though probably there was some reason for it. The nave of this abbey is of the Transitional Period; it is one of the most graceful remains of this style, and very well worth a visit.

MUIR COLLEGE, ALLAHABAD.

THE illustration shows one corner of the quadrangle of Muir College, now being erected from the designs of Mr. William Emerson, of Westminster-chambers, by the Royal Engineers, under the direction of Col. Fraser, C.B., the Superintendent Engineer of these provinces. This college for the education of the Mohammedans is intended to form part of the University of Allahabad, and is the result of the energetic measures taken by Sir William Muir, K.C.S.I., when Lieut.-Governor of the North-West Provinces, for the higher instruction of the native classes. The building is designed in an admixture of Caireen and Indian Mohammedan styles. At present only two sides of the quadrangle are being built. The large domed building on the left is the convocation hall, named after H.H. the Maharajah of Vizianagram, who contributed £10,000 towards the work. The open stair seen in the view leads to the public gallery. The tower will be 183ft. high, and contain a peal of bells. The low buildings on the right are the lecture-rooms, with open verandahs on either side, which the intense heat necessitates for shade. The stone used in the construction is from Sheorajpore, whitish and nearly as fine grained as marble.

SCHOOLS OF ART.

SOUTHAMPTON.—The annual distribution of Science and Art prizes at the Hartley Institution took place on Friday week. The attendance at the School of Art during the session has been 122. In April, 345 drawings and studies, the work of 69 students, were sent to South Kensington for examination; one third-grade prize in the advanced section was awarded, and one drawing retained for national competition. In May, 57 students tried the second grade examinations in freehand, model, geometry, and perspective; 29 papers were satisfactorily worked out, and nine students were awarded prizes for excellence. The committee also superintended the examination, in the second grade, of 22 outside candidates not connected with the school; of these only four passed satisfactorily.

On Thursday week, the following gentlemen were elected Royal Academicians:—Mr. W. Q. Orchardson, painter; Mr. R. Norman Shaw, architect.

A new skating rink is now being erected at the Humberstone-gate end of Rutland-street, Leicester, from the designs of Mr. T. H. Baker, architect, at a cost of £7,000.

Messrs. W. B. Wilkinson and Co., cement manufacturers, of Newcastle-upon-Tyne, have brought a new method of constructing incombustible partitions as a substitute for lath and plaster. In the new method no wood or iron is employed, and no plastering is required; the partition has special recommendations of strength and cleanliness; and the expense does not exceed that of ordinary lath and plaster constructions. This form of partition can be made to hang from wall to wall, independently of any floor; and ceilings can also be formed independent of any roof.

Last week, on p. 603, under the heading "Richmond, Surrey," we mentioned Mr. Daniel Bell as the executant of the mosaics in the recesses at the new mortuary chapel, but assigned to other artists the stained-glass window above. Mr. Bell requests us to state that he designed and executed both glass and mosaics under the direction of Mr. Blomfield.

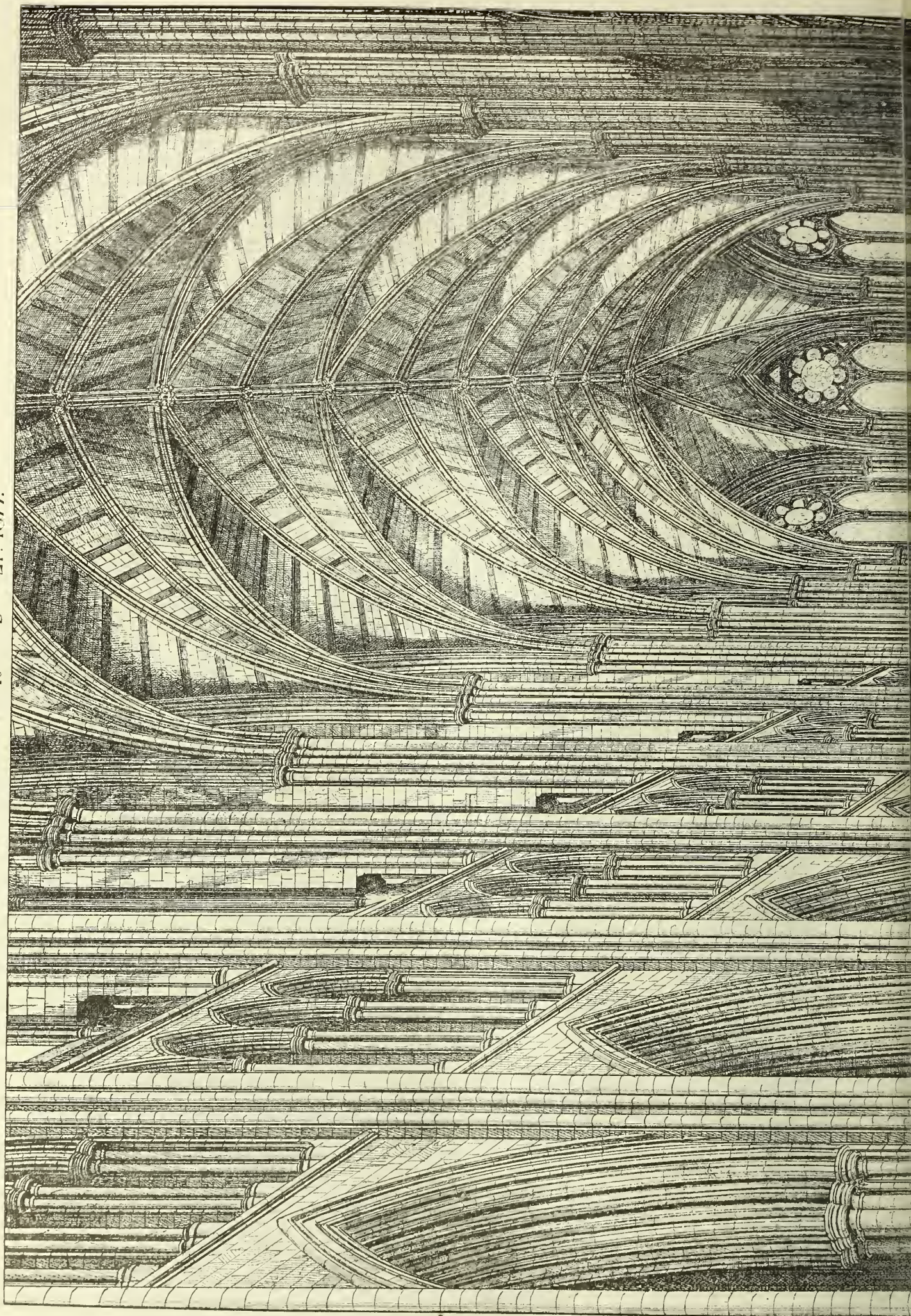
Mr. E. G. Mawbey, of Derby, has been appointed clerk of the works to the Stephenson Memorial Hall at Chesterfield.

The designs for the Elm-road schools, Wisbech, were not prepared, as stated last week, by Messrs. Adkins and Son, but by Messrs. Adams and Son, of Wisbech and King's Lynn.

* BUILDING NEWS, August 24, 1877.

* BUILDING NEWS, June 22, 1877.

THE BUILDING NEWS, DEC. 21, 1877.



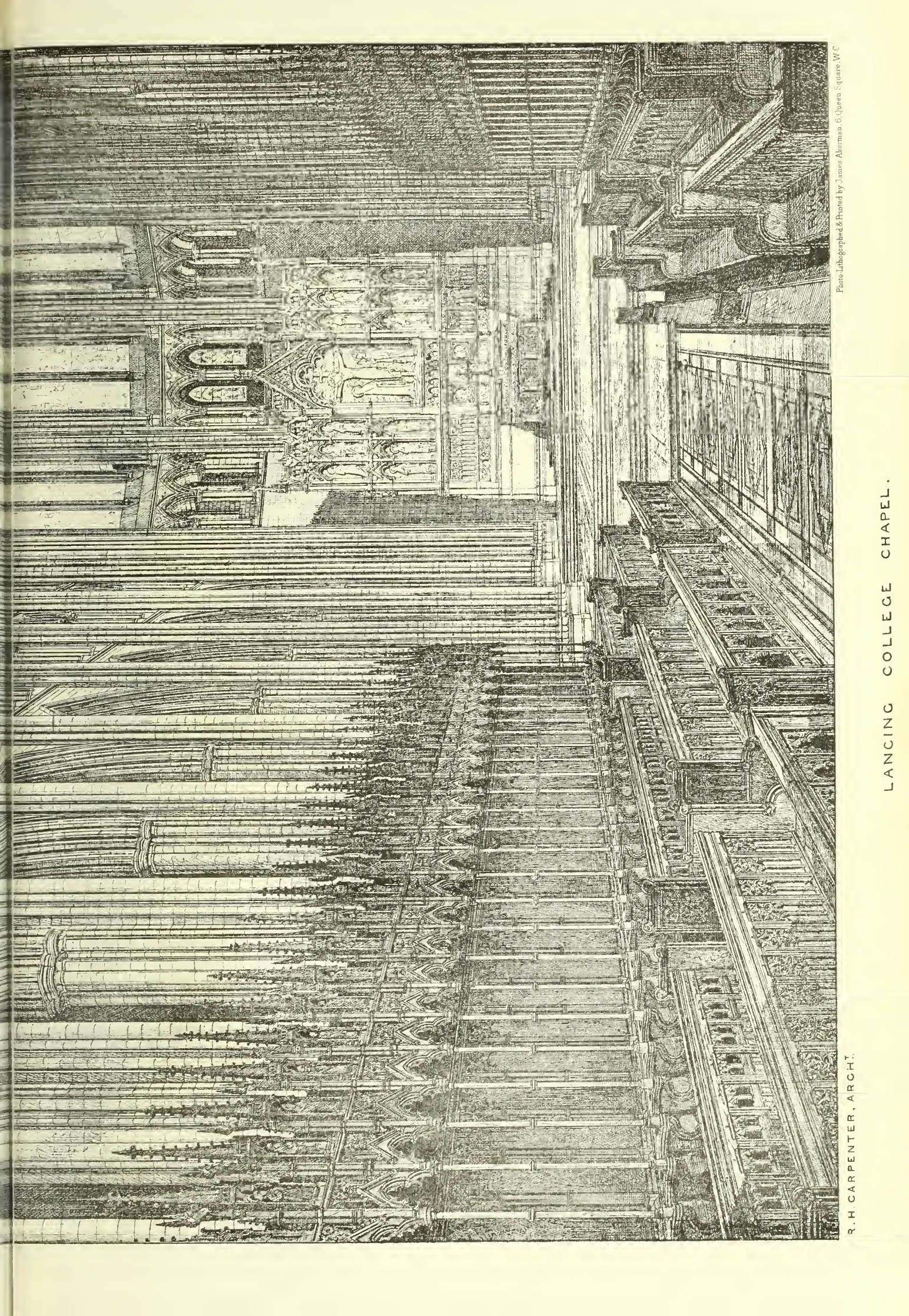
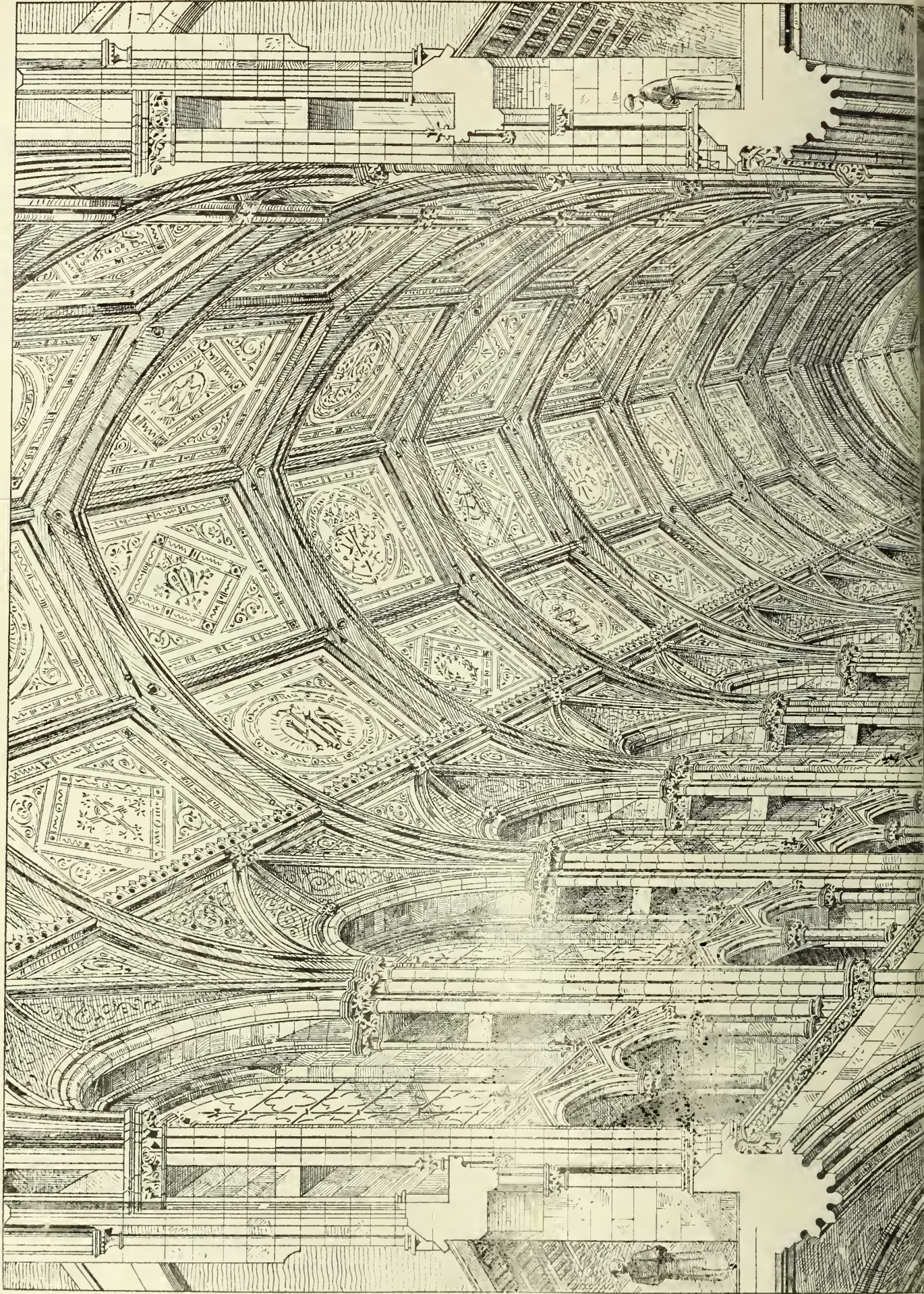


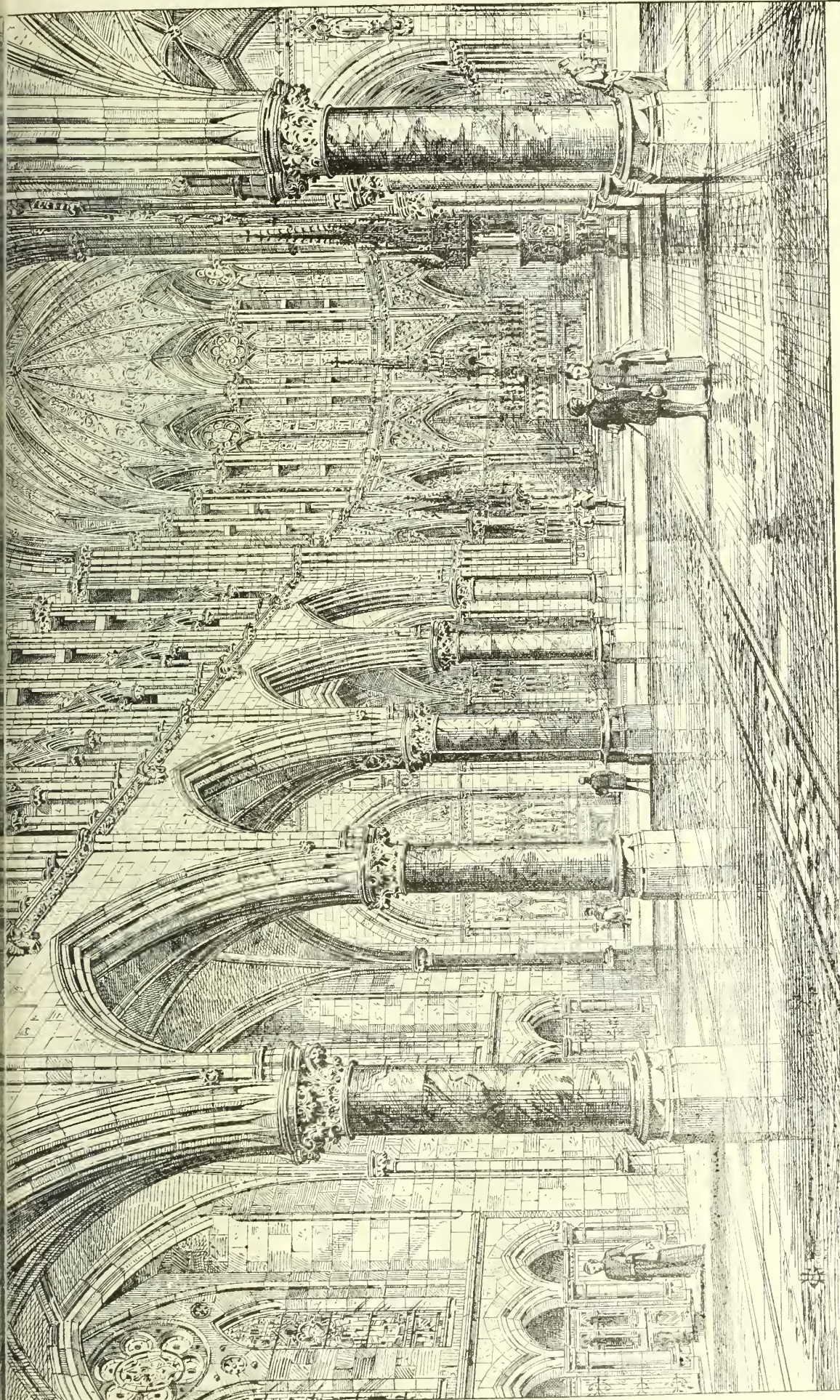
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LANCING COLLEGE CHAPEL.

R. H. CARPENTER, ARCHT.

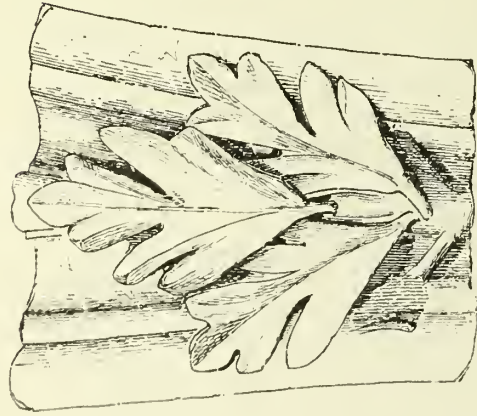
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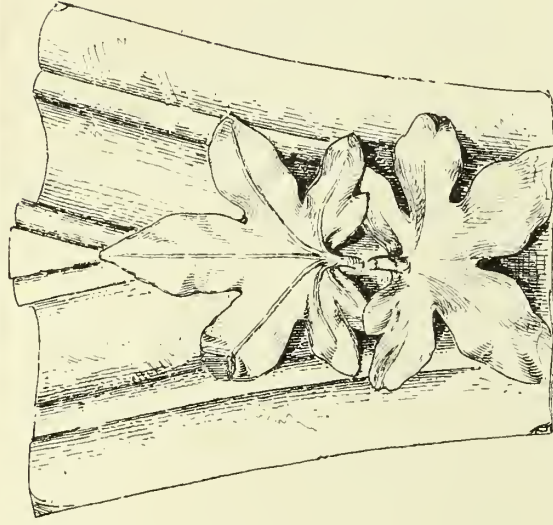


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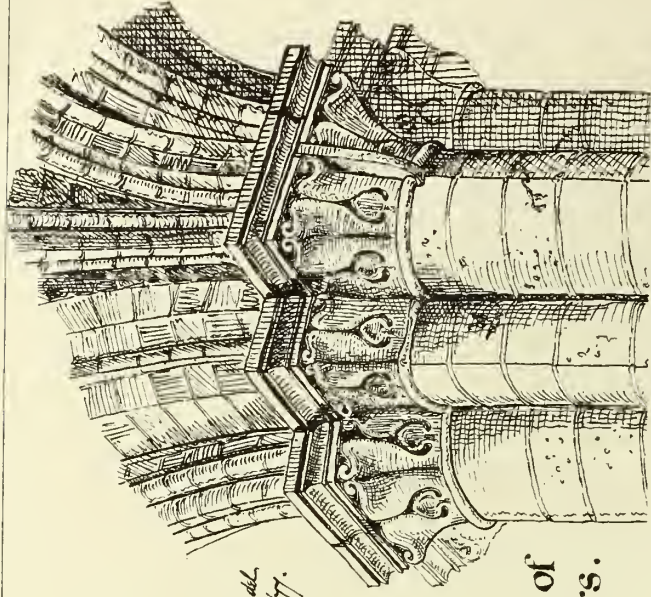
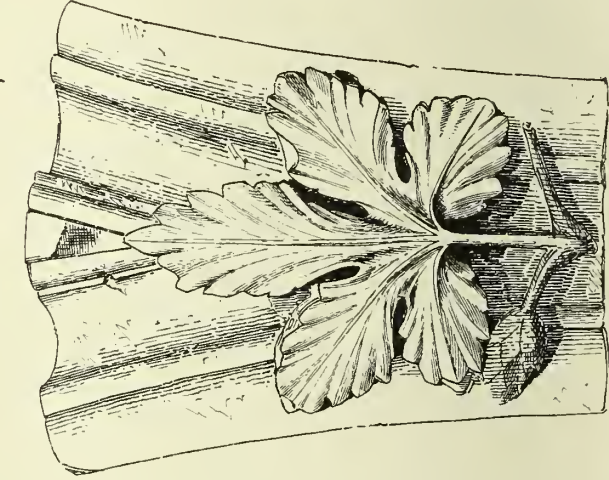
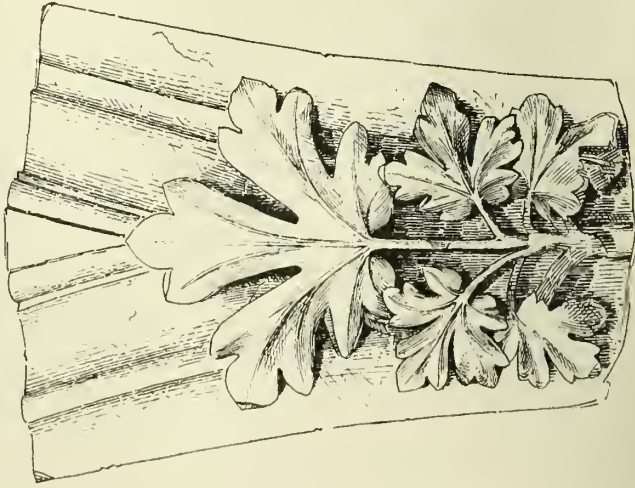
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SOUTHWELL MINSTER NOTTS: FOLIAGE AT INTERSECTION OF ARCH MOULDINGS
R. A. M. SKETCHING CLUB



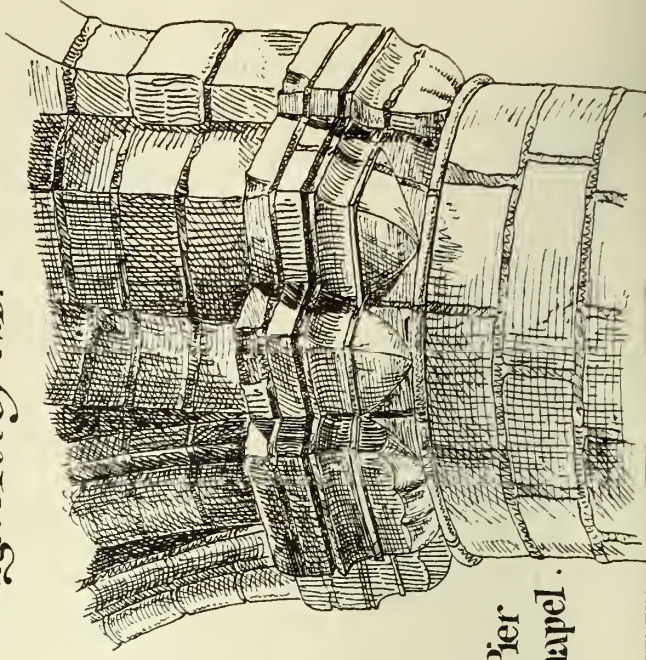
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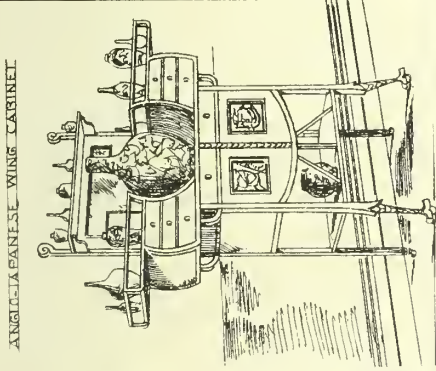
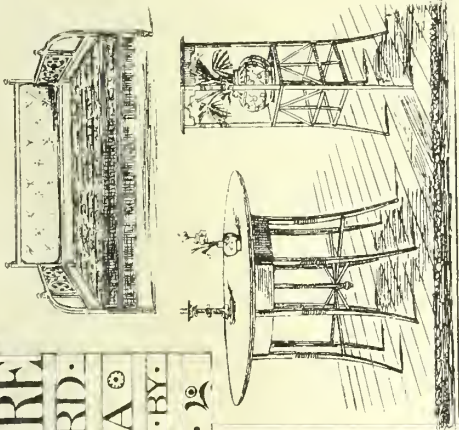
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Jedburgh Abbey N.B.

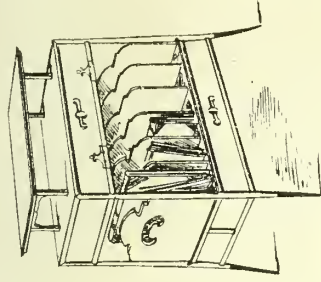


Cap of Pier
Choir Chapel.

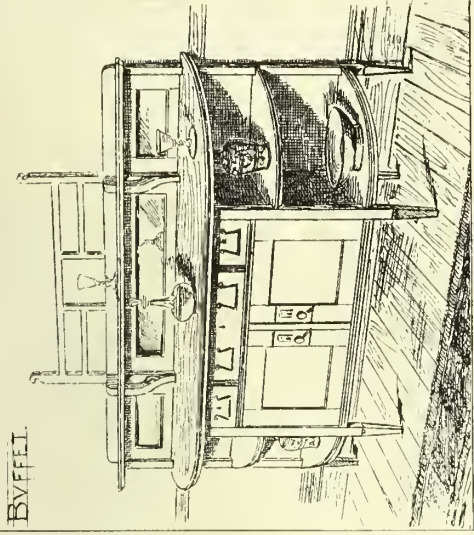
ART-FURNITURE
 DESIGNED BY EDWARD
 W. GODWIN, F.S.A.
 AND MANUFACTURED BY
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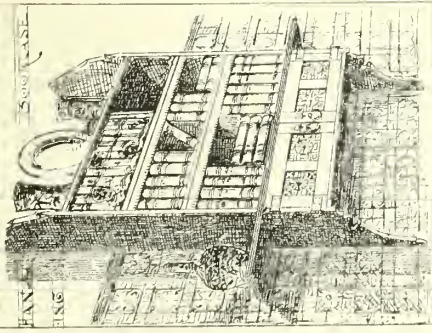
ANGLO-JAPANESE WING CABINET



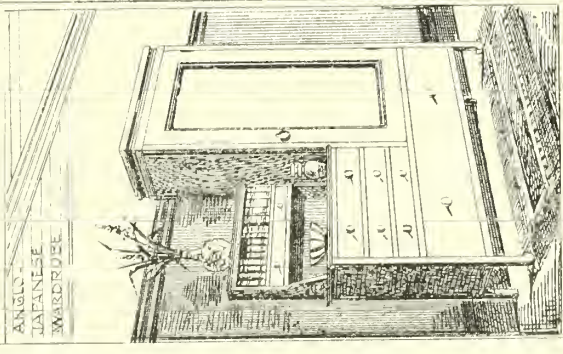
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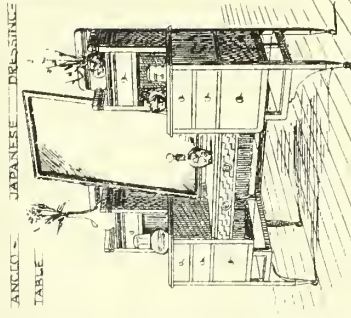
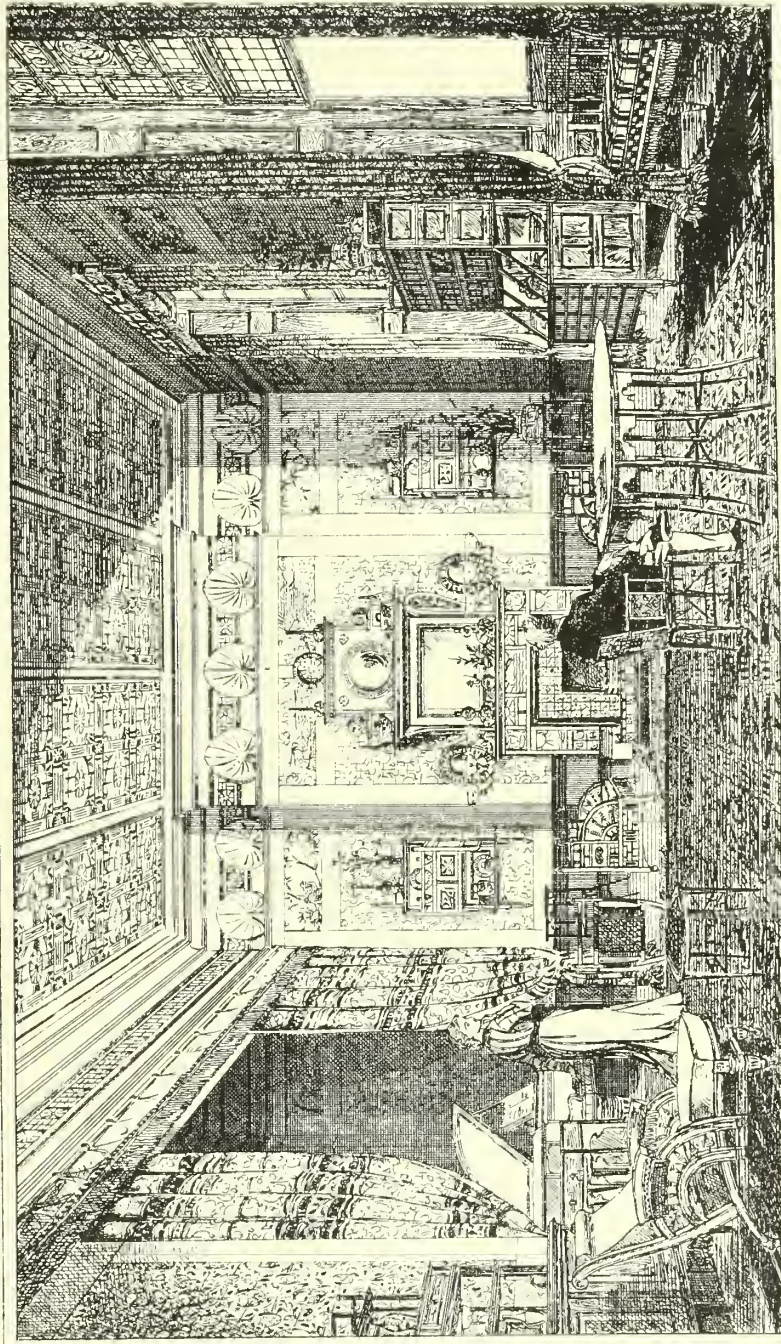
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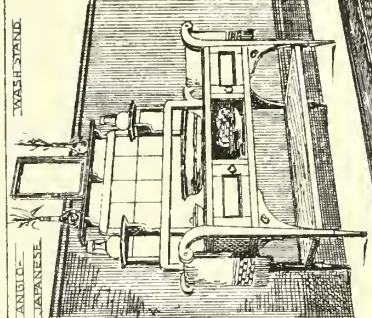
WARDROBE



ANGLO-JAPANESE WARDROBE



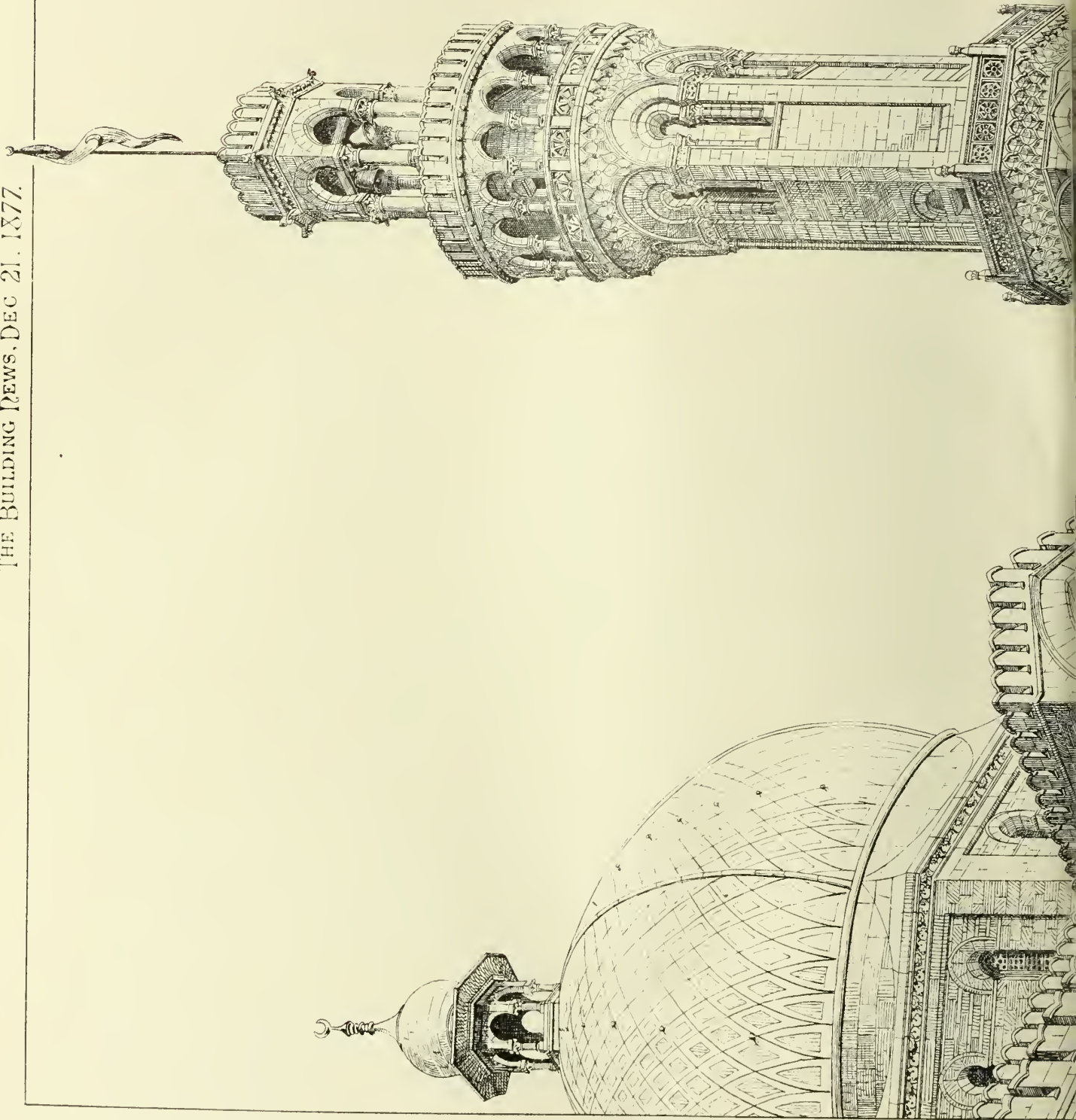
ANGLO-JAPANESE DRESSING TABLE



JAPANESE WASH STAND



THE BUILDING NEWS, DEC 21, 1877.



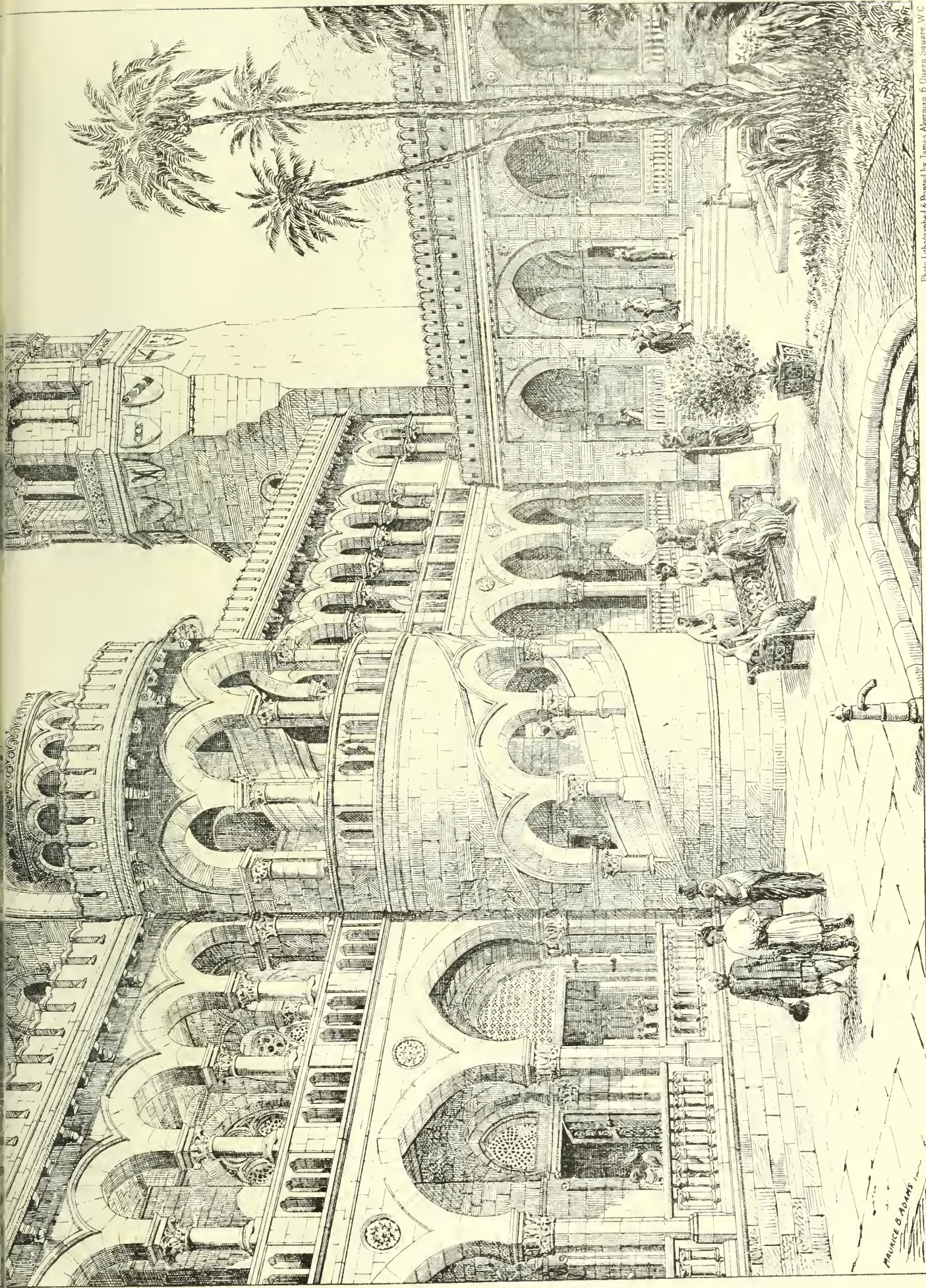
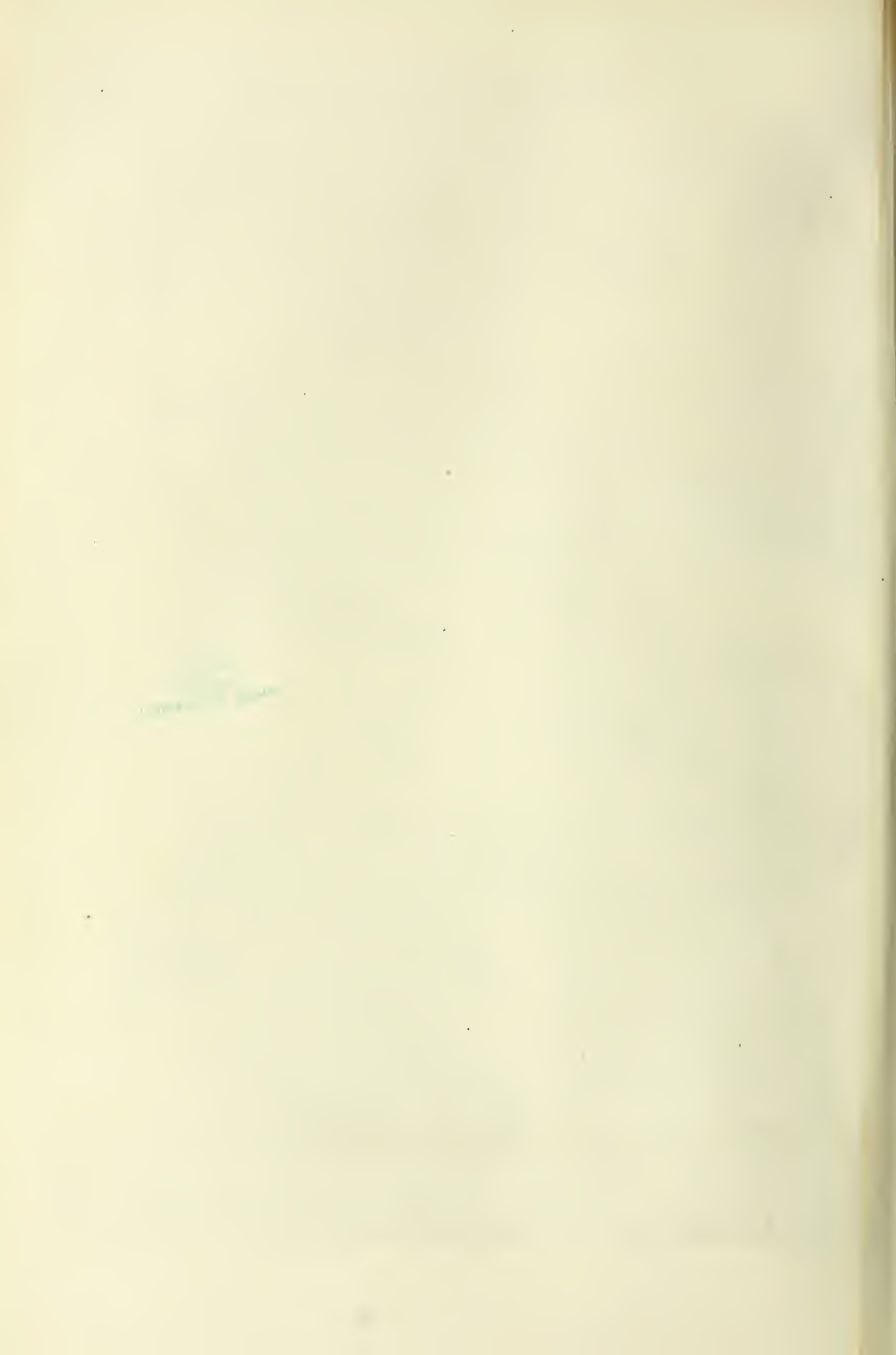
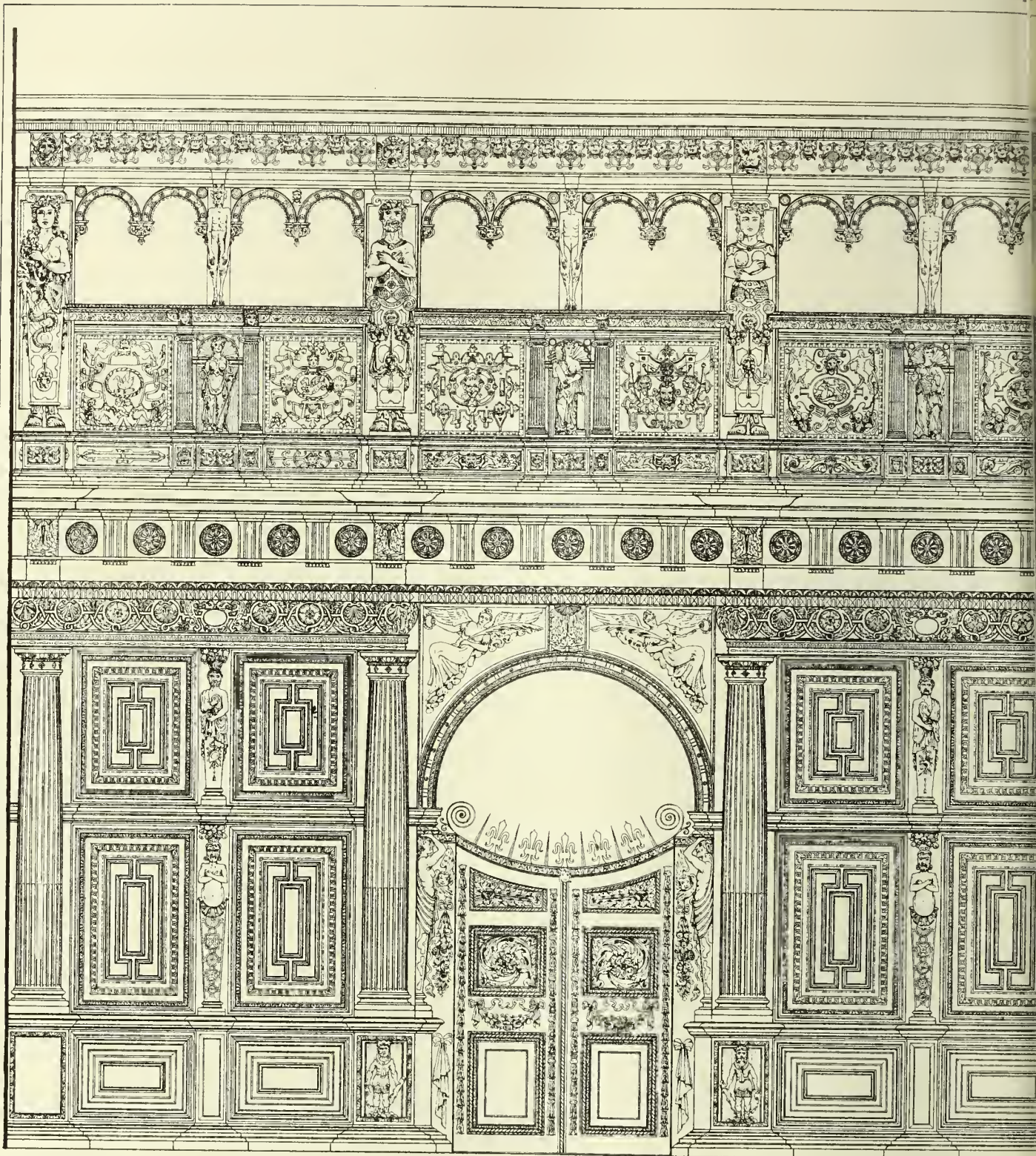


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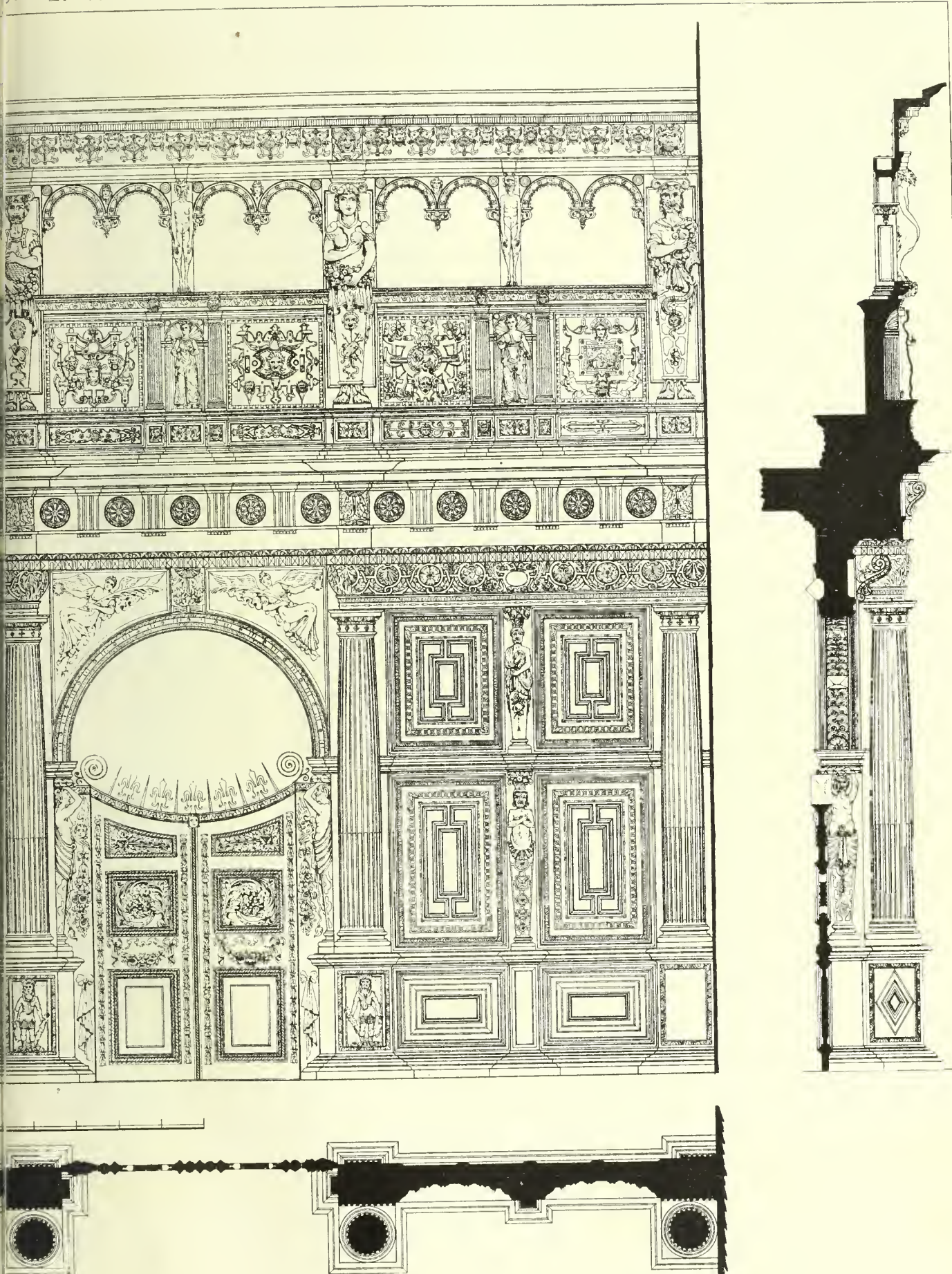
THE QUADRANGLE, MUIR COLLEGE, ALLAHABAD UNIVERSITY, INDIA
W. EMERSON, ARCHITECT

MAUNICE B. ADAMS



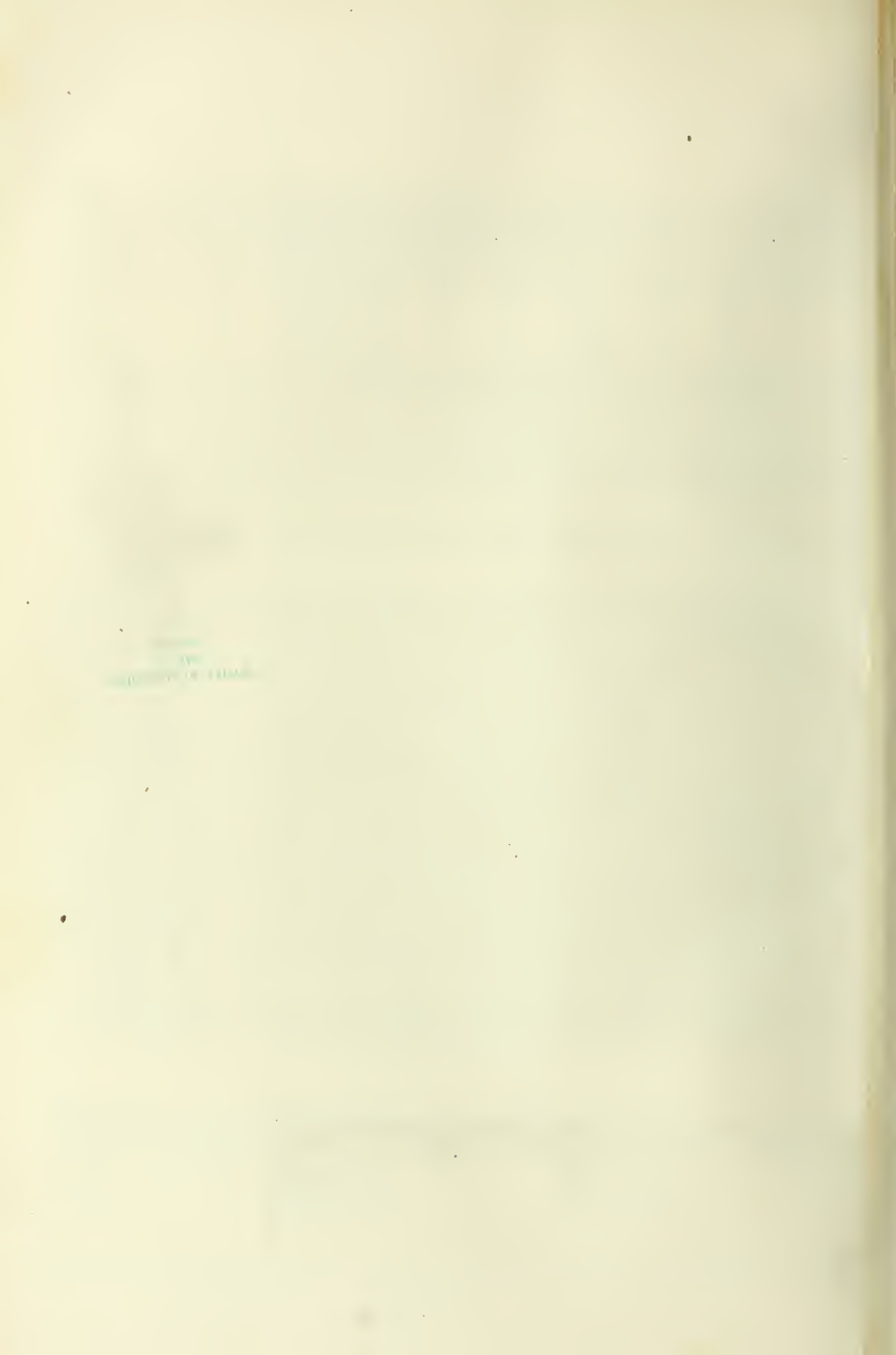


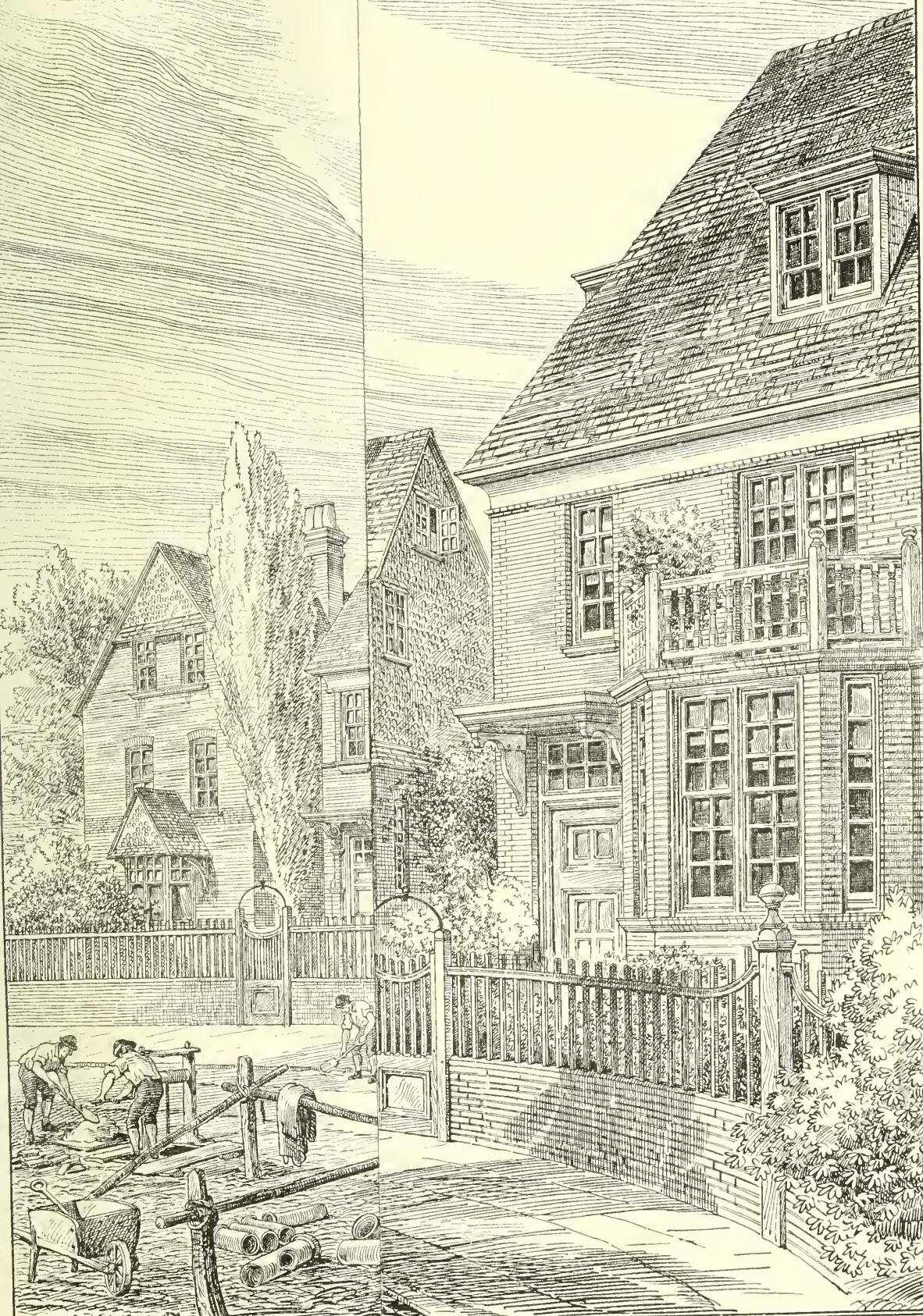
OLD · OAK · SCREEN · MIDDLE



EMPLE · HALL ·

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MAURICE B. ADAMS DEL 1877

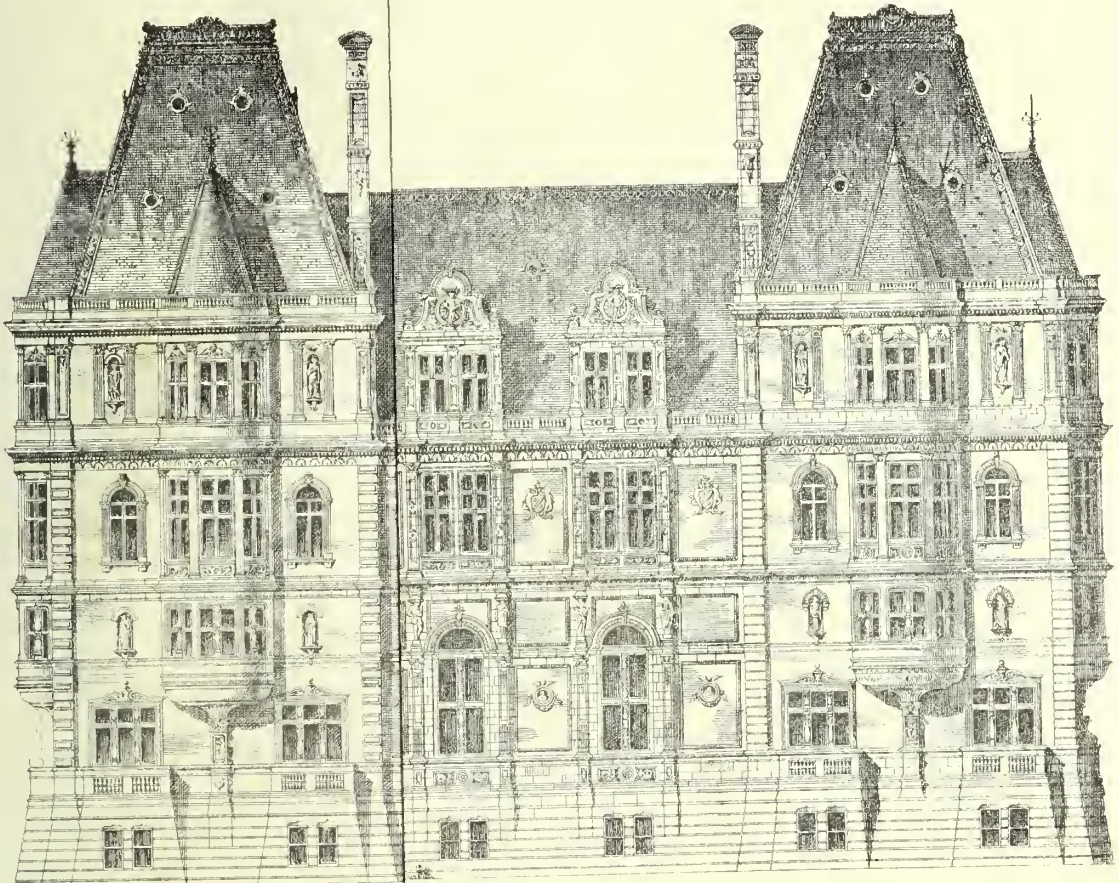
Bedford Park L.L.A.S. R. Norman Shaw A.R.C. Architects



MAURICE B. ADAMS DEL. 1877

Bedford Park Estate · TURNHAM GREEN · Perspective View of VILLAS · R. Norman Shaw · A.R.C. Archt

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MARBLE & ADAMS

· HOLLOWAY ·
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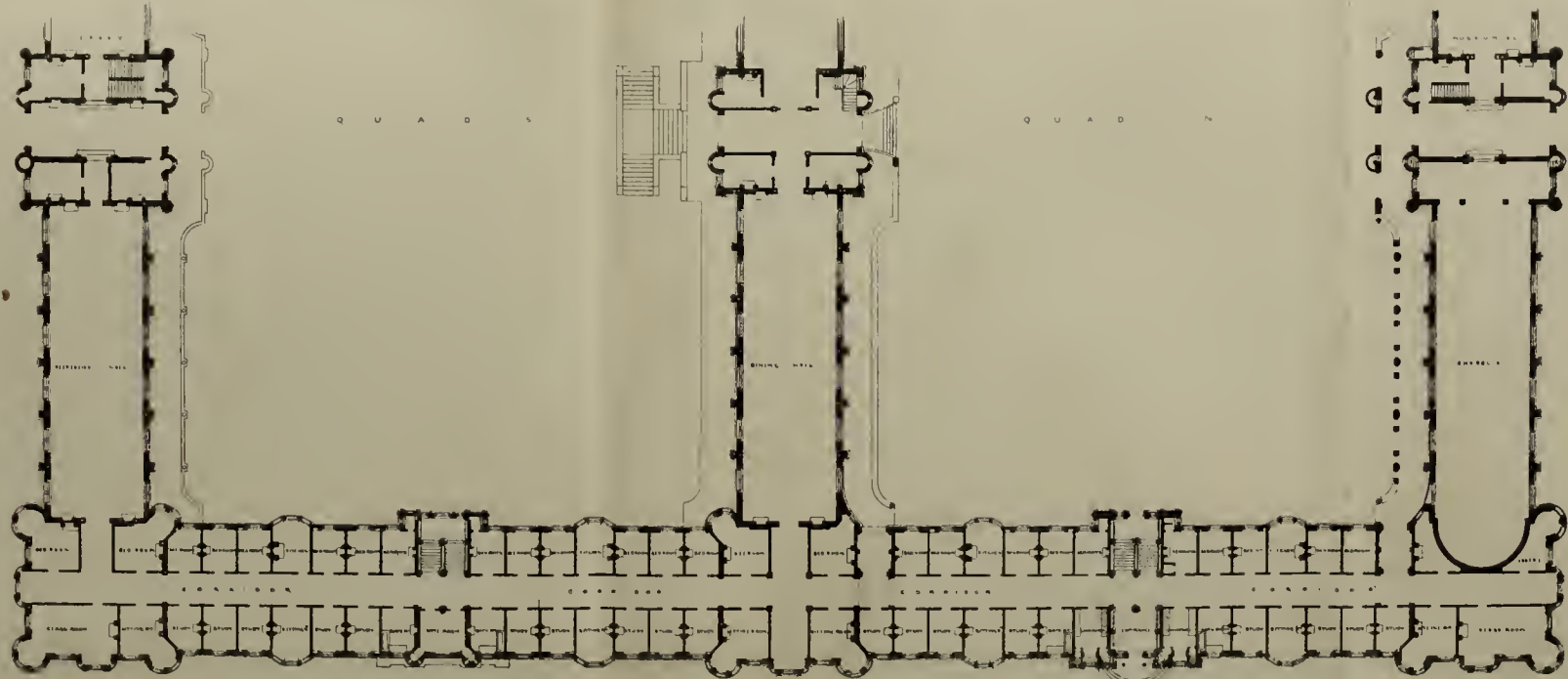
· COLLEGE ·
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FRONT · ELEVATION ·



HALF PLAN OF PRINCIPAL FLOOR
SCALE-PLAN

· HOLLOWAY ·
· EGHAM ·

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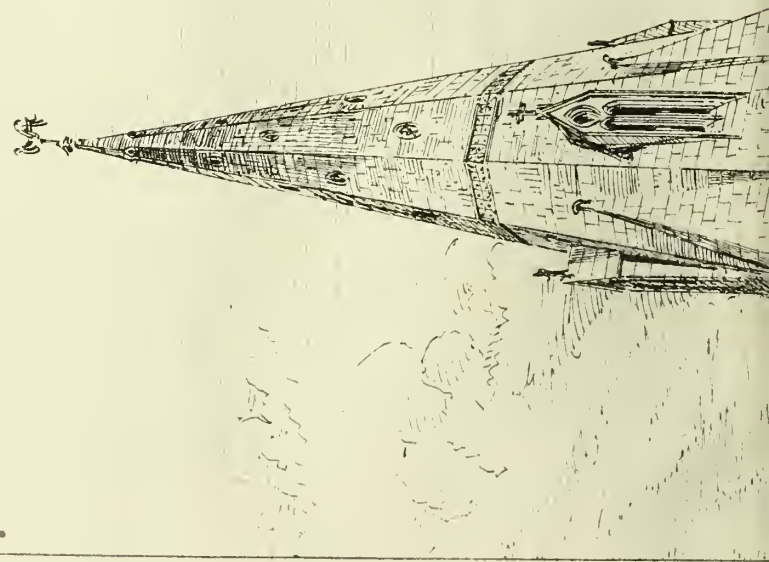
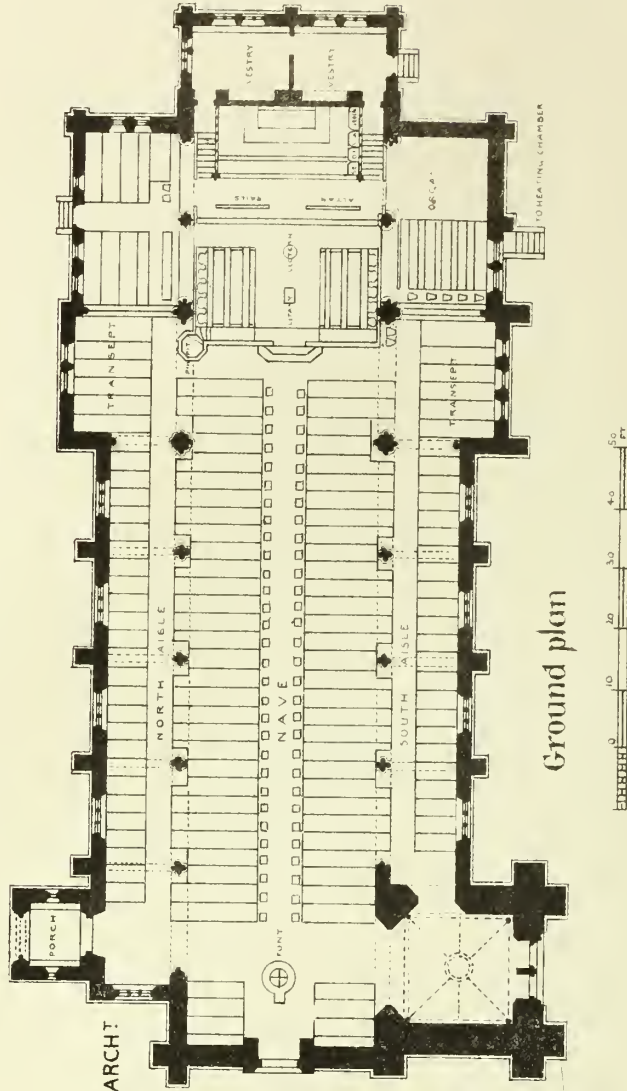
W · H · CROSSLAND ·
ARCHITECT ·

UNIVERSITY OF MARY

THE BUILDING DEWS, DEC 21, 1877.

*Church of S. MARY Southampton
to be erected as a memorial to the late*

Bishop of Winchester (Wilberforce). G.E. Street-R.A. ARCHT.



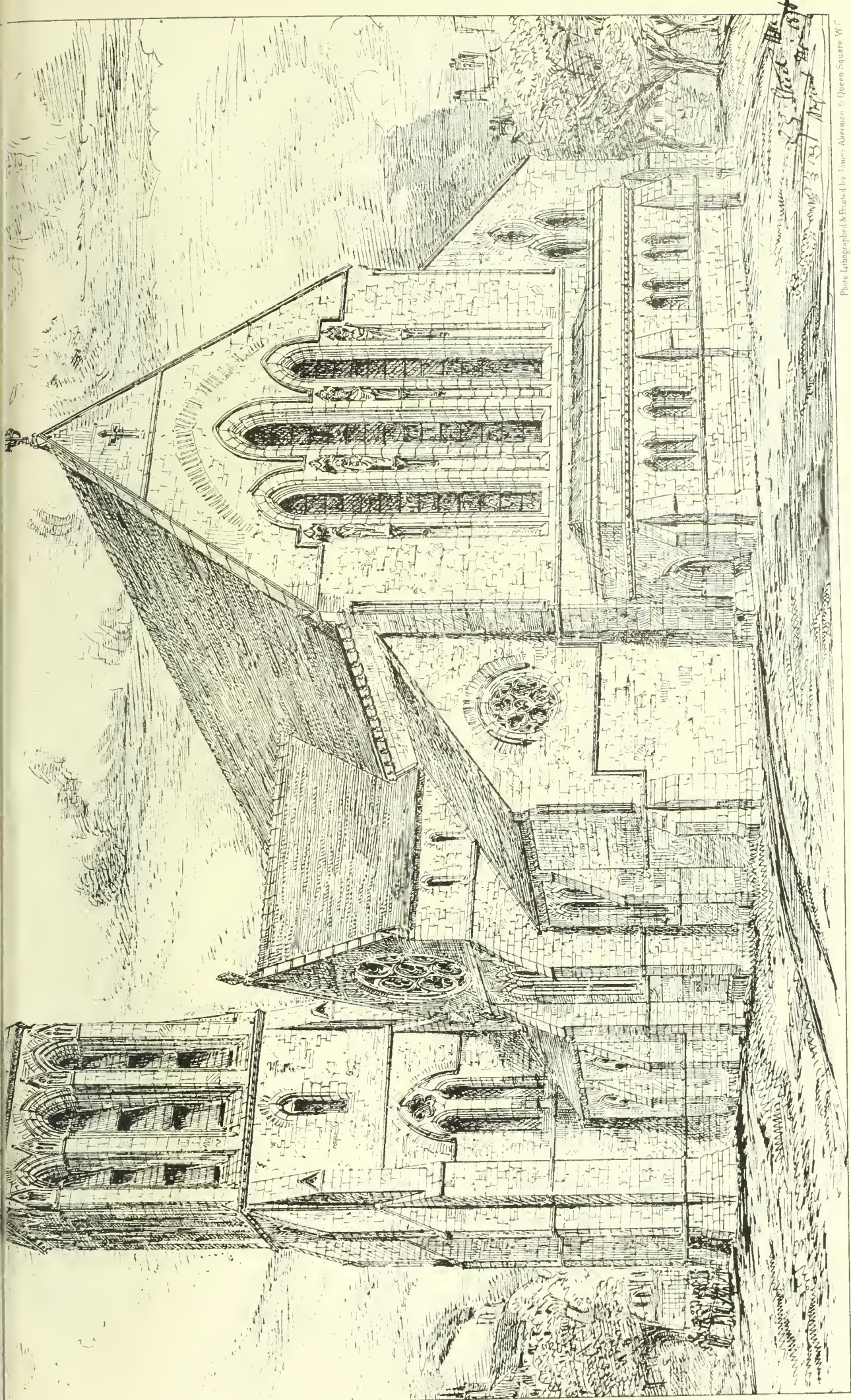


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THE BUILDING DEWS, DEC 21, 1877.

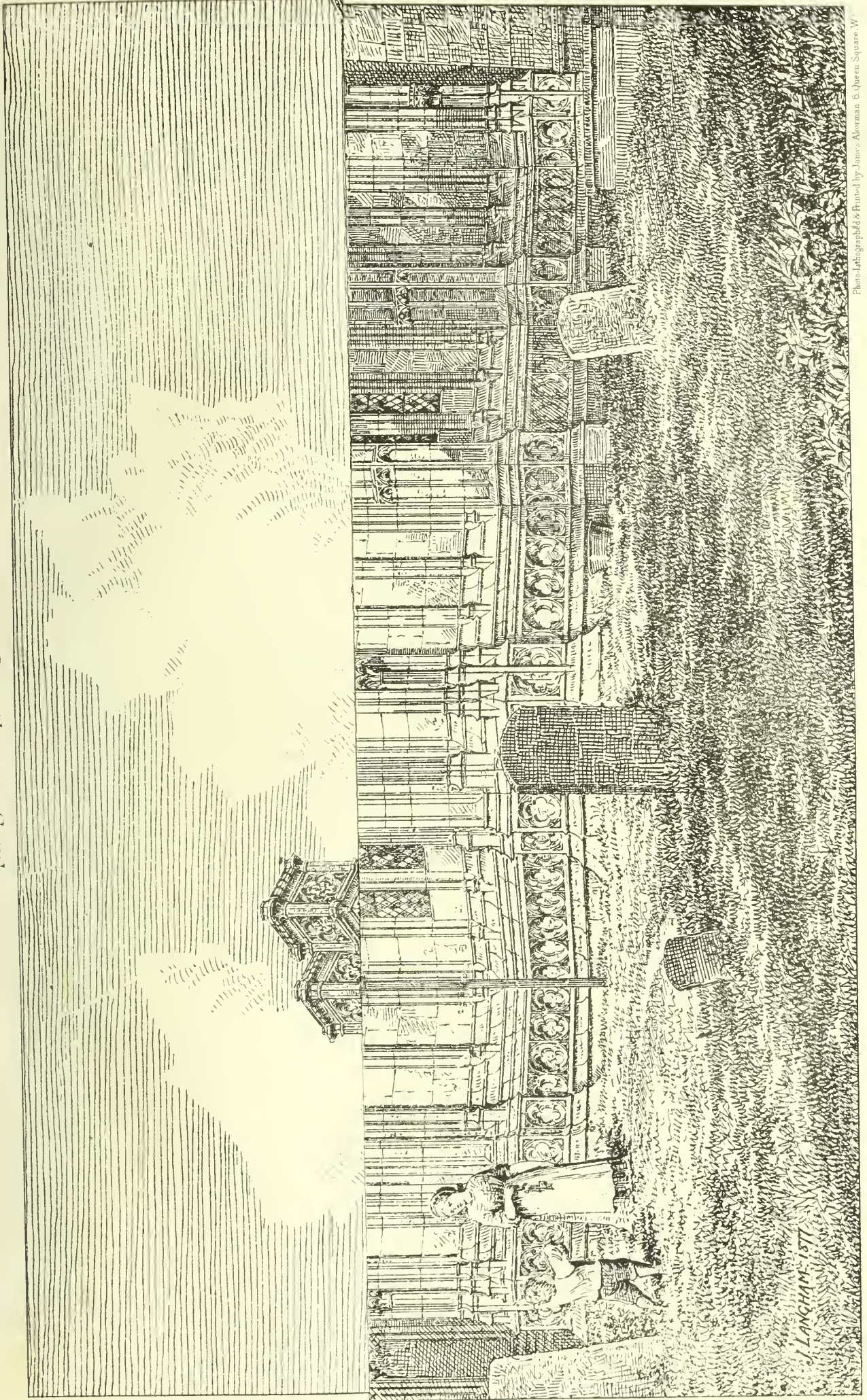
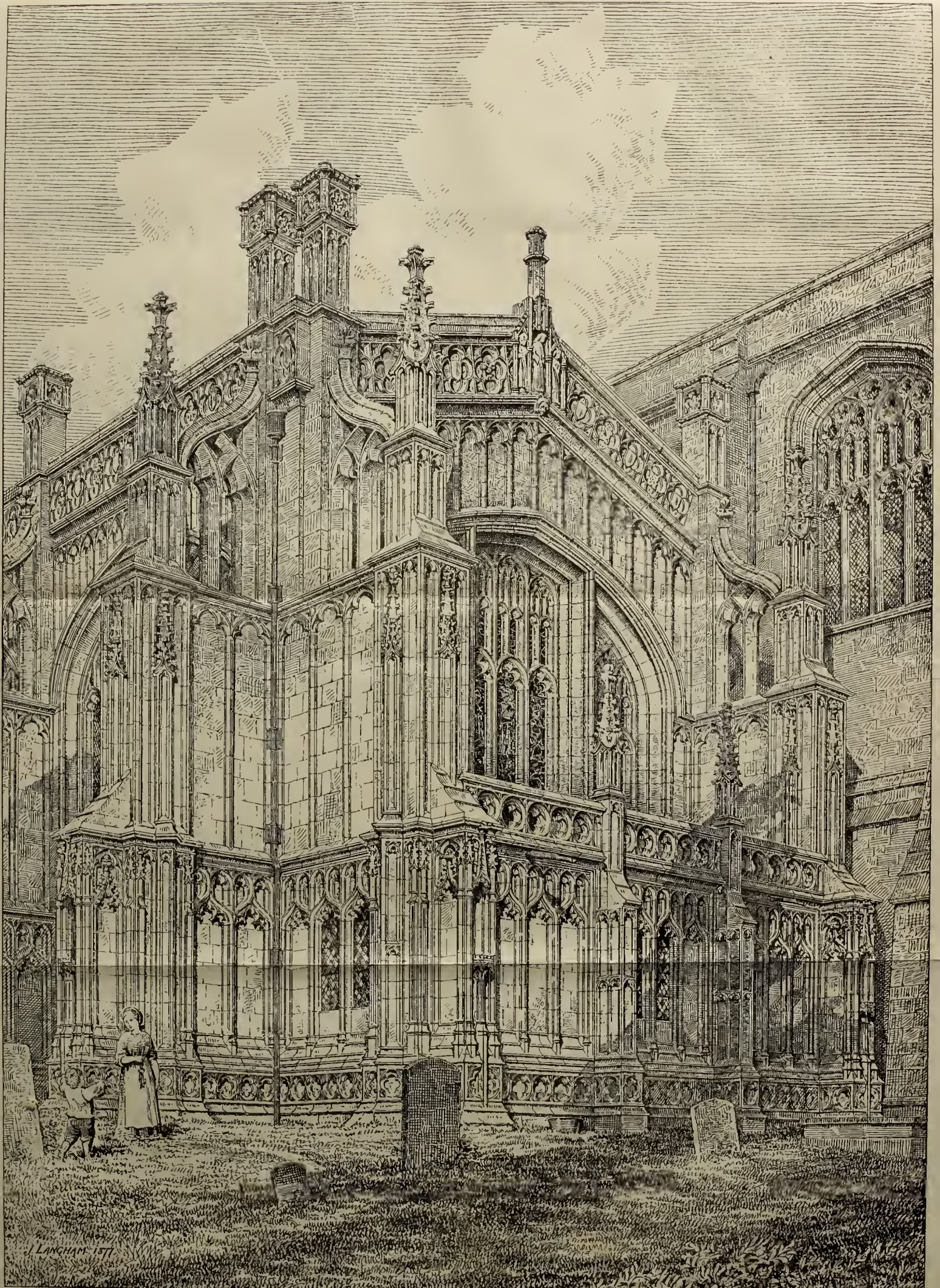


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The Beauchamp Chapel · Warwick.

J. LANCHEM 1877



J. LANGHAM 1877

Stone Lithograph & Printed by James Alderman 6, Queen Square W.

The Beauchamp Chapel Warwick.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fortnightly meeting of the Institute was held on Monday evening at half-past seven o'clock. The President, Mr. Charles Barry, F.S.A., occupied the chair. The following gentlemen were balloted for and elected as fellows: John T. Bressey, of 70, Bishopsgate-street Within; J. H. Jones, of Denilsguis, New South Wales; and David Thompson, of Glasgow; as an associate: W. B. Tomlinson, of Coventry; as hon. associates: W. H. Barry, 23, Westbourne-terrace, W.; Philip H. Calderon, R.A., Weston Lodge, 16, Grove End-road; J. Gascoigne Lynde, The Orchard, Gore-street, Manchester; Charles Manby, C.E., 24, Great George-street, Westminster; Alfred Morrison, F.R.G.S., 16, Carlton House-terrace, S.W.; and Charles Neate, C.E., 4, Victoria-street, Westminster, S.W. Thirteen nominations for membership were read, two each as fellows and associates, and nine as hon. associates. The thanks of the members were accorded to several donors of books to the Institute library.

The PRESIDENT then invited Mr. James Neale, F.S.A., Associate, to read his paper, entitled

ARCHITECTURAL NOTES ON ST. ALBAN'S ABBEY.

The walls of the Institute room were decorated with an elaborate display of drawings illustrative of the abbey, including a ground plan, elevations, sections, and details. As Mr. Neale explained in his opening remarks, each of these detailed drawings was executed to scale on the spot from measurements, every joint shown and every moulding taken the real size. We hope to give some of these drawings next week, and also the second portion of Mr. Neale's paper, which we are obliged to hold over. There were also a number of coloured illustrations of the decorations recently discovered on the bosses and the panels of the ceilings.

Mr. NEALE remarked that it is now seven years since he measured a bay of the thirteenth-century work on the north side of the nave of the abbey, with the hope of passing the examination as a student of the Royal Academy, and, being successful, he continued the study, and in 1875 he gained the Pugin travelling studentship, and afterwards the silver medal of the Institute. During his studentship he accumulated so many drawings that some antiquarian friends suggested their publication, which led to a continuance of the work for three more years, and he now looked forward to the issue of his volume from the press in the course of a few weeks. After an allusion to the traditional founding of the abbey circa 303, Mr. Neale came to the founding of the present building by Abbot Paul, of Caen. Abbot Paul was a relative of Lanfranc, Archbishop of Canterbury. Lanfranc, who was Abbot at St. Stephen's of Caen at the time of its erection in 1064, rebuilt Canterbury almost upon the model of St. Stephen's. Paul, more ambitious, rebuilt St. Alban's on a similar plan, but on a scale vastly exceeding either Canterbury or St. Stephen's, as the following comparison of the three edifices—in which Caen is first, Canterbury second, and St. Alban's third in order of mention—will show:—Number of bays in the naves, 9; 9; 13. Number of bays in the choirs, 2 besides the apse; 2 besides the apse; 5 besides the apse. Number of bays in each transept, 2 and 1 apsidal chapel; 2 and 1 apsidal chapel; 3 and 2 apsidal chapels. Total length from east to west, about, 290ft.; 290ft.; 460ft. Total length across the transepts from north to south, about 145ft.; 145ft.; 189ft. Length of naves taken from west front to west face of transept, about, 193ft.; 193ft.; 234ft. Length of western facades, about, 90ft.; 90ft.; possibly about 150ft. Abbot Paul's church consisted of a nave, with its side aisles; transepts, without aisles; choir, with side aisles; sanctuary, with side aisles and apsidal termination. He adapted the levels of the floor to the levels of the site. The floor at the east end seems to have been about 6in. above the ground line adjoining, and the floor at the west end about the same amount. The slope of the hill downwards from the east allowed a difference of 4ft. in the floor

levels. But, not contented with this, the slope from the north southward was also echoed—the floor is thus 2ft. 6in. lower at the south than at the north wall of the transepts. These floor levels have been frequently modified, but their influence has been considerable on the fate of the building. The high altar was ultimately elevated 3ft. 6in. above its original level; but the Norman levels in the sanctuary aisles have probably always been maintained, and they dictated the floor levels of that great extension of the eastern arm, which occupied the century in which mediæval art was attaining, and attained its greatest excellence. A sufficient elevation was obtained for the high altar without the necessity of a crypt. The Norman church was built of tiles collected from the ruins of Verulam. Some measure 21in. by 12in., by 2½in., but the average size is 17in. by 12in., by 1½in.; they are of a deep red colour. The mortar joints are, as a general rule, a little thinner than the tiles themselves. The possession of so immense a bulk of ready-made material excluded stone from any considerable portion of the building; a few shafts and capitals, and the impost mouldings of the ground-story and triforium arches were for constructive reasons made of Barnack stone, but practically the whole of the building was constructed with Roman tiles. Probably the massiveness of walls and piers was to some extent due to the unlimited supply of tiles. Cushion capitals occur in the transepts and tower—very possibly the earliest capitals of this form remaining in England. As to the plan, or state of preservation of the early church in 1077, we have no proof, but it is certain it was no mean structure; and the Normans, although erecting an entirely new building, retained parts of the destroyed one. The Saxon relics seem to have been arranged with considerable care in the bays of the triforium arching of the sanctuary and transepts. Those in the sanctuary would be removed when it was partly pulled down and wholly remodelled in the thirteenth century, but those in the transepts still remain. These balusters are complete in themselves, each having a shaft, capital, and base; but, in order to lengthen them, the Normans added capitals and bases. These additions contrast with the original columns in workmanship, material, and design. The new capitals and bases were worked with the axe (as was all the other stone throughout the Norman church). The whole of the plain and moulded surfaces of the original balusters are worked smooth—evidently turned in a lathe. Some of the marks of the turning tools are very fresh. It would thus appear that it could never have been used externally in the Saxon church. The rest of the circular shafts—used alternately with the Saxon ones—are of the Norman period; they are not turned, but axed vertically. During the late restoration of the Saxon church on the Castle Cliff at Dover, and also that at Jarrow-on-Tyne, a number of these curious balusters—which had also been re-used by the later builders—were exposed to view. Some of the moulded bands of the Dover balusters exactly correspond with the St. Alban's mouldings. Those at Jarrow have a multiplicity of mouldings, consisting mainly of flattened beads without the variety of detail found at St. Alban's and Dover. Fragments of similar balusters were recently discovered at Ely Cathedral with mouldings of the same character as those at St. Alban's, and the marks of the turning-tools very clearly visible. The Norman church retained its original character till Abbot John de Cella (1195-1214) pulled down the west front. In commencing reconstruction he made his floor line in the porches about 3ft. 6in. lower than the original floor of the nave of the Norman church. This new level also appears in the north and south aisles. In the north aisle the bed for the tile floor remains against the stone bases of the piers between St. Andrew's Chapel and that aisle. In the south aisle a similar bed exists in the arch leading to the south-west tower, and at least for a few feet further eastward. It is possible that De Cella may have vaguely contemplated carrying this lower level along the nave some considerable distance further eastward. It is equally possible that he did not intend to carry it further eastward than the

eastern portion of the western bay of the nave, rising to the general floor level by means of a flight of steps. This last has, for some thirty years last past, been believed—without very much foundation—to have been De Cella's intention; a belief that is likely to embody itself in a solid form ere long, with a flight of steps from the north of the north aisle to the south of the south. The floor levels north and south previously mentioned give, however, incontestable evidence that the north aisle retained, till the destruction of St. Andrew's Chapel, the floor line that De Cella had marked out when he started on the western front. For about 70ft. from the western wall the north aisle must have been reached by a flight of steps on the aisle side of the ground-story piers; whether this lower floor extended further eastward of this new excavations will determine. The western porches contain interesting evidence as to the manner in which succeeding builders completed a design, which had been carried too far for material alterations, except in the details. De Cella put in apparently all the foundations, but thereafter threw all his energy on the northern side. In his time the northern porch was entirely completed. This porch has mouldings of extreme delicacy, some enriched with the dog tooth. In the central porch he did not, however, succeed in carrying out his design higher than the tops of the main columns. In the southern porch there are scarcely any architectural features due to De Cella. A beautiful holy-water stoop was inserted in the north porch in the early part of the fourteenth century. This porch would naturally be used by the laity coming from the town on the north of the church. Abbot William de Trumpyngtone took the central and southern porches in hand and speedily carried them to completion. All the new mouldings above the capitals of the central porch, and nearly the whole of the mouldings of the southern porch have the same character; there are fewer members in the groups, and the mouldings are coarser in themselves than those in the northern porch. There is no dog-tooth in either of these porches. The carving in the north porch and the earlier carving in the central porch has peculiar overlapping curling leaves and strongly defined stems, and is singularly like that in the choir of Lincoln Cathedral. The later carving in this porch and the whole of the carving in the southern porch is the normal Early English foliage. From this it will be seen that the northern and central porches differ largely from the southern porch. The omission of central bosses from these vaults both differ from the northern porch. There are in the central porch evidences of individual preferences, over and above the evidence of the change in style. As far as was compatible with maintaining the work already erected and carrying it to a logical completion, Trumpyngtone made modifications in the framework of the design that are hardly credible. For instance, De Cella contemplated reproducing the jambs of the central porch on the nave side, with their clustered marble shafts—thus giving it a greater depth and importance than the lateral porches. But Trumpyngtone built in the two doorways between the clustered jambs. The jointing of these doorways does not range with the jointing of the original jambs. In mediæval work it was not unfrequently for stones already prepared to be used at a later date. This occurs in the central porch at St. Alban's, but with this difference from other instances—a difference making the case unique. Trumpyngtone used stonework prepared by De Cella, but cut away the minor mouldings. De Cella had not worked the whole of the vaulting ribs; Trumpyngtone was unwilling to supply what was wanting with copies of De Cella's stonework. He was equally unwilling to throw aside the stonework already prepared—this strange piece of self-assertion is the result. Judging from the carving and the forms of the mouldings the earlier parts of the porches of St. Alban's appear to be a few years later than the choir of Lincoln, and therefore 1200-1205. Cutting down his predecessor's work was a custom with Trumpyngtone. The porches might have been sufficient for many men, but in the work of the intended western

towers he did something equally vigorous. The archway on the north side was destroyed at the time of the fall of St. Andrew's Chapel, with the exception of a portion of the west jamb. On the south side the arches and jambs are more perfect, and the original design of De Cella (1195-1214) is there exhibited. The alteration of the character of the design by his successor, Trumpyngtone (1214-1235), on continuing the work is also shown. In the jamb prepared by De Cella eight clustered marble shafts were arranged for, and six smaller stone shafts, slightly recessed, in the intervals between these marble shafts. De Cella's design is also traceable up to the level of the marble annulet moulding. At this level he discontinued the work. Trumpyngtone carried up the smaller stone shafts to the capitals, but entirely omitted the marble ones. The dimensions of the western towers can be ascertained from the foundations, and their height when further progress was arrested may be supposed to be shown by the height of the existing work. There is weight in the suggestion of the Rev. H. Fowler, that the western towers would almost certainly have been named in the records if they had ever been complete enough to form part of the floor of the building. In truth the existence of Norman towers—now a mere conversational commonplace—should rest on a more solid foundation than the tile and flint work found under the ground level, which might be of any century. The total destruction of St. Andrew's Chapel might fairly justify an argument for a north-western tower as advanced as that on the south. But to suggest more than this; to describe, for instance, both the towers as "crowned with roofs of steep pyramidal shape, the most ancient form of covering applied to features of this kind," &c. (Buckler, p. 99) would require a temerity to which I cannot lay claim. In August, 1877, after the removal of the modern brick cottage (which abutted against the western end of the south aisle wall) the ground was excavated for the foundations of the new buttresses of the south side. A part of the foundation of the eastern wall of the south-western tower was exposed, 10ft. thick, composed of flints and Roman tiles. Messrs. Buckler, in their admirable book, "The Architecture of the Abbey Church of St. Alban, 1848," make a special point of the method of the change from the Norman to the Early English work. They say "the Norman walls were not wholly demolished, but the massive tile work was reduced in sufficient proportion to allow it to be cased with ashlar." It is also added that the transformation commenced at the top continuing downwards. A comparison of the Norman and Early English bays will show what miracles of cutting away in the triforium and clerestory passages would have been necessary; and as further consideration the ground-story piers, 19ft. 4in. high, would have been reduced from about 16ft. square to octagons of 2ft. 9in. across. The supposition that such transformation began at the top and continued downwards might derive support from the eastern bay of the clerestory, and from the strange form of the east pier of the ground story, but the mouldings are actually later in date, stage by stage, from the ground story upwards. In Mr. Neale's opinion the whole casing theory is a work of high imagination without any, even the slightest, support from actual facts. It has the credit of having beguiled well-meaning people against their better judgment for a goodly term of years. Trumpyngtone was an *enfant terrible* in architecture, and exposed with frankness what is usually concealed with care. When he commenced the rebuilding of these bays on the north side of the nave, he prepared the base mouldings of the main piers to receive filleted shafts, but the shafts were carried up as plain rounds, without the fillets. One of these bases was used and still remains *in situ* to the westernmost pier of the easternmost bay on the north side of the nave. When it was decided not to remove the half of the Norman pier on the eastern side of this bay, the three upper courses only were built upon the Norman work. The base not being required was cast on one side. After the idea of the filleted shaft had been given up Trumpyngtone still tried to en-

rich the plain shafts by dyeing them on to an octagon, at the base. When erecting the two easternmost of the Early English bays on the south side, the piers were worked without either octagon or fillet, but a base previously prepared, but not required on the north side, was now used on the south. Trumpyngtone intended to vault the nave, and we still see marble vaulting shafts in the spandrels of the ground-story arches, and the abacus at the triforium level cut away to allow the shafts to pass. The clerestory piers on the north side of the nave have sinkings designed to give shadow behind the intended shafts. When the rebuilding had proceeded on the north side as high as the springing line of the triforium arches, Trumpyngtone determined to forego the vaulting and substituted a wooden roof. The two easternmost of the five Early English bays, on the south side of the nave, were erected some little time after the three adjoining bays and the four bays opposite on the north side. This is evident from the marked change in the mouldings. There is also no preparation on these two bays for vaulting the nave. The piers of the clerestory are not hollowed on the face, as is the case in the piers on the north side. The clerestory arches to the easternmost bay are enriched with the dog-tooth. This ornament does not occur in the rest of the clerestory—an additional instance of minor retrenchment. Trumpyngtone on continuing the work of De Cella at the west end retained the Norman floor line in the nave. He also adopted the top of the surbase of the new porches as his porch floor line. Thus he only required two steps up to the nave. It has been stated by Messrs. Buckler and others that the original Norman work remains in the massive pier on the south side of the nave, and that in the thirteenth century the western half of this Norman pier was cased with stone; a similar course being again adopted with the eastern half when the fourteenth century bays were erected. The tiles and flints which appear in the triforium passage have no doubt given rise to this theory, and it has been adopted by one writer after another without special consideration. It is true there is Roman tile in the centre of this pier, but the component parts of the mortar prove the core is not practicable, and in keeping with the new architecture. The interior of the Lady Chapel walls are mostly of Roman tiles and flint structure. The different mortars used at the various dates are all easily discernible. The mortar of the Decorated work is very hard and contains more lime than the Norman mortar. After the fall in 1323 of the Norman bays on the south of the nave, Abbot Eversdone immediately commenced the rebuilding, and it is to him that we are indebted for the design of the five Decorated bays eastward of Trumpyngtone's work. These Decorated bays on the south side of the nave, and the Lady Chapel, are clearly proved to be works of the same period; for in the small niches in the jambs of the Lady Chapel windows are exactly the same mouldings to the bases and to the capitals, as to the Decorated bays in the nave. These moulded bases to the niches in the Lady Chapel are only 1in. high, although those in the nave are about 1ft. 5in. Again, some of the carving is precisely similar in design. Also the same peculiar ball-flower occurs in both the nave and the Lady Chapel. The carving in the nave is indeed much bolder, and worked with a firmer and more decided hand than that in the Lady Chapel. This fact, and many other features, would lead to the conclusion that the five Decorated bays in the nave are rather later than the Lady Chapel, although designed by the same architect. At Eversdone's death, which occurred at the end of 1326, the rebuilding had probably reached as high as the floor of the clerestory passage, and all above this level was continued by the succeeding Abbot, as indicated by a change in the character of the mouldings, which are more shallow and flattened in their outline. The general design is, however, almost upon the model of the thirteenth-century bays, and the arches are more acutely pointed. This seems to have led one writer after another into the error of attributing these bays to 1275. The date is only discoverable with certainty by means of the details. It seems clear that Eversdone intended the triforium piers to consist of three principal

and two smaller intermediate shafts. The mouldings of both the capitals and the bases were worked, prepared for such smaller shafts. This, doubtless, would have a pleasing though severe appearance. However, to enrich the effect, these intermediate shafts were afterwards carved with bold four-leaved flowers, arranged alternately, some circular, projecting to the line of the original shafts, while the others were worked receding and flat. By this ingenious arrangement, which also occurs in the carving of the triforium string, much variety and depth of shadow are obtained. Parts of the original intermediate shafts still exist, adjoining the capitals and the bases. Even these parts, in two or three instances, were carved, but as the result was not very happy, the rest were left in their original condition. It was also intended that the label mouldings should simply die into each other (as in the Early English bays). Carved heads, as terminations to the labels, were afterwards added so skillfully that a very careful examination can alone discover them to be an afterthought. Much of the carving is now almost as perfect as the day it left the artist's hands, and evinces the greatest depth of feeling in the carver. An assertion was made some years ago, "the walls at the backs of the Early English and Decorated arcading were introduced when the steep roofs of the aisles were removed." This assertion has been frequently copied; but the triforium arcades were never, as generally stated, entirely open, for (1) the stones of the arches over the triforium bond with the walling at the back of the passage; 2, the masonry joints of the asserted filling in are continuous with the piers; 3, the mortars used in the external walling and in the arcade, have the same component parts; 4, there never was any relieving arch or double arcade to support the clerestory wall above (as at Westminster Abbey) which would have been essential had the walls been pierced; 5, the corbels on the south side of the nave, which carried the timbers of the roof over the aisle, are arranged irrespectively of the piers, and some occur in the walling, said to be the filling-in of the arches; 6, it is evident the small doorways (still existing) which led from the passages into the roofs over the aisles, and also the corbels; are of the same date as the rest of the arcading. [We shall give the second half of the paper next week.]

A discussion followed, in which Sir Edmund Beckett, Sir Gilbert Scott, Messrs. Street, Clarkson, and Ridgway-Lloyd, and the Rev. W. J. Lawrence took part, and at its close a vote of thanks was heartily accorded to Mr. Neale.

Mr. Locock Webb, Q.C., read a paper on the "Law of Easements," dealing chiefly with that branch which deals with their essential qualities, and the acquisition of easements of light, air, and water. An abstract of the first portion of the paper appears opposite, and it will be concluded in our next issue. The thanks of the members were accorded the lecturer on the motion of Messrs. Whichcord and Currey.

BOOKS RECEIVED.

The British Almanac and Companion, 1878 (London: Stationers Co.), reminds us of the approach of the new year. The information is of the usual type. The writer of the architectural summary for the past year is cut shorter than usual, but still manages to express his disapproval of architects generally, though encouragement is held out that in civic architecture lies the best hope of work for the architect in the coming years, and the faintest chance of the new "nineteenth-century style," whose advent some still profess to believe in. *The City Diary for 1878* (London: W. H. and L. Collingridge) is as useful, handy, and unpretentious as ever. We have used it for fifteen years, and always look for its arrival. *The Boy Engineers*, by the Rev. J. Lukin (London: Trübner and Co.), is another welcome contribution from that veteran adviser of juvenile mechanics, Mr. Lukin. He has somewhat enlarged his field in this volume, not altogether with advantage, but still he seldom travels beyond his own experience, which has been a wide one. Any one blest with a restless specimen of advanced boyhood, who looks scorn-

fully on the usual pabulum provided for respectable children at this season, and who wishes to hit on something more agreeable to the taste of the recipient, had better buy this book. *Calvert's Mechanics' Almanac and Workshop Companion*, 1878 (Manchester: J. Calvert), in addition to the usual matter contained in an almanac, is replete with useful information of value to architects, engineers, and workmen. *The Whitworth Papers* (Manchester: J. Calvert), are a reprint, by permission of the author, of some valuable papers read at different times by Sir Joseph Whitworth, to which is added information concerning the Whitworth Scholarships. *The Professional Pocket Book* (London: Rudall, Carte, and Co.), is specially adapted to the hourly requirements of professional and business men, and will be found useful by all in need of reminders of their multitudinous engagements. *Notes on Bankruptcy, Liquidations, Compositions, and Private Arrangements*, by John Bath and Son (London: Alfred Boot), is a clear and explicit statement of the law affecting bankrupts and compounding debtors, and will be found useful by every trader and professional man. We find as a rule that people who compound with their creditors need remarkably little assistance in these times, so that it is possible those who may find this treatise of most service will be creditors anxious to know what chance exists of their ever obtaining any part of what is due to them from unscrupulous and ingenious customers.

THE LAW OF EASEMENTS.

M. R. LOCOCK WEBB, Q.C., Hon. Associate, read a paper on this subject before the Institute (*vide ante*) on Monday evening, of which we give a *résumé* of the first part, and propose to conclude it in our next issue.

The accepted definition of an easement he quoted from Gale as "a privilege without profit, which the owner of one neighbouring tenement has of another existing in respect of their several tenements, by which the servient owner is obliged to suffer or not to do something on his own land for the advantage of the dominant owner." There must, as an essential quality of an easement, be two distinct tenements, the dominant, to which the right belongs, and the servient upon which the obligation is imposed. The right conferred by an easement attaches upon the soil of the servient tenement. If any disturbance of an easement has taken place previous to the transfer of the servient heritage, although such tortuous act would give a right of action against the former owner, his successor is also liable if he allows it to continue. The servitude, once acquired, passes with the heritage to each successive owner. Although the right to an easement is a "privilege without profit," it has been held that an easement is an interest in land for the invasion of which compensation may be claimed under "The Lands' Clauses Consolidation Act, 1845," 28 and 29 Vict., c. 18. Easements are either affirmative or negative. Affirmative easements authorise the commission of acts which, in their very inception, are positively injurious to another—such, for an example, as a right of way over, and a right to discharge water by a spout or projecting eaves, upon another man's land; the right to support from a neighbouring wall; the right to use or to affect water of a natural stream in any manner not justified by natural right. Negative easements are injurious consequentially, only restricting the owner of the soil in the exercise of his natural rights of property—as where he is prevented building on his own land to the obstruction of lights. The right of support of neighbouring soil for land not incumbered by buildings, and the right of a riparian owner to the flow of a stream in its natural course, are ordinary incidents of property, and not easements. The origin of every easement may be referred to an agreement, either express or implied, of an owner of the property to be subjected to it. In case of express agreement, it will be obvious that the precise words of the instrument itself must determine the extent of the right created. The implication of the grant of an easement may arise in two ways—firstly, upon the severance of an heritage by its

owner into two or more parts; and, secondly, by prescription. Upon the severance of a heritage, a grant will be implied of all those continuous and apparent easements which have been used by the owner, and which are necessary for the use of the tenement conveyed, though they had no legal existence as easements, and of all those easements without which the enjoyment of the severed portions could not be had at all. Grants will be construed most strongly against the grantor, "for no principle can be more sacred than that a man shall be compelled to perform his contract." And another kindred principle is, that "no man shall derogate from his own grant." Both these principles are well-established rules of law. Upon the severance of an estate, such rights of easements, usually called "easements of necessity," will be acquired by implied grant as may be necessary to give effect to the intention of the parties to the severance. The grant of a thing passes everything included therein, without which the thing granted could not be had. But a grant arising out of the implication of necessity cannot be carried further than the necessity of the case requires, and there must be a reasonable user of the easement. Easements are also acquired by prescription, or in other words by possession had during the time and in manner fixed by law, for after the lapse of the requisite period, the law adds the right of property to that which before was possessory only. To constitute a legal possession, there must be not only a corporeal detention, or that quasi-detention, which, according to the nature of the right, is equivalent to it, but there must be also the intention to act as owner. An enjoyment in order to confer a title must have been interrupted, both as to the manner and during the time required by law; but in those easements which require the repeated acts of man for their enjoyment, as rights of way, it would appear to be sufficient if the user is of such a nature, and takes place at such intervals as to afford an indication to the owner of the servient tenement that a right is claimed against him—an indication that would not be afforded by a mere accidental or occasional exercise of it. By the 2nd and 3rd William IV., c. 71, known as "The Prescription Act," the title by prescription is governed by statutory provisions, making length of possession, prescribed by the statute, a bar or title of itself, which was so before only by the intervention of a jury. The Act provides that (Sec. 1) claims to right of common and other rights with profit shall not be defeated after thirty years' uninterrupted enjoyment, unless held by consent or agreement; (Sec. 2), claims of rights of way or other easements the prescription should be twenty years; (Sec. 3), when the access and use of lights to and for any dwelling-house, workshop, or other building, shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent or agreement, expressly made or given for that purpose by deed or writing; and (Sec. 4), each of the before-mentioned periods should be deemed to be those next before some suit or action, wherein a claim to which such periods relate shall be brought into question. These are the general principles relating to the law of easements. It is now proposed to allude to some particular easements and natural rights of a similar character, such as those relating to running water, eaves, subterranean channels, nuisances, and light and air. Running water is the subject of easements of several kinds. The right to receive a flow of water in a natural stream and transmit it into its accustomed course is an ordinary right of property—a natural right. The right to interfere with the accustomed course, either by penning it back upon the land above or transmitting it, altered in quality or quantity to an extent not justified by natural right, is an easement. Without any convention, the occupier of a lower field holds it under servitude of recovering the natural drainage from an adjoining field on a natural level. This servitude is imposed by usage, depending upon natural situation, and extends

to usual floods. But, if a storm floods the adjoining lands in an unusual manner, the landowner may, it seems, fence against it, within the period of prescription. He may raise the banks to keep the stream within its ancient bed, if he can do so without injury to others, and so, perhaps, if the stream changes its course. *Prima facie* the proprietor of each bank of a stream is the proprietor of half the land covered by the stream, but there is no property in the water. Every proprietor has an equal right to use the water which flows in the stream, and consequently no proprietor can have the right to use the water to the prejudice of any other proprietor. Easements of an affirmative nature, the object of which is to interfere with the natural course of the stream, may be acquired by user over a stream flowing through a man's own land. With regard to eaves, although every one in building is bound to construct his house so as not to overhang his neighbour's property, and to construct his roof in such a manner as not to throw the rain water upon the neighbouring land, yet a man may acquire a right by user to project his wall or eaves over the boundary line of his property, or discharge the rain running from the roof of his house upon the adjoining land. As to subterranean channels, the rule of law which governs the enjoyment of a stream in its natural course is not applicable to underground springs or subterranean channels. Any person may dig wells, or cut drains in his own lands with impunity, although he thereby drains his neighbour's land, by interrupting the flow of water percolating through the pores of the soil, and which, but for such cutting or draining, would have reached his neighbour's land, or by causing the water already collected on his neighbour's soil to percolate away from and out of it. The easements acquired and servitudes imposed by an artificial watercourse depend on the purpose for which it has been made and used. In a certain sense all sewers passing through the lands of private owners are easements; but sewers constructed under legislative authority, or which, although originally private property, have become vested in public bodies, such as the Commissioners of Sewers, are regulated by statutory authority. By the "Land Drainage Act, 1861," the powers of Commissioners of Sewers extend (1) to cleansing, repairing, or otherwise maintaining in a due state of efficiency, any existing watercourse or outfall of water, or any existing wall or other defence against water, and to such other matters as are mentioned in the 16th section of the Act. By the interpretation clause "water-course" includes all rivers, streams, drains, sewers, and passages through which water flows; (2) to deepening, widening, straightening or otherwise. The law relating to sewerage is regulated by the Public Health Acts of the 31 and 32 Vict., c. 115 (the Sanitary Act, 1866), and the 38 and 39 Vict., c. 55 (the Public Health Act, 1875), which repealed the 31 and 32 Vict., c. 115, except so far as relates to the metropolis. Under the provisions of those statutes, all existing and future sewers, within the district of the local authority, except sewers made by any person for his own profit, or by any company for the profit of the shareholders, and sewers made and used for the purpose of draining, preserving, or improving land under any local or private Act of Parliament, or for the purpose of irrigating land and sewers under the authority of any Commissioners of Sewers, are vested in and placed under the control of the local authority, which is restricted from making or using any sewer, drain, or outfall for the purpose of conveying sewage or filthy water into any natural stream or watercourse, or into any canal, pond, or lake, until such sewage or filthy water is freed from all excrementitious or other foul or noxious matter, such as would affect or deteriorate the purity and quality of the water. The term "nuisance" is applied in the law indiscriminately, both to a disturbance of an easement already acquired, and infringements upon the natural rights of property, for which an action can be sustained. Strictly speaking, however, the term "nuisance" should be confined to the latter class of injuries only; those acts which though originally tortuous as infringing the common law

rights of property, may nevertheless, in process of time, confer a prescriptive title by enjoyment. Many acts done upon a man's property which are in their nature injurious to the adjoining lands, and consequently actionable as nuisances, may be legalised by prescription. There can, however, be no prescription to make a common nuisance, which is a prejudice to all people, because it cannot have a lawful beginning by licence, or otherwise being against the common law. But when manufactories may have been borne with in a neighbourhood for many years it will operate as a consent of the inhabitants to their being carried on, though the law might have considered them as nuisances had they objected to them in time. A manufacturer may consequently acquire a right to pour his polluted water into a stream as against all new comers, so that those below him, coming after he has acquired the right, may not have the right to complain of what he does to the stream. An injunction has been refused against a private gas company, to prevent hindrance to traffic arising from taking up parts of streets, on the ground that the injury done was accidental and occasional only. The strict right of property entitles the owner to so much light and air only as fall perpendicularly on his land. He may build to the very extremity of his own land, and no action can be maintained against him for disturbing his neighbour's privacy by opening windows which overlook the adjoining property, but it is competent for such neighbour to obstruct the windows so opened by building against them on his own land at any time during twenty years after their construction, and thus prevent the acquisition of the easement. The right to the reception of light and air in a lateral direction without obstruction is an easement. The right to the enjoyment of air is, generally speaking, governed by the same principles as those which regulate the passage of light; and although it is rarely now that a case is established for the interference of the Court upon the ground of stoppage of air irrespective of obstruction to light, such exceptional cases have arisen very recently. With regard to the law relating to the obstruction of ancient lights, the old doctrine which was established by Lord Eldon in what has been termed the parent case of the Attorney-General v. Nichol, seems in substance never to have been departed from. "There are," said his lordship, "many obvious cases of new buildings darkening those opposite to them, but not in such a degree that an injunction could be maintained, or an action upon the case, which, however, might be maintained in many cases, would not support an injunction." It was held also in *Back v. Stacey*, that in order to give a right of action and sustain the issue, there must be a substantial privation of light sufficient to render the occupation of the house uncomfortable, "and" to prevent the plaintiff from carrying on his accustomed business on the premises as he had formerly done. With the single exception of reading "or" for "and," the above ruling correctly lays down the doctrine in the manner in which it would now be supported in action in the Supreme Court of Judicature. There is no difference between the right of a person residing in a town and the right of a person residing in the country to be protected in respect of obstruction of ancient lights, and it is held that the owner of ancient lights is entitled, not only to sufficient light for the purpose of his present business, but to all the light which he may have enjoyed previously to the interruption sought to be restrained.

The memorial stones of a new Primitive Methodist chapel were laid at Melton, next Gravesend, on the 4th inst. The cost will be about £800. Mr. J. Kerridge, of Wisted, is the architect, and Mr. H. Rands the contractor.

Mr. James Ballantine, a Scotch poet, dramatist, and novelist, died on Tuesday, in Edinburgh, at the age of 69 years. He was the head of the firm of glass-stainers which bears his name.

The Lords Justices on Tuesday confirmed the decision of the Queen's Bench that lands acquired by a railway company for the permanent purposes of the undertaking are not superfluous lands which revert to the adjoining landowners, although such lands may not have been required for permanent purposes within ten years of the expiration of the time limited for the completion of the works.

COMPETITIONS.

BARROW-IN-FURNESS.—At a meeting of the new Town Hall committee, held in the municipal offices, Barrow, on the 15th December, Mr. A. Waterhouse's report on the designs submitted, was read, in which he stated that he had come to the conclusion that the first place in the competition should be awarded to "Ima," second place to "Fortis," third place to "Rath-haus." It was moved and seconded, and resolved, that the report of Mr. Waterhouse be received and adopted. The committee thereupon proceeded to open the various letters containing the names and addresses of the authors of the designs, when it appeared that the architect for the designs "Ima," had omitted to enclose his card. "Fortis" was Mr. T. E. Colcutt, 26, Bloomsbury-square, W.C.; "Rath-haus," H. Perkins, and G. B. Bulmer, Park-row, Leeds. The premiums are £150, £100, and £50 respectively. The designs are reviewed on p. 607.

DUBLIN.—A rather important competition is about to take place at Dublin. The time for sending in the designs has been extended from the 10th to the last day of the present month. The directors of the Midland Great Western Railway of Ireland are about to erect 80 to 100 cottages for workmen, and they offer three premiums—viz., £100, £50, and £25 for what they consider the best plans.

ILFRACOMBE.—At a meeting of the Ilfracombe Local Board of Health on Wednesday, last, the designs of Mr. W. Morgan Robbins, submitted in open competition for the laying out public pleasure grounds, were accepted, and a premium of £10 awarded, together with instructions to proceed with the work forthwith.

KILMARNOCK.—After a public exhibition of the competing models for the proposed Burns statue, and giving due weight to the opinion of subscribers as elicited by voting-cards, the committee have decided that the artist of model No. 1 (Mr. W. G. Stevenson, Edinburgh) be commissioned to execute the statue; that the artist of model No. 10 (Mr. D. W. Stevenson, A.R.S.A., Edinburgh) be awarded the premium of £50; and that the artist of model No. 6 (Mr. Charles M. Bride, Edinburgh) be awarded the second premium of £25. These awards are subject to the condition that the three artists agree to execute details as may be arranged by the sub-committee, who retain possession of the models.

LANCASTER.—Designs for a new Congregational chapel to be built at Lancaster, are to be sent in to-morrow, the 22nd inst. The building is to accommodate 800 persons, at a cost of not more than £3,500. The structure will be known as the "Centenary Congregational Church."

OSWESTRY.—A new Board School is to be built at Oswestry for 600 children, and a competition has been instituted. Designs will be received to-morrow (Saturday), the 22nd inst.

READING.—At a meeting of the Reading Town Council, on Tuesday, the following resolution was adopted:—"That, inasmuch as the committee are of opinion that none of the plans are entitled to be awarded the premiums mentioned in their statement, in consequence of non-compliance in some one or more important particulars required as conditions, nevertheless the committee have selected three plans—namely, the plans with the mottoes 'Grosvenor,' 'Plan,' and 'Be Strong'—to which they have determined to award an honorarium of £108 6s. 8d. each, making in the gross the total amount of the premiums offered, but on the special understanding that these plans and drawings are to become the absolute property of the building committee." The names of the successful competitors are as follows:—"Grosvenor," W. T. Sams, of 17, Conduit-street, London, the architect of the Grosvenor Gallery; "Plan," Alexander and Henman, Stockton-on-Tees; "Be Strong," Brown and Albury, Reading. A review of these designs appears on page 608.

New gasworks at Hengold were opened on Thursday sen night. The masonry has been executed by Mr. Gould, of Newport, Monmouthshire, the gas apparatus was put up by Messrs. Willey and Co., of the engineering works, Exeter. The works are capable of producing 4,000ft. of gas per hour.

Building Intelligence.

BALLYMACARRETT.—On Monday the ceremony of laying the foundation stone of a new Presbyterian church was performed. The building will be a parallelogram on plan, with a circular tower attached to one extremity of the vestibule. Sittings will be provided for 430 persons on the ground floor, and the galleries will accommodate 270 persons. All the external walls will be built of the local silurian slate in random coursed work, with dressings of Scabo sandstone. The ceilings will be plastered between the tie beams, which will be stained dark and varnished. The builder is Mr. John Russell, Donegal Pass, and the works are being carried out from the plans of the architects, Messrs. Young and Mackenzie, Donegal-square, Belfast. The cost of the building will amount to nearly £3,000.

DUDLESTON, NEAR ELLESMERE.—The new chancel to Dudleston Chapel was opened on the 12th inst. It has been built of local stone, with Shelvoke stone dressings; the roof is covered with tiles. The chancel is lit by a three-light east window and two two-light side windows; it is separated from the nave by a low stone screen, and fitted with oak stalls. A stone sedilia and piscina are built in the south wall of the sanctuary. The reredos, representing the Crucifixion, is by Earp. Maw's tiles are used. The builder is Mr. W. Bowdler, of Shrewsbury. The architect is Mr. E. Haycock.

EDINBURGH.—A new library has been added to the Royal College of Physicians, Edinburgh. The room is 55ft. long and 32ft. wide. The ceiling is circular, about 27ft. 6in. high at the centre, and is divided into panels, ten of which are filled in with stained glass. The design for the library was one of the last works on which the late Mr. David Bryce was engaged a few months before his death. The whole of the new work has been designed in the Italian style, and in keeping with that of the main hall adjoining—the architects being Messrs. David and John Bryce.

HEREFORD.—A new middle-class college is about to be erected at Hereford, from designs by Mr. F. R. Kempson. The style adopted is Early Gothic. The building will be of brick, relieved with terra-cotta and stone dressings, and the roofs will be covered with Broseley tiles of a dark colour. The erection of the college and its accessories is estimated to cost £13,000. The contract for the building has been taken by Mr. James Bowers, of Hereford.

INCORPORATED CHURCH BUILDING SOCIETY.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels, held its usual monthly meeting on Monday. Grants of money were made in aid of the following objects, viz.:—Building new churches at Mount Hawke, near Scorrier, Cornwall; Sharlston, near Wakefield; and the Lodge, near Ruabon. Rebuilding the at Pebrockstowe, near Beaford, Devon; enlarging or otherwise improving the accommodation in the churches at Bledington, near Chipping Norton; Chaldon Herring, near Dorchester; Croxdale, near Durham; Hargrave, near Chester; Patney, near Devizes; Pembroke, St. Mary; St. Giles-in-the-Heath, near Launceston; Southburgh, near Thetford; South Shields, Holy Trinity; Sutton-Bonington, near Loughborough; and Wellington Heath, near Ledbury. Under urgent circumstances the grant formerly made towards reseating and restoring the church at Sutton-on-the-Forest, near Easingwold, was increased. Grants were also made from the Special School Church and Mission House Fund towards building mission churches at Chester, St. Barnabas; Fisher-street, in the parish of Barking; and Haggerston, St. Paul, Middlesex.

KEIGHLEY.—New schools in connection with the Congregational chapel at Keighley have been opened. Messrs. Hargreaves and Bailey, of Bradford, were the architects. The building is in the Italian style. The assembly-room is approached by a short flight of steps, 10ft. wide. This room is 9ft. long, 3½ft. wide, and 28ft. high, exclusive of the orchestra, which is 21ft. by 11ft. There are also six class-rooms

communicating with this room, and six classrooms on the upper floor. Accommodation is provided in the class-rooms for about 600 scholars, including 140 infants, and nearly 800 can be seated in the assembly-room. The lecture-room will also seat about 100. The total cost will be about £4,350.

LISCARD.—St. Mary's Church, Liscard, intended for the inhabitants of a large district carved out of the parish of Wallasey, was consecrated last week. The church is designed in one span, with the addition of transepts, but without side aisles or pillars, so that the view of the east end is entirely unobstructed. The style chosen is Early Perpendicular. The walls are built of local grey stone, relieved with Run-corn stone dressings; in the interior the open seats are of polished pitch pine, and the floor of the nave is laid throughout with patent wood block pavement. The decorative art has been almost exclusively confined to the chancel, and consists of sgraffito work on the walls. The floor of the chancel is laid with marble mosaic, and this and the sgraffito work has been executed by Messrs. G. Trollope and Sons, of London. The span of the roof is 38ft. 6in. The heating is effected by Messrs. G. Haden and Sons' warm-air apparatus, and the lighting by handsome pendants from the ends of hammer beams of roof, supplied by Messrs. Freeman and Collier, of Manchester. The church, which contains about 620 sittings, has been built under the immediate superintendence of Mr. E. W. Nobbs, Mr. Grayson being the consulting architect. The contractor was Mr. Ridehalgh, of Liscard.

LONDON SCHOOL BOARD.—At the meeting of this Board, held on Wednesday, the tender of Messrs. William Downs and Co., of Union-street, Southwark, amounting to £6,594, was accepted for the erection of a school for 436 children in Graystone-place, Fetter-lane, E.C., and that of Mr. B. Nightingale, of Albert Works, S.E., amounting to £7,332, was likewise accepted for the erection of a school for 587 children on a site in Buckingham-terrace, Kensington. A resolution of the Board of the 1st August last, accepting the tender of Messrs. Wall Bros. for the erection of the Tanner's-hill, Deptford, school, was rescinded in consequence of certain restrictions imposed by trustees, and the offer of the contractors to erect the new school for 572 children in accordance with the altered plans, on the contract schedule of prices, was accepted. Various alterations and additions were sanctioned to be made to school buildings, the most important being to those in Tottenham-road, Kingsland (to cost £950); Peter-street, Farringdon-road (£890); Mansfield-place, Kentish-town (£185); and Wornington-road, North Kensington (£143 8s.). Tenders were accepted for shelter porches at the schools in Canonbury-road, Islington; Drury-lane; and Mantua-road, Battersea. For furniture and fittings to new schools the following expenditures were authorised:—Curtain-road, Shoreditch (891 school places), £594 5s.; Holland-street, Southwark (815), £643 8s. 6d.; Chicksand-street, Whitechapel (952), £468 7s. 4d.; and Northey-street, Limehouse (enlarged by 281 school places), £229 8s. 2d.

METROPOLITAN BOARD OF WORKS.—At the meeting of this Board on Friday it was agreed to contribute one-half of the net cost (estimated at £2,500) of a proposed improvement by the Vestry of Bermondsey in Riley-street, Bermondsey, by which it will be widened to 30ft., and also to make a similar contribution of one moiety of the cost (estimated at £79,284) of the widening of Golden-lane by the Vestry of St. Luke. This thoroughfare is to be widened from an average of 22ft. to a uniform width of 50ft. throughout its length. The Corporation of the City will carry out that portion between Red Cross-street and Brackley-street, and the vote now made refers to the remaining portion (900ft. long) of the lane from Brackley-street to Old-street. The works committee signified their approval of the plan and elevation of the statue of John Stuart Mill (of which Mr. Woolner is sculptor), to be erected opposite the School Board offices on the Victoria Embankment, and it was remitted to the parks committee to give directions for laying out the surrounding grounds. The works committee brought up

a report on the conclusions arrived at by the select committee of the House of Commons on the Fire Brigade. The report mainly dealt with the recommendation of the committee that the control of the brigade should be transferred from the Board of Works to the Police Commissioners, and adduced many arguments against the proposal. The report was adopted. The works committee also reported that they had considered the 94 applications for the appointment of assistant in the drawing office of the superintending architect, and regarded 16 as the most eligible, from whom again they had selected six names for the final choice of the Board—Messrs. Ebbetts, Gough, Millwood, Perry, Taylor, and Wingate. The Board proceeded to the election on the exhaustive process, the candidate securing the least number of votes being successively struck off, until the list was reduced to two, thus:—First voting—Millwood, 28; Gough, 18; Wingate, 6; Ebbetts, 5; Perry, 3; and Taylor, 2. Second voting—Millwood, 25; Gough, 16; Wingate, 4; Ebbetts, 3; and Perry, 1. Third voting—Millwood, 25; Gough, 15; Wingate, 4; and Ebbetts, 3. Fourth voting—Millwood, 26; Gough, 9; and Wingate, 2. Fifth voting—Millwood, 26; Gough, 7. Mr. Millwood was accordingly elected. In reference to a recent memorial from Penge, as to more efficient protection from fire, it was stated that a hose reel had been recently supplied to the hamlet, and the clerk was directed to inform the Penge Vestry that the Board is not at present prepared to place a fire-brigade station in the district, but that telegraphic communication will be established between the Penge police station and the fire-brigade station at Sydenham. An amended design for a medal proposed to be given to fire-brigade men who distinguish themselves by extraordinary bravery at fires, was approved; it was decided that the medal be of silver, and the fire-brigade committee was authorised to have a die made and medals struck. An application of Mr. J. H. Huxtable, on behalf of Mr. C. Linton, for approval by the Board of a plan for the construction of a building at No. 18, St. Mary-axe, divided by patent wrought-iron curvilinear bank shutters instead of iron doors, as prescribed by the Building Act, was not granted. An information was received from the managers of the Brentwood District Industrial Schools of their intention to apply for a loan of £15,000 for the erection of a new infirmary, probationary wards, at their district schools.

MONTGOMERY.—The nave and north transept of this interesting cruciform church have been opened after restoration. They are fitted with oak open seats. Painted arches have been substituted for square openings between nave and north transept, in character with those on the south side. There are new wood floors, and pavements of Maw's tiles in nave, transepts, and chancel. The thirteenth-century windows have not been touched. The chancel contains the old returned stalls, and there is an extremely fine double-rood screen with loft over, which, tradition says, was removed from a religious house—probably Cherbury. The walls have been repaired where necessary, and underpinned. In the south transept, or Ly-more Chapel, is the singular canopied tomb of Richard Herbert, Esq., and Magdalen, his wife, who are represented with their eight children. One of the sons was the well-known Lord Herbert of Cherbury, and another (as he says) his "holy and exemplary" brother George, the poet whose name is so intimately associated with the place of his birth, Montgomery. The date is 1600. The lectern and other fittings are of oak. The oak memorial pulpit, with niches containing figures of the twelve apostles, &c., is being executed by Earp. The church is warmed by hot water. Messrs. Powell and Co., of Prees, are the contractors. The architect is Mr. E. Haycock, of Shrewsbury.

PATSHULL.—The tower of the Church of St. Mary, Patshull, near Wolverhampton, has been much altered and improved in the formation of a belfry to receive a fine peal of six bells, made and hung by Messrs. Mears and Stainbank, of London, who have also applied their chiming apparatus for occasional use. The ringers have now a commodious chamber

(formerly the bell-chamber), approached by an external staircase, instead of having to ring from the inside of the church, as heretofore, in the position where the bells were formerly hung. From the main cornice, which is almost on a level with the old ceiling or vaulting of this chamber upwards, the octagonal portion of tower and dome was wholly removed, and the floor of the new bell-chamber is now at this level, the upper portion of the tower, which forms the new bell-chamber, being reconstructed from this point. The character of the work is in keeping with the body of the church, consisting of a circular-headed belfry window on each of the four sides, embraced in the Tuscan order, with square quarter pilasters and rusticated angles. From the blocking over the entablature of the order rises the dome upon an appropriate base; this is covered with lead, and crowned with a perforated cupola terminal and gilded ball and vane surmounting the whole. The flag of the vane is the same that stood at the apex of the former dome. The circular windows on three sides of the ringers' chamber are glazed, in place of the old louvres, and an iron grille has been fixed in each. It is proposed to open a window into the church at the west side of the tower, where the niche with a statue of King Charles II. now stands. The entire height of the tower to the top of the vane is 86ft.; the old tower to the same point was 71ft. The builder's work has been executed by Mr. Benjamin Graham, of Huddersfield, who has obtained the stone required for the work from the quarry in Patshull High Park. The whole of the works have been carried out from the designs and under the supervision of Mr. Wm. C. Banks, architect, of Gracechurch-street, London.

WETHERBY.—On Friday week the new chancel which has been added to the church of St. James, Wetherby, was opened. A new east window, filled with stained glass, has been erected at a cost of £200. A new altar of oak, by Mr. G. B. Thain, has been provided. It is in the Early English style. Over the altar and touching the window-sill is a redos in plaster, designed by Mr. Henry Walker, the contractor. The floor within the altar rails and in the centre of the chancel has been laid with tiles supplied by Mr. R. Minton Taylor, of Stoke.

WEYMOUTH.—The extension of the break-water at Weymouth, for the protection of the harbour during easterly gales, is erected on the rubble ground first deposited in 1827, under the direction of the late Sir J. Cubitt. It is 250ft. in length from the end of the old break-water, or outer pier; the width on the top is 18ft., the sides battering 3in. to the foot. It is constructed of concrete built in situ. The upper edge of the work is protected by a heavy coping of Portland roach stone, joggled and cramped. The engineer of the works is the borough surveyor, Mr. W. Barlow Morgan, under whose personal supervision it has been constructed. The contractor is Mr. John Jackson, of Glasgow, the foreman of the works being Mr. Challoner.

The annual dinner of the Society of Engineers was held, on Tuesday evening, at the Guildhall Tavern, under the presidency of Mr. Thos. Cargill, C.E., who, in proposing the toast of the evening, claimed that the measure of the civilisation of a country is the number of railways it contains.

The Town Council of Exeter have decided by a large majority, to purchase water works in the city, on the basis of payment of 8 per cent. on the capital of the company. In addition to an expenditure of £94,000 on the purchase of the old company, the council propose to either go to Dartmoor or bore into the old red sandstone for a fresh supply for drinking purposes, at an outlay estimated at from £50,000 to £100,000.

The Wantago Town Commissioners have commended, in accordance with their surveyor's report, to lay Val de Travers asphalt on two sides of the Market-square, and in other thoroughfares, at a cost of £900, and to completely reform and raise the Market-square at a further cost of £320. The money has been borrowed on mortgage of the rates for a term of 16 years.

The Town Council of Blackpool have applied to the Local Government Board for sanction to borrow £26,000, for purposes of sewerage, &c., in the town, and £5,785 for sett-paving the carriage-drive on the south-shore promenade, from the Manchester Hotel southwards.

PUBLIC HEALTH,

The Leading Journal of Sanitary Science and Progress. The number published December 21 contains articles on Urban Surveyors and Model Bye-laws, The Fire Brigade and the Board of Works, Municipal Precept and Example, The Tottenham Sanitary Association, Treating Diphtheria with Alcohol and Quinia, Lectures by Ladies on Health, The Adulteration of Food, Treatment of Relapse in Leads, Curiosities of Suicide, The Air of Glasgow, Gymnastics and Hygiene, Open-Air Treatment of Phtisis, The Preservation of Food, Public Health Reports, Legal Intelligence, Correspondence, Editor's Table, Cleanings, &c. Price 2d.—31, Tavistock-street, Covent-garden, W.C.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Cheques and Post-office Orders to be made payable to J. PASSMORE ENWARNS.

ADVERTISEMENT CHARGES.

The charge for advertisements is 6d. per line of eight words (the first line counting as two). No advertisement inserted for less than half-a-crown. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 6s.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

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Cases for binding the half-yearly volumes, 2s. each.

RECEIVED.—D. R.—J. D. S.—G. W. H.—W. B. and Co.—E. O.—S. G. C.—H. G.—J. H. T.—J. B.—W. H. P.—R. Lloyd W.—J. N.—J. F. B. (with photos)—B. and R.—M. H. (Your suggestion shall receive consideration.)—J. S. and Sons.—D. P. F.—H. G.—H. P. and J. B. B.—C., Sons, and B.—G. A. W.

DRAWINGS RECEIVED.—D. P. F.—J. S. and Sons.—C. J. P.—G. A. W.

G. R. W. (Mitchett's F pens for general use in pen-and-ink architectural purposes are as good as any.)—A VOPULIN. (You have no other means of protection than a patent, and if you are not prepared to take one out you must be contented to see parts of your invention patented by others.)—HUGH. (Try at Knight and Co., Fleet-street.)—C. FOWLER. (It is impracticable, and on the whole undesirable.)—LINCOLN. (The Architectural Association is the only body that lends books to country subscribers. Write to the Secretary, 9, Conduit-street.)

DESIGNING CLUB.—A. L. B. (We have told you more than once that your drawing shall be returned if it comes to hand.)—W. E. W. (Your objections do not affect our decision.)

DRAWINGS RECEIVED.—Medicus.—Dicere Volo.—Ambition.—Loisir.—Silkworm.—Excelsior.—A. and B.—Naiveté.—Johnny.—Trefoll.—L in G.

Correspondence.

SOUTHPORT NEW MARKETS COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—When the subject was under discussion at a previous meeting of the Town Council, the designs marked "Regardez Moi," "Sanitas," and "Experientia Docet," were recommended by the markets committee for the first, second, and third prizes.

The report of the council meeting adjudicated the premiums as follows:—1st, "Iron;" 2nd, "Southport;" 3rd, "Regardez Moi." Evidently the council themselves (as inferred from the reported speeches) generally did not agree with the selection made by Mr. Waterhouse. Mr. Councillor Hacking—a prominent exception—stated that he thoroughly agreed with Mr. Waterhouse in awarding the first prize to "Iron." This seems a strange inconsistency; for at the previous council meeting he stated there was, in fact, only one set of plans—those of "Sanitas"—which agreed with the instructions.

So far as regards a covered market, the sanitary and general arrangements are far more important than architectural design.

In reference to the selection of referee Mr. Waterhouse stands in the foremost rank of living architects.

Mr. Waterhouse, in his report to the committee, has laid down certain principles, or essential points, to be observed.

1. The cost of each design.
2. The value as a source of revenue considered from two points—(a) the extent of accommodation provided, and (b) the quality of that accommodation—such as the means taken to direct the stream of public traffic to all the stalls equally.
3. The isolation of the fish market, and its contiguity to the yard.
4. The treatment of the basement—especially as to its lighting and mode of access—so as to make it worth the cost of its construction.
5. The appliances for lighting and ventilating the markets themselves.
6. The suitability of the designs to the general architectural character of the town.

The report implies that the selection was made of plans that generally embodied the above features. Let us look at the plans. Not one of the premiated carries out the third essential point. The fish market has not the slightest contiguity to the open yard, but, on the contrary, this market is placed as far as possible away from the yard.

Again, the treatment of the basement. A very casual examination of the drawings shows that not one of the three plans could be built as drawn—the level of the main sewer is so shallow that the cellars would be constantly flooded. "Iron," the first prize, would never have a less depth of water standing therein than from 1ft. to 2ft., and both the other designs would also suffer. "Regardez Moi" plainly shows the relation of the bottom of sewer to the cellar. No professional eye is required to see that these plans, so far as regards the basement, are such as could not be tolerated, for they would be, in truth, nothing but cisterns for deposit of sewage water.

It seems very singular that a plan with the above serious disadvantages, and also with the objections stated by Mr. Alderman Sutton in his speech—a fish market provided for only eight stalls (though on looking at the plans I fail to see more than five stalls), w.c.'s adjoining the main and principal entrance, and architecturally considered, occupying the most prominent corner of the building, deficient entrances, and, I may also add, no provision for weighing on any large scale—should obtain the first prize, and that, too, evidently weighing against the opinion of the markets committee, who, so far as arrangements and convenience of plan of market are concerned, ought to be well able to judge.

Regarding the cost of the erection of "Regardez Moi," the architect's own report states distinctly that the plans could not be carried out for anything like the sum fixed by the "instructions."

As one of the twenty-five competitors ("Sanitas"), I submit that the selection is unfair. The selected plans do not comply with the printed instructions to architects, nor are they arranged with any regard to the levels shown on the plan attached to the instructions.—I am, &c.,

JOSEPH HARDING.

49, Lime-street, Preston, December, 1877.

DISHONEST ARCHITECTS.

SIR,—There has been much discussion lately on architects taking illicit commissions, and it is to be sincerely hoped that the exposure will lead to the discontinuance of such dishonest practices.

Believing as I do that publicity will do much to check the evil, I am desirous of bringing to your notice the following case:—My employer is an architect of some standing, and is one who would scorn to touch a farthing offered to him by way of a bribe or commission, and, in fact, would look upon such an offer as a great insult to his dignity. This high-minded gentleman having some works in hand, important enough for the services of clerks of works, has

induced his clients to employ his assistant (myself) to act in the capacity of travelling clerk of the works—part of the time being employed on the works, and the remainder at the office. By way of remuneration each client was informed that so much per week (naming a sum) with travelling expenses, in addition, would be required. To this the clients consented, believing, without doubt, that the architect would receive payment merely for my time and costs on the works. When forwarding a certificate for payment to the builder an account is made out in my name for salary as clerk of works, on receipt of which the client sends my employer a cheque for same. I am, however, paid my usual salary as if this arrangement did not exist, and consequently the architect pockets the client's cheque, and also makes a profit of some 60 per cent. on the transaction, as the rate charged for my services is considerably more than the cost to my employer. Thus by overvaluing my time to the client the architect contrives to make this large bonus without the slightest scruple.

This wrong could easily be prevented if the client made the cheque payable to my order, and also insisted on my receipt for same—for in either case I should decline to attach my signature, on the ground of being a party to the fraud. I will leave your readers to judge of the fairness and honesty of these proceedings, merely remarking that I greatly regret my inability to interfere under the circumstances.—I am, &c.,

FIAT JUSTITIA.

RESTORATION OF ANCIENT BUILDINGS.

SIR,—I am glad to find from Mr. Gough's letter in your last issue that the Society for the Protection of Ancient Buildings is coming to the front. However, in the particular case of North Frodingham Church, it is impossible to know who is in the right without seeing the drawings of the building as it is, side by side with the plans for restoration. When an architect of the present day adds new work of his own to an old building, his great object appears to be to copy ancient examples so carefully as to prevent future critics from detecting the fact that restoration has taken place at all.

Now, this is essentially bad and false art. When new work is put in, it should be executed in such a manner as to leave no doubt which portion belonged to the ancient fabric, and which portion is the new link in the historical chain of features added in the nineteenth century. Up to a few years ago there was no difficulty in assigning a date to any altered part of a building, because a later style was always a development of a previous one. This kind of comparative criticism is now impossible, for the manner in which an edifice is designed by the modern architect is as follows—viz., the elevation is obtained by consulting several volumes of plates from the BUILDING NEWS, and taking a window here, a door there, and a chimney-stack from another page; then the plan is made to suit the elevation; finally, a few carved capitals, &c., are added out of Viollet-le-Duc, or perhaps a picturesque dormer window from a sketch made while on a summer tour in Normandy. The drawings are then fit to put into the hands of a contractor, who does the rest.

There are two remedies for this state of things, 1. Architects may design more nobly, and develop a style which has sufficient individuality to be unmistakable; or (2), if they will persist in servilely reproducing the work of past ages, then, whenever a church is restored, the Society for the Protection of Ancient Buildings should insist on careful plans and sketches being made, showing accurately the state before and after restoration. Copies of these drawings should be hung up in the vestry for the benefit of visitors, who would then know whether to bless or curse the memory of the restorer.

I know of no case in which this latter alternative has been adopted, and perhaps Sir Gilbert Scott or Mr. Street, who have restored so many churches, may be able to tell us the reason for not having adopted so apparently obvious a course.—I am, &c.,

J. ROMILLY ALLEN.

31, James-street, S.W., Dec. 10.

Intercommunication.

QUESTIONS.

[5222].—**Damp in Walls.**—Can any reader give a remedy for damp in an internal brick wall? The bricks were shipped to the building and thrown into the sea by the contractor, and must have retained a certain amount of salt, which is thrown out, and discolours the paper. The proprietor does not wish to strap, lath, and plaster the walls anew (they are now plastered on the brick), as this alters the cornices, skirting, and architraves, which are not easily matched. Has any one tried felt, tinfoil, or other substances, under the paper, and with what effect?—**DAMP.**

[5223].—**External Plaster Work.**—Will any of your readers state what material they use, or is generally used, for plastering externally the framing of half timber work? Builders inform me that Portland cement is the only material that will resist the weather; but surely a material (perhaps putty and silver sand) can be used of a more artistic colour. I am aware that rough cast is used, but I am speaking with reference to a finished face?—**DISCIPULUS.**

[5224].—**Floor.**—Will any of your subscribers kindly give a diagram of a floor betwixt a wooden two-story bay-window without the beam showing below the ceiling of the bottom room?—**BEVERLAC.**

[5225].—**Plaster Roof.**—Will any reader inform me the best way to run an elliptic Gothic rib in a plaster ceiling of a schoolroom, 22ft. wide? The roof is lath and plaster against the rafters. The principals and the purlins will be moulded in plaster in the shape of a common ogee, stuck on the edge 3in. below face of ceiling. What I want to know is how to work out the elliptic Gothic (lath, P, 3in. wood) rib, which projects from face of L, P, 3in. Is it best to make a trammel or how?—**A YOUNG PLASTERER.**

[5226].—**Brick Ornament.**—Can any reader inform me whether there are any books published containing ornamental brick spouts and cornices of various sizes, and if so, by whom they are published?—**YOUNG BUILDER.**

LEGAL INTELLIGENCE.

NEGLIGENT WORKMEN.—A case of some importance to both employers and workmen was decided in the Salford County Court on Monday. A mechanical fitter, named Garside, formerly employed by Messrs. R. Neill and Sons, builders, sued that firm for wages amounting to 34s. alleged to be due to him. The defendants admitted the claim, but pleaded that the plaintiff owed them a much larger amount. Garside, it appears, had been employed in taking down a mortar mill at the new Central Station, and it was alleged that in consequence of his neglect the pan of the mill had been broken, and Messrs. Neill had been obliged to make good the damage thus done. This was the basis of the counter-claim, and Messrs. Neill presented their demand under section 3 of the Act of 1875, which gives power to every county court in disputes between masters and workmen to "adjust and set-off, the one against the other, all such claims on the part either of the employer or the workman arising out of or incidental to the relation between them, as the court may find to be subsisting, whether such claims are liquidated or unliquidated, and are for wages, damages, or otherwise." On a review of these facts, the judge came to the conclusion that the allegation of negligence had been established, and his decision was that Garside should pay Messrs. Neill the sum of £10 11s. 3d., being the amount of damage done to the mortar mill, minus the 34s. due as wages and the price the broken pan realised as old metal.

MR. HANKEY AND THE BUILDING ACT.—On Tuesday, at Westminster, Mr. Henry Alers Hankey, of Queen Anne's-mansions, St. James's-park, was summoned by Mr. E. Dru-Drury, the district surveyor, for various infringements of the Building Acts. There were six summonses relating to the construction of the mansions at Queen Anne's-gate, and the summonses alleged that the defendant had constructed a building of greater area than 3,600 square feet, that he had omitted to close the openings of the party walls by unwrought iron doors of the thickness prescribed by the Act, &c.; that he had constructed the building of greater height than the plans specified, that the floors were constructed of other than fireproof and incombustible materials, and that openings had been made in the walls separating the west wing from the south wing, which made them one building, in contravention of the Building Act of 1855. In opening the case a solicitor, who represented the Board of Works, said the summonses might be summed up under three heads—viz., height of building, floors, and passages, and party walls. The Act provided that no dwelling-house should be erected of a greater height than 100ft., but should it be proposed to construct one of greater height it would be necessary to ask the permission of the Board, and Mr. Hankey sought that exemption in November, 1875. With regard to the north wing, Mr. Hankey had permission to build to the height of 130ft.; he had, however, built to the height of 141ft. With regard to the south wing, permission had been given to go as high

as 141ft., whereas it would be proved that the height was 147ft. 10in., and the other section applied to a portion of the building for which no permission had been granted at all. Since these buildings had gone on Mr. Hankey had three times, but unsuccessfully, endeavoured to obtain the permission of the board to carry up the building beyond the height in the license. With regard to the west wing, which had been constructed to a height of 111ft., or 11ft. in excess of the ordinary height of building, no permission had been given at all to exceed 100ft. Counsel then proceeded at some length to argue the law on the second point—viz., the forming of the floors and corridors, to be constructed of incombustible material; in buildings intended for dwellings of more than 12,500 cubic feet the floors of corridors should be constructed of stone or other fireproof material, and in this instance concrete had been used. Of course this was somewhat uncomfortable, and the floors had been covered with wood, which, he contended, was combustible material, and thus an infringement of the Act. Mr. Poland contended that they had as much right to put down wood as carpet or kamptulicon. The object was to prevent the spread of fire from floor to floor, and in this case the precaution had been taken by the use of concrete. Mr. Bazalgette contended, however, that the boarding was part of the floor as construed by the Act, and, if part of the floor, then not incombustible. He then went to the third section of the alleged infringements, and pointed out that, instead of having double iron doors between two separate buildings, Mr. Hankey had inserted single concrete doors. That might or might not be better than the iron doors, but the terms of the Act had not been complied with, and that was all with which he had to do. The case was then adjourned for a fortnight.

A "BUILDER-SURVEYOR'S" CHARGE FOR PLANS.—*Shaplin v. Woollard.*—Lambeth County Court.—In this case the plaintiff, a builder and surveyor, sued the defendant, a grocer, for £2 2s. for preparing sundry drawings and estimates in respect of certain property possessed by the defendant in Lordship-lane, Camberwell. It appeared that in April last the defendant called at plaintiff's offices on Peckham-rye, and requested him to make some drawings and specifications for the purpose of converting some house property into shops. On the part of the plaintiff, it was contended that the order had been virtually given, the work properly done, and adopted by the defendant in his conversion of the premises in question. For the defence it was stated that plaintiff was never employed, but was only a volunteer competitor, and that the property in question had not been built or altered according to his plans. After a deal of evidence, his Honour said the ordinary course was that, unless there was a special bargain, no charge was to be made if the work was not accepted. Judgment would be for the defendant, with costs.

ACTION FOR CARPENTER'S WORK.—*Delay in Completion.*—*Webster v. Blanche.*—Bow County Court.—This was an action brought to recover the sum of £23 for money paid. According to the plaintiff's statement, borne out by his witnesses, it appears that in March last he had some houses that wanted finishing, and the defendant agreed to do the required work to two of them for £120. Plaintiff being satisfied with the work, gave him two more to do, the price to be the same as the first. He went on with the work for some time, and £102 had been paid on account of the second contract. On the 28th of July, plaintiff finding defendant was not going on with the work, complained to him about it, but he took no notice, whereupon plaintiff wrote, telling him that unless he immediately continued the work he should have to get somebody else to finish it, and should hold him responsible for the amount that should be charged. Upon this the defendant refused to do anything more to the houses, and plaintiff called in another builder, who finished the work and charged £41, which he (plaintiff) paid. Defendant said he would have finished the work, but could not do so when plaintiff wanted him, as he had a very important job to do. With regard to the amount charged by the other builder, he considered it excessive—in fact, he, as a practical man, could have done all the work that wanted doing to complete the houses in a week. His Honour, after hearing the witnesses on both sides, gave judgment for the plaintiff for £22 10s., and costs.

CHARGE OF CONSPIRACY TO DEFRAUD AGAINST BUILDERS.—At the Guildhall Police-court, on the 18th inst., William Smale, builder, of 57, South Lambeth-road; Samuel Greenslade, builder, of 5, Jelf-road, Brixton; and Charles Francis Knox, of 11, Newgate-street, appeared before Sir Andrew Lusk to answer a summons charging them with conspiring to cheat and defraud the creditors of Smale. Mr. Besley and Mr. Straight appeared for Messrs. Eastwood and Co. (Limited), brick merchants, Belvedere-road, Lambeth, who prosecuted, and Mr. Poland appeared for the defendants.—Mr. Besley said the defendants' design evidently was so to arrange matters that Smale's creditors should not receive one farthing of his money. Smale was a builder in a very good way of business, and having very good credit. There was no doubt that at some time he was solvent, or very nearly solvent, and that he then obtained credit to the extent of £4,000 or £5,000. Smale then gave a bill of sale to Mr. Knox (his solicitor) for £1,314, upon all his moveable plant

and business effects. Then he had some houses building at Brixton, to which Messrs. Eastwood and Co., had supplied goods on his order, and those he transferred to Greenslade, a man in his employ as a foreman at foreman's wages, and he also gave him a bill of sale on his furniture. The only thing left was the benefit he had in a contract, and that he assigned to his father for an alleged advance of £600, so that there was not one farthing for the creditors. Smale next sent a circular round to his creditors to try and liquidate, but this fell through. Messrs. Farniloe and Sons then instituted proceedings in bankruptcy, and in proving his bill of sale for £1,314, Mr. Knox produced cheques for various sums advanced to the defendant, Smale, at different dates, making up the amount. The counterfoils agreed with the cheques, but when Mr. Knox's banking account was examined, it was found that whenever a cheque had been given to Smale as an advance, a similar sum had been paid into the bank on Mr. Knox's account only a day or so before, and in many instances that money was Mr. Smale's money. Mr. Knox's balance had frequently been as low as 6s. 8d., and several of his cheques for £3 10s. and £4 had been dishonoured. At the examination, before Mr. Registrar Brougham, he called on Mr. Knox to show how he made out his ability to prove his claim under the circumstances, and he replied that he had friends who had advanced money to him for the purpose, and he had money in his pocket which he never passed through his bank. Mr. Registrar Brougham called upon him to furnish an account, which he did, and the account showed that from Jan. 10 to June 2 he had advanced Smale £3,850. Mr. Registrar Brougham said he did not believe him, and refused to allow his claim. Messrs. Farniloe had some claim on buildings which Smale was erecting at Brixton, but on applying for the money they were told that the buildings were Greenslade's. With regard to the benefit in the contract, which the defendant, Smale, had made over to his father, under a bill of sale, the other parties to the contract refused to acknowledge the bill of sale, and had since paid the amount into the hands of the trustee.—Mr. William Stopher, solicitor, of Coleman-street, then gave formal evidence, and the case was adjourned, Sir Andrew Lusk admitting Knox to bail in his own recognisances in £500, and the other defendants—Smale and Greenslade—each in two sureties of £100 each, and themselves in £200 each.

ARCHITECTS' FEES.—*Laurie v. Davis.*—This was an action in the Lord Mayor's Court to recover £120 for professional services in preparing plans of a projected skating rink, which the defendant was about establishing at Lewisham, at an estimated outlay of £3,000.—The defendant pleaded never indebted, and had paid a sum of £10 into court. Beyond that he averred that he was not liable. The plaintiff and the defendant had been acquainted for some time, and the result of a correspondence and conversation between them was, that the plaintiff was engaged to prepare the plans for the rink, but the scheme was never carried out.—The jury found a verdict for the plaintiff.

STAINED GLASS.

BIGGLESWADE.—A stained glass window has been placed in the large east window of the parish church in memory of the late Mr. Barnett, of Stratton-park. In the centre is a representation of the Transfiguration, and on either side are grouped scenes in our Lord's life, numbering in all eight. The tracery openings are filled with figures of the apostles and evangelists.

HARROGATE.—A memorial window has been placed in the baptistery in the west end of Christ Church, High Harrogate. The subject is the baptism of Christ by St. John. In the upper portion of the window is the sacred monogram, beneath which is a canopy. Under the canopy, and occupying fully one-half of the window, is the principal subject. Christ is represented standing in the water, and St. John upon the bank in the act of performing the rite, while over the head of the Saviour the dove is hovering. In his hand St. John holds a cross, to which is attached a banner bearing the inscription "Ecce Agnus Dei." On the bank are the symbolical flowers, iris, water-lily, &c. The window was designed and executed by Messrs. Shrigley and Hunt, Lancaster.

A meeting of the delegates from the different master builders' associations was held on Tuesday, at Birmingham, for the purpose of forming a national association. It is proposed that Birmingham should, on account of its central position, be its headquarters.

NOTICE OF REMOVAL.

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THE Home Secretary distributed the prizes gained by the students attending the metropolitan drawing classes in connection with South Kensington Museum at the Cannon-street Hotel last week. He said that, although we had done much lately for education, he thought we had little to boast of, as we did not move in the matter until we saw it could not, with safety to the nation, be longer delayed. Until a very recent date he considered that taste in art was very low in this country, and in proof of this he pointed to what he called the vulgar exhibitions to be seen in the interiors of the houses of the great. Mr. Cross then contended that, even for the benefit of our artificers, the public taste should be so educated that nothing, except founded on the principles of art, should be demanded from them.

A DISPUTE between the Metropolitan Board of Works and the New River Company was settled on Monday, for the second time, against the former. They have paid at the rate of one shilling per thousand gallons for the water supplied for watering the Embankment and the public gardens thereon. The Board claimed that a section in an Act of 1852 entitled them to the use of this water for sixpence per thousand gallons; to which the company replied that that reduced rate could not be applied to so intermittent a supply as one for the summer only. The Lords Justices, on Monday, confirmed the decision of the Queen's Bench in favour of the New River Company.

THE programme for the 20th session of the Society for the Fine Arts has just been issued, and shows that there are arranged for the ensuing year five conversazioni the first being fixed for the 17th January, and held at the rooms of the Society of British Artists, Suffolk-street, W.; a Shakespearian recital by Miss Herand; and six lectures, including "The Decoration of Town Houses," to be treated of by Mr. R. W. Edis, F.S.A. (March 17th); "The Historic Relation of Secular and Sacred Art," by Mr. J. Forbes Robertson (April 4th); and "Pen and Pencil Sketches in Brittany," by Dr. Phené, F.S.A. (May 16th).

THE annual general meeting of the Institution of Civil Engineers, "to receive and deliberate upon the report of the council on the state of the Institute, and to elect the officers for the ensuing year," was held on Tuesday. A motion for the adoption of the report led to a long discussion, but was ultimately carried in conjunction with another resolution, directing the incoming council to prepare, for the consideration of a special general meeting of members and associates, such alterations in the bye-laws, as the suggestion contained in the report with reference to classification may require. The premiums and prizes awarded at the close of last session were then presented by the president. The report of the scrutineers declared that the following gentlemen had been duly elected to fill the several offices in the council for the ensuing year:—Mr. John Frederic Bateman, F.R.S., president; Mr. J. Abernethy, Sir W. G. Armstrong, C.B., F.R.S., Mr. W. H. Barlow, F.R.S., and Mr. J. Brunlees, vice-presidents; Mr. W. Baker, Sir J. W. Bazalgette, C.B., Mr. F. J. Bramwell, F.R.S., Mr. G. B. Bruce, Sir John Coode, Mr. W. Froude, M.A., F.R.S. Mr. G. F. Lyster, Mr. W. Pole, F.R.S., Mr. C. W. Siemens, F.R.S., Mr. D. Stevenson, F.R.S.E., Sir Jos. Whitworth, Bart., F.R.S., and Mr. E. Woods, members; and Col. H. Hyde, R.E., Mr. J. P. Knight, and Major-General Scott, C.B., R.E., F.R.S., associates.

On the 13th inst., died, at his residence in Limerick, one of the oldest, if not the oldest architect in the United Kingdom—Mr. James Pain—at the age of 97. The deceased was born in London, of a well-known family, distinguished in architectural and building affairs. He served in the office of the celebrated John Nash, by whom he was sent to Ireland to superintend some important works, and eventually with his brother, Mr. George Richard Pain, settled in Cork and Limerick, in which counties, as well as in the south and west of Ireland generally, the firm of James and G. R. Pain enjoyed for many years an extensive practice. Among

their works may be noted Mitchelstown Castle, erected for the Earl of Kingston, a noble pile in the late Tudor style; Dromoland Castle, for the Earl of Inchiquin; Loughcooter, for Lord Gort; Elm Park for Lord Clarina, and many others. Adare Manor, the residence of the Earl of Dunraven, was begun by them, and afterwards passed into the hands of the second Pugin, and finally into those of Mr. P. C. Hardwick. They also designed the Cork Court-house, possessing a splendid Corinthian portico, referred to by Lord Macaulay in his history; the Cork and Limerick prisons, Thomond and Athlunkard bridges over the Shannon, and several large churches, both Protestant and Roman Catholic, in the cities of Cork and Limerick. Mr. G. R. Pain died at a comparatively early age, but Mr. James Pain continued to reside in Limerick, and to practise his profession till within the last few years. He enjoyed a deservedly high reputation for his upright and honourable course of conduct, both amongst his employers and professional brethren. His remains were interred in the venerable Cathedral of Limerick, on the 17th inst.

THE intended restoration is announced of a hitherto neglected relic at Dunfermline, dating from the time when King Malcolm held court at the Tower-hill. This relic is Queen Margaret's Cave, which consists of an apartment in the solid rock, and is situated a few hundred yards from the Tower-hill. It is 6ft. 9in. in height, 8ft. 6in. in width, and 11ft. 9in. in length. At the bottom of the cave is a small spring well, the water of which rises at times and covers the whole of the lower space. Queen Margaret was accustomed, historians tell us, to repair constantly to the cave for the purpose of private devotion, and the King discovering the real cause of her long absences, hearing, while he listened, prayers uttered by her on his behalf, caused the rude excavation in the rock, always damp and dingy, to be fitted up as an oratory. After the Queen's death the place was permitted to fall into decay.

THE trustees of the National Gallery and the nation have sustained a serious loss by the death of Mr. Ralph N. Wornum, the Keeper and Secretary of the National Gallery, who died of nervous disease of the brain on Saturday last. Born in 1812, and originally educated for the bar, Mr. Wornum, in 1834, devoted himself to the history and practice of painting, first by six years' diligent study in Munich, Dresden, Rome, and Paris. He established himself as a portrait-painter in London in 1840, and was one of the competitors selected for praise, though not for a prize, in the first cartoon competition in Westminster Hall. A correspondence with Sir C. Eastlake in 1845 on the insufficiency of the National Gallery catalogue led to his selection, at the suggestion of Sir Robert Peel, for the compilation of an improved catalogue. His "Epochs of Painting" has been adopted as the text-book for examination in the art schools of Oxford, on the recommendation of Messrs. Ruskin, Dyce, and Richardson. In 1864 he published his "Life of Holbein," the best English work on the subject, and has thus made the English student—on one leading painter's history at least—independent of foreign labours. Besides all this work, his daily labours as keeper and secretary of the National Gallery were devoted and unceasing, and continued to the time of death.

THE *Dunedin Trades Journal* says if one were to judge by the number of substantial-looking buildings which are being erected in all quarters of the city of Dunedin, a very flattering opinion as to the prosperity of the building trade must necessarily be formed. On all sides the landmarks of the past are being swept away, and brick and stone are taking the place of wood. A former resident, who had been absent but a couple of years, on his return would be amazed at the almost Aladdin-like change which has taken place in that brief period. The Princes-street of old is no more, and instead of the rickety, tumble-down row of shanties which overhung the precipice, a row of stately buildings have been reared, whose ample proportions and architectural beauty would be an ornament to any city. Go where you will improvement seems to be the order of the day,

but although many of the commercial and business establishments have been making extensive improvements, additions, and renovations, in no class of the community has the building trade secured so many patrons as amongst the publicans.

THE "Working Women's Hotel," at New York, founded by the late Alexander T. Stewart, will soon be opened. It has cost about 2,000,000dols., and that amount is given absolutely to the enterprise; but thus started, it is to be self-supporting. There are upwards of 500 private rooms in the hotel, some double rooms of 30ft. by 16ft., which two women may take, and other single rooms of half the size. A number of reception-rooms are provided, in which the residents may entertain their friends. The main dining-room will seat 600 persons at a time. The house is intended to give to women who earn their own livelihood the best rooms, best furniture, best attendance, and best living at a charge for the whole not exceeding 5 dols. per week. Mr. Stewart estimated that the hotel ought to make 1,000 working women independent, and 3,000 or 4,000 more nearly so. The great kitchen has a capacity for cooking food for 5,000 people.

AT the meeting of the Society of Antiquaries of Scotland at Edinburgh, held on Monday week, a very interesting paper was read on "Roslin Castle, its Buildings, Past and Present," by Mr. Andrew Kerr, architect, formerly of her Majesty's Office of Works. It seems probable, from various notices and traditions, that there may have been a stronghold of some kind at Roslin so early as the eleventh century, but no remains of any such early work can now be traced. The oldest part of the present castle appears to be of the early part of the fourteenth century, and was erected by Sir William St. Clair, who set out with the Bruce's heart to Palestine, and fell fighting against the Moors in Spain in 1330. The castle was added to by his great grandson, Henry, the second of the St. Clair line of the Earls of Orkney. He built the great keep or south-west tower. Sir William St. Clair, third Earl of Orkney, the founder of the Collegiate Church of Rosslyn, also made large additions to the castle. These exhibit many French features, and Mr. Kerr accounted for this by the fact that Sir William and his wife resided for some time in France. In 1544 the castle was burned by the English forces of Henry VIII. It was partially restored by Sir William St. Clair after 1530. The building was continued by Sir William of Pentland, his son, whose initials, with the date 1682, are cut on the lintel of the door leading to the great staircase. The ceiling of the dining-room, which is richly decorated, bears in the centre panel the Rosslyn arms and the date 1622. It is immediately after this that the castle seems to have been in its most complete condition. The north-west side was battered down and the castle plundered by General Monk. It was partially restored after this, but again attacked and plundered by a mob in 1638.

WATER SUPPLY AND SANITARY MATTERS.

ROTHERHAM.—A Local Government Board inquiry was held at Rotherham Court-house, recently, before Lieutenant-Colonel Cox, with reference to an application which had been made by the Corporation for sanction to borrow £4,000 for the purchase of land at Northfield for the deposit of dust, ashes, and rubbish, collected by them, and £10,000 for works of street improvement. It was stated that the latter sum was required for flagging, paving, channelling, and kerbing Masborough-road, Sheffield road, Frederick-street, and other thoroughfares. These streets were formerly macadamised, but it was found that the cost of repairing the macadam on Sheffield-road was about 20 per cent. of the original outlay. It was now proposed to put down granite setts, which, it was hoped, would last 20 years.

TYLDESLEY.—The local board of health have instructed Mr. R. Vawser, C.E., of Warrington, to prepare a scheme for the interception and purification of the sewage from their district. This step had been rendered imperative on the board in consequence of legal proceedings under the Rivers Pollution Act having been threatened against the board by Lord Lilford, and others, who allege that the streams in the district are being polluted by sewage.

THE BUILDING NEWS.

LONDON, FRIDAY, DEC. 28, 1877.

SCULPTURE BEFORE MICHAEL ANGELO.

IF painting before Raffaele some years ago created a school in Europe—and more especially in England—sculpture before Michael Angelo is creating a similar school among the Italians of the nineteenth century. There is organised at present in Florence an association representing that which by many has always been considered the higher, the purer, and the less meretricious art—dedicated to the vindication of, as it were, pre-Michael-Angelo sculpture. That artist, they say, in the appeal now circulating to the mediæval spirit, bequeathed to his posterity from fifteen to twenty masterpieces; and are these to intercept our view of the mighty background behind? The ancient Greeks had a proverb, "There were strong men before Agammemnon;" and so, the modern Florentines declare, there were Italian sculptors before Michael Angelo. In this conviction they are about to assemble a gallery of examples—whether originals, copies, or casts—in the Tuscan capital. Others have gone upon another path, and claimed for Canova that which they denied to the sculptor of "Moses;" but their opinions are quietly put in the background. Given, the genius of Angelo, acknowledged in its highest degree; and had it any relation with, any growth in, the genius of preceding ages? Frankly answered, from an artistic point of view, we can imagine few questions of more interest to the living generation of Italy. But the art-archæologists of Florence, like some of our own countrymen, students like themselves, have been compelled to search almost exclusively in a particular century—and that the thirteenth—for illustrations of their favourite theory, which is, that Angelo, like Raffaele, was rather the offspring than the father of a school, the birth and development of which is traced through the two following epochs. Apart from this, which is hypothetical, it is impossible not to admire the veneration, late though it be, after long periods of neglect, bestowed upon those austere *bas-reliefs* executed by Nicholas of Pisa—the suggestions, no doubt, of much that Donatello accomplished, but which were comparatively lost amid the shadows of churches and monasteries, the universal and invariable principle scorning all classic or pagan taste which pervaded them; and yet the gradually growing grace which the masters of Tuscan art, even in its younger modern period, could not fail to impress upon their works, archaic and ascetic though they were intended to be. The pre-Michael-Angelists said, like the pre-Raffaellites, "Let us restore nature;" but they could not help adding to it the ideal, and this even the Florentines of the nineteenth century admit while drawing their comparisons. But, throughout, they confess that it is less with statuary than with architectural sculpture that they have to deal. To the former class belong, moreover, groups of heroic effigies rather than reminiscences of the Greek or Latin thought; huge mailed warriors, like Bartolomeo Coleoni, Charles of Anjou, in the Hall of the Capitol at Rome; and even Roman emperors in panoply. The mediæval sculptor addicted himself very much to symbolism; he gave himself up to mysteries and passions, too, and rarely aimed at beauty or even sublimity. Even the Apulian marble-worker prefers to deal with animals and leaves than with the human form. To say truth, indeed, there survives no single work of those times to be compared, in

point of pure art, with the works of the times which came after them. They are wonderful, full of teaching, lessons in earnestness and rough knowledge, but a single stamp is upon them all, and the Florentine artists desire to discover whether, amid all the relics of those generations, there be any exceptions to the rule. The representation of St. Eustace, at Ravello, is certainly not one, with its Arab-like drapery and barbarous attributes. In fact, the art of statuary, if not of sculptor, appears for awhile to have deserted the Italian genius, so that the term "Renaissance" was applicable in its fullest sense. There are tombs, fountains, portals, mortuary monuments, pulpits, gates, and mythological compositions in abundance; but the sculptors were, all the while, executing their tasks clumsily and without inspiration—as, for example, Morio, with his colossal effigies of SS. Peter and Paul, at Naples—two enormous figures, with no more character than a couple of dolls. It is true that Italy, and Rome in particular, was in need of models during that twilight time. Thousands of statues—even those which Theodoric had spared—lay in mutilation about the streets; hundreds of others were built into walls, like worthless stones; but nearly the whole of the epoch is barren: and even in the fifteenth century we know of but two Roman sculptors—Paolo Romano and Gian Cristoforo—the first a goldsmith as well, and the second a carver in wood. The Lombards were more ambitious, but even Milan produced little more than ecclesiastical monuments, with images of Popes and virgins in draperies copied from paper, linen, and glue; though there an early revival began to be felt, which stimulated, no doubt, in later years the emulation of Florence. Still, the architectural predominates over the simply sculptural, as our Florentine pre-Michael-Angelo-ites deplore. Caradossa is famous only for a mortuary, Bambaja for a tomb of Gaston de Foix, Bernardino for a frieze, and Marco Ferrari for a representation of St. Bartholomew being flayed alive—a composition which might never have been noticed had not the artist innocently added an inscription warning the critic not to mistake it for a work of Praxiteles. A very different order of art is arrived at, we are reminded, when Leoné Leoni, goldsmith, medallist, and sculptor, Antonio Fontana, and Modèo—the one great sculptor of Pavia—and the Venetian artists appear in the foreground, waiting, as it were, for Michael Angelo to initiate a new generation. It was over the studios of Florence, however, that his spirit cast a spell, though, as already noticed, the modern Florentines declare him to have inherited, rather than created, a style from amid the ruins of Byzantine barbarism and magnificence. In proof they point to the Descent of Christ from the Cross in the church of St. Martin, at Lucca; the Baptistery at Pisa, which is little more than a plagiarism from the famous sarcophagus in the Campo Santo; the throne at Sienna, the choir at Bologna; but none of this is sculpture as Michael Angelo understood the art—by no means confounding it, however, with a mythological multitude of fauns and nymphs, Graces and Satyrs, Apollos or Mercuries. The true point is now approached by our Italian archæologists, for they ask, Did a decadence in sculpture take place when Mount Olympus ceased to supply its models? Must every artist's idealisation be that of a form which has been fed upon ambrosia? Why, no more than Michael Angelo himself would have repelled so academical a doctrine, though he certainly did burst away from the narrowness and acerbity of the earlier Christian centuries. So, at least, according to the new *cognoscenti* of the Tuscan studios, who would prefer recognising in him rather

a development than a type. They are inclined to lean somewhat heavily upon Nicholas of Pisa and his pupils, who, indeed, represented almost a generation of Italian sculptor life, with John of Pisa as his ally, to whom are due four figures, whence Angelo himself might, indeed, have translated an idea—of Prudence, Moderation, Courage, and Justice—works in which, as it were, a lineage and transmission of genius is distinctly visible. In them, nevertheless, there is not an attempt at poetical beauty. All is simple, strong, and real, without the slightest embroidery of imagination—too much muscle and vigour, in fact, and too little of re-moulding nature, according, at least, to the nineteenth-century Florentine standard. The son, in these respects, was even less of a "frame-maker" than the father. But it must always be remembered what was the work which these sculptors had to do, and to which they were, in a manner, chained down. Arnolfo of Lapos' *chef d'œuvres* were the tomb of Cardinal de Braye in the church of St. Dominic, at Orvieto, and at Rome the Tabernacle of St. Paul's—without—the-Walls—two as arid subjects as could easily be conceived. The Cathedral of Orvieto belongs to a different category, but the sculptures in that edifice belong also to a different time. They are principally *bas-reliefs*, however, and, of course, essentially Scriptural. Up to this time, indeed, or since the Pagan downfall, sculpture was the mere handmaid of architecture, and it may be feared that the pre-Angelo enthusiasts will find a difficulty in demonstrating anything else. Then, however, sculpture began once more, so to speak, to step down from the wall, to detach itself from the solidity of central structures, to appear in the full shapes of St. Cecilia, Judith and Holofernes, John the Baptist, and the Magdalen—Classic subjects being still rejected. There was an equestrian statue of Gattamelata, at Padua, round which the people thronged as round a novelty; another of Francesco Sforza, at Milan: a third of Colleoni, at Venice, and the Italian taste for sculpture spread. Nothing, however, or at any rate very little, of Michael Angelo in all this, notwithstanding the confidence of the Florentine art-antiquarians—nothing in the monuments even of Marsuppi and Bruni, in Santa-Croce itself, superb though they are. His own early effort, "Head of a Fawn," executed at fourteen, was a declaration of war against the exclusively ecclesiastical style; and then it came to be seen that, throughout the Renaissance period, the Tuscans were, of all artists in Europe, the most sympathetic and intelligent students of the antique, and that, when called up, they had treasures of acquisition ready at hand with which to meet the new appeal. But they never learned to become copyists, and this was a debt due from them to the predecessors whose works are now somewhat indiscriminately decried; if, indeed, they deserve disparagement at all. They had ceased, it is true, to treat sculpture as an art exiled from Greece and Rome, and to be regarded as a foreign refinement, with all its foreign elements preserved: it had gone through a long process of change, resembling, at times, decay, or even dissolution; but the "age of tombs" passed, it may be said, with the Medici, and the plastic spirit, in its highest expression, revived. The pupil of Ghirlandajo studied from the antique in the gardens of Lorenzo—sufficient evidence, perhaps, even for the new Society of Mediævalists, that the middle ages had not, in their most fructifying period, given a school of oral art to the ages which were to come after them. Whence, amid their annals could he have caught the inspiration of his "Sleeping Love," or "Bacchus," or "Adonis," or even the "Pietà," ordered

from him by the Abbot of St. Denis? There is nothing like this "Pieta" in the whole pre-Angelo series. It will not be pretended, of course, that there is anything like the "David" or the "Moses," while the celebrated "Tomb" is so utterly in contrast with the old sacerdotal sarcophagi in the Gothic churches of Europe as to suggest a different order of structures altogether. Explanations have been given, say the somewhat eclectic critics of the new Florentine Academy, to the purport that, up to the Reformation, or nearly so, Art was the pensioner and ally of religion in a particular form. It disidealised itself; it went into the chapels of the monasteries, and the cells of monachism; in a word, it cut off the connection which we are asked to perceive between the art of caskets and chests and quaintnesses, and the revived, if not greater art, typified by Michael Angelo. Certain it is, however, that no contrasts could be deeper than those between the resemblances which the Florentine art-archæologists seek, and those which they will not discover. It might be better, however, did they not make it so entirely an affair of schools. They are seeking links at Florence—and among the most competent in that city, too—between the several generations of Italian art-work, peculiarly as applied to sculpture, and peculiarly also as applied to the growth developed between the ages which preceded that of Michael Angelo and the ages and types which grew from the genius, cultivated as it must have been, of himself, his contemporaries, and his successors. Any endeavour to conduct the history of Italian, and, therefore, of European modern art in a broad, free, and connected stream from the darker through the brighter days, must be of infinite merit in itself, and would be of incalculable value if successful. The Florentines, therefore, may feel assured of encouragement in any case, and of honorary crowns uncounted, after the Italian fashion, should they succeed.

THE READING TOWN HALL COMPETITION.

WE return to the other designs in this competition, which we had no time nor opportunity of criticising last week. Several points occur to us upon a further consideration of the designs, and these we shall now notice. The competitors had first to decide upon the position of the hall, its size and connection with the present town hall. Upon this a great deal depended; in fact, we may class the designs under two great groups—the parallel hall plans, or those which place the hall parallel to the present one, *i.e.*, in the direction of north and south, and the right-angle arrangement, in which the axis is placed east and west. As regards the library, museum, and school department, various arrangements have been adopted. Other points to be attended to were the necessity of a wide entrance from the main street to the hall, with good egress, easy access to the library and reading-rooms, and well-lighted drawing and painting rooms. A further study has convinced us that several of the unpromised plans comply with the conditions, and we fail to see in what respect the conditions have been disregarded. It was only fair to the authors that the award of the committee or their referee should have stated in what points the authors had neglected their instructions, and the competitors will not be satisfied till this is done.

"Boz" is a design marked by considerable refinement in a French or Flemish type of Gothic. The elevation is tastefully drawn, the roof, broken by dormers, being tinted to show red tile; but the plan does not equal the elevation. The hall is 100ft. × 52ft., placed east and west, with a centre entrance from Blagrove-street. There is an

ante-room and corridor communication with the old hall, and a circular apse for organ. Below the hall is the lecture-room for cookery and the kitchen offices—a location that has been assigned for these departments by other competitors as well, and, though making the most of the area, is open to objection, unless the most perfect ventilation be adopted. On the north side of the hall are the reading-rooms and library—the former in two parallel rooms kept low and lighted from the roof, the lending library being in front, with an entrance from Blagrove-street. The school of art is on the east or back portion of the site entered from the new street. In front is the museum, on the upper floor, partly over the lending library, but poorly distributed. "Brick and Terra Cotta" is the motto of a cleverly distributed plan, with well-disposed areas, showing hall in an east and west position, 111ft. × 50ft., joined to the present hall by a lobby, and also by the existing corridor. By this arrangement the halls may be connected for exhibitions, conversaciones, and concerts on special occasions, or may be disconnected if desired. The main entrance is made a loggia or arcade in front, with side flights of steps to the large hall. The library in front at the north side has a corridor entrance, and the lowness of this part of the building disconnects the hall in effect from the library building, perhaps rather too much for the sake of unity. The museum is behind, separated by an area. The elevation pronounces the hall, the entrance end of which is brought out to Blagrove-street. There is too ecclesiastical a character in the treatment of the large pointed window over the entrance, the side-stair turrets, and the crowning of niches at the summit of the gable which surrounds the base of central fleche, or appears to do so. The pencil sketch is spirited and clever. "Lux" sends two clever plans. The first shows an east and west position of the hall, which is 88ft. by 51ft. 9in., with orchestra at the west end, a loggia entrance with two side flights of stairs to hall, and a gallery all round, a total of 1,619 persons being provided for. The hall is lighted on north side. The entrance to the library, which extends along the new street, is in front, though we scarcely like the flight of steps to it and the turn into it. The museum is below and the school above. We find the author has well satisfied the demands for light and air, as there is a good intervening area on the north of hall. We like the alternative plan better in some respects; the hall is placed north and south, and the connection between the two is by a curved corridor and an ante-room rather ill-studied as regards the pier spacing. The museum library and school are in front block quite isolated from the hall, which is behind, and placed parallel. We notice a main loggia entrance in the new street to the hall, which thus does not compete injuriously with the present entrances. The cooking school is below the hall; the analyst and medical officer have also rooms provided here, with access from an open archway. This is undesirable. The elevation of the alternative plan shows much feeling in a foreign Gothic style, and the treatment would have been simple and dignified if the entrances and bay windows had less broken the harmony of the front than they appear to do; there is, however, much merit in the design, though the coloured perspective does not do it justice. "Plan and Purpose" has the hall east and west, with a vestibule communication with the old hall, a front lobby entrance, and is lighted on both sides. The hall is 135ft. 6in. by 92ft., besides the gallery extension over entrance. The author separates his hall and library by a large area, the latter building being placed along the new street frontage. A

long corridor, entered in front, gives access to the library and reading-rooms, above which is the school department, traversed by a similarly long corridor, which is not desirable. There is a mechanical look about the Gothic, which, though not glaringly faulty, scarcely harmonises with the old structure. The high-shouldered roof and parapets of the hall front have a disjointed effect. We find the author follows the rather objectionable plan of placing his kitchen offices below hall, and the museum below library. "Triangle," with dot (Mr. Webb) has a striking coloured perspective in a rather glaring yellow colour, exhibiting a bold freely-treated Gothic front, with a well-designed entrance tower, which would disagree with that of the present building, if not overpower it. The hall is placed east and west, and the library and reading-room below the hall, while the school department faces in the new street. We may point to the questionable position of the reading-room under the hall, and the very narrow staircase, which seems too small for the vestibule. The entrances are certainly not well considered. Of the school of art we may say it is unpleasantly suggestive of a photographer's studio perched on the top of a house. Another Gothic artistically-conceived design shown in a cleverly-drawn brown-line perspective, but far too domestic in character, is "Utility." The treatment is half timbered, and well grouped; but there would be an almost ridiculous mixture in such an addition to the present brick and monumental Gothic of Mr. Waterhouse—it would almost savour of the sublime and the ridiculous. We find the hall placed behind, north and south, with a vestibule communication with the old apartment, the school placed below the hall on the ground floor—a fatal objection—and the library and museum as a front building, the reading-rooms being on the first floor—in contradiction to the instructions—and the museum and cookery apartments in front. There is a confused disposition of the front block. "As You Like It" has a very wide hall, north and south, placed at the back, and divided into nave and aisles, lighted from clerestory and one aisle; but the entrances are too small and few. It is cut off by a corridor from a front library. The museum is in the basement, and the author has not studied with enough care the requirements. The elevation is far better than the plan—it shows some spirited Gothic detail and refinement in parts—but the buildings are too dislocated. "Progress" has some good features, shown in a carefully-prepared set of drawings. The new hall is 108ft. × 53ft., and is calculated to give accommodation for 1,500 persons seated in the area and balcony, with an orchestra for 300 performers. Access is provided by one entrance 12ft. wide from Blagrove-street, the old one being used for the balcony; but egress is deficient. Provision has been made for the service of dinners to the halls, and the retiring-rooms are tolerably compact and well planned. The library and reading-rooms are placed in front, approached from the main entrance, and also from a separate entrance; and the librarian's room is well placed for circum-spection, and near the lending library. Above the library is the museum, with top light. The schools are on the north side, and are ample; the cookery school is well placed under the hall. Architecturally the author has endeavoured, and with some success, to harmonise his buildings with the present one, and the grouping and subordination have not been lost sight of. The library entrance forms an octagon turret, and the hall is emphasised in front. The author estimates the different portions at 5d., 6½d., and 8½d. per foot cube, or a total cost of £24,794.

Another design with the same motto we note with some good points, but with only one exit and one entrance from an old corridor. "Hope" is the motto of a plan showing the hall, the entire depth of the site, with its end towards Blagrove-street, dimensions 98ft. by 50ft., with a side corridor entrance and hall connection with the present building. We object to the arrangement of making the library entrance opposite to that of the hall in the same corridor. The science department is placed behind and the art school in front; this, too, is objectionable. The elevation is tawdry. "The Kennet" is the motto of a Gothic design displaying taste in the elevation, and a departure from the usual position of the orchestra. Here the hall is central (105ft. by 50ft.), its axis being north and south, and the orchestra, a large semi-circular recess, occupies the side of hall, though the motive for this is not apparent. There is an intervening vestibule between the old and new halls, and the entrance is a flight of steps leading from the front street. The library is cut up in front, and the museum at the back poor, the school being placed on the north side. "Fleur-de-lis" has the east and west arrangement of hall, an end narrow stair entrance to gallery, but inadequate access to ground floor, except the old corridor connection. The library and school on the north side are reached from the same end vestibule and corridor—a very insufficient means of communication. Looking at the elevation we find much to commend. The elevation harmonises with the existing building, but is very heavily coloured, and we do not like the mansard and turret over the loggia, which rise over the openings of a balcony and appear to crush it. The hall interior has nothing to recommend it. "Apt" is another east and west arrangement of hall, which is large, and surrounded by corridors and gallery. The main entrance is in Blagrove-street, in front of the hall, leading on the left to the library by a passage or vestibule. Crossing this vestibule there is a descent of several steps to the hall, which is objectionable, the floor being lower than the street level. Considerable study is shown in the plans, and some good points occur in the Gothic elevation, which is of a later and more florid type than the old town hall, and too domestic to please us. There are some others we note, though of less merit. "Cardomine" is a showy heavily-tinted perspective in a late Gothic dress, with a north and south hall enclosed by a wall in front and in a line with the present hall; the school of art and museum are behind, and the library and reading-rooms below the hall. The interior of the latter is station-like, and the Gothic is very debased and quite out of keeping with the present building. "Utility" is the motto of an elaborate set of drawings (Gothic) bound in a large folio. There is nothing in the design to attract attention except that there is only one entrance vestibule, which serves as a common entrance to the new hall and a connection with the old one, that the frontage is made to curve with the street, and that a great angle tower of preposterous dimensions rises over the entrance. "Acoustics" has a very red-looking perspective (Gothic). All we notice in it is that the buttresses and pinnales overhang the front in a rather questionable manner. "Fors" exhibits thought and clever handling, but the hall, 55ft. by 52ft. is small, and the common entrance of hall and library objectionable. There are two corridors on the north and west sides of hall; the drawing room and reference library are mixed up together in front undesirably, and there is a general want of separation in the departments. We may just mention "Utility," a very extravagant Gothic design, with a hall 112ft. by 65ft. placed E. and W.,

that overpowers everything else; inadequate in its entrances in its narrow passage to reading rooms and cramped stairs from the new street to the Art Department. It is a pity to see such a fruitless amount of labour expended in the drawings, which are clever but excessively confusing in minutiae, and what we may term "fizzy." "Data" is confused; "Civis Muro" lacks study of conditions; "Toujours Fidèle" is extravagant in its Gothic; "Y. Z." is disjointed in plan; "Talfourd" is a fiery red-looking elevation in which all is sacrificed to the hall, badly provided with entrances; "Economy" has a large hall in alignment with the present hall and the library and museum below, while "Experience" exhibited in a tawdry-tinted elevation, has a hall with a colonnade entrance to the new street, and a corridor entrance in front intersecting with the old corridor prolonged.

Last week our remarks were chiefly descriptive of the three premiated designs. We here make a few critical observations upon them. Taking "Plan" first, in our opinion the best of the three in many points, and certainly the most economical, we find the hall placed endwise at right angles to the present hall. This position is best in some respects—it allows a good entrance to be made in the principal facade; it does not, as the author points out, cut off means of access from Blagrove-street to back portion; and it forms a more pleasing combination with the present hall. On the other hand, there may be the objection that the end being so near the street should be pronounced instead of masked by the entrance. The hall is, as we said, only 81ft. x 52ft., about the length of the old. This is small, considering that the main purpose of the council was to erect a hall of much greater dimensions than the old one. This is no doubt the weak point in "Plan," though it is one that might be rectified by bringing out the front or by widening. Ingress and egress from the town hall has been managed by making the end of the new hall range with the flank of the old one. Among the defects we notice that the side corridor entrance is narrow, being only 6ft., and the main central entrance would have been better a little wider; the library and museum entrance also looks contracted, and the staircase to the museum is commonplace. The narrow aisles and iron arcades in the hall are certainly below par, and useless as far as we can judge. A good area for light and air is provided over the roof of the library, which is kept low, giving side lights to the rooms above; and an open area is left between the library and the school at the back. The borrowing library and reading-room are well placed, and the painting-room is at the top, well lighted on the New-street side. We find the orchestra is well planned for sound, being apsidal, and a passage under the orchestra communicates with both sides. The merits of "Be Strong" seem to centre in its larger hall, 110ft. x 63ft., placed at the back in a north and south direction, its architectural treatment and flat-curved ceiling, with coves, and its octagon vestibule connection with the present hall. Two galleries are provided, a balcony surrounding the hall on three sides, and following the semicircular end of hall, and a gallery above this end. The retiring and refreshment rooms, stairs, and orchestra arrangements are well studied. Again, the reading-room and borrowing-counter are conveniently placed in front, with separate ingress and a good vestibule—the counter is in front of entrance, and the hall and library and museum departments are kept distinct. On the other hand, we do not like the steps down from present to new hall, which is 7ft. 6in. lower than the former, and we consider that at any sacri-

fice the halls should be on the same level, especially if they are to be used *en suite*. A Blagrove-street entrance is provided, but we first have to ascend seven steps to the octagon vestibule, and then go down six steps to get into the hall. This is very objectionable. On the whole, however, the plan is clever, and reflects credit on its authors. The chief elevation, however, does not harmonise in spirit with Mr. Waterhouse's Gothic, and we certainly think the hall front in the new street inexpressive, and poor in treatment. The best feature is the octagon stair turret to the science school. "Grosvenor" adopts the same direction of hall, but places it centrally with a vestibule between it and the present. Instead of being level with the latter, it is six steps higher, and there are about twenty steps to mount before we reach it from Blagrove-street—an objection it shares equally with the last-named plan. The corridors, roofed low, on each side of the hall, practically isolate it from the other buildings; there are two entrances, one a main one from Blagrove-street, and the other a corridor entrance from the new street, which, however, is the chief access to the schools, which extend along the east side. The gallery runs round three sides, and the orchestra is at north end, with artistes' rooms compactly arranged. As we have said, the reading-rooms, &c., are on both sides of front vestibule entrance, the portion near the hall is kept low, and roofed with top light—the space being divided by piers into bays. The museum is well lighted over the front part, an area for light being got between it and the hall, the latter is thus lighted by eight side windows on each side with fan-lights over. The hall is Classically treated with a flat-panelled ceiling to harmonise with the old. We question the value of the area on the east side. There are desirable points in each of these designs, and the crucial question is the hall and its position. It is obvious the three departments should be practically kept distinct, though the library and museum admit of being placed together in the same block. There can be no doubt the library should be located in front, and that the main entrance to hall should, if practicable, be in Blagrove-street, the schools being well kept by themselves, either on the east or the new-street side. Economy, however, may point to a combination of the library, museum, and school departments. The object to be realised is a combination, however, that shall not affect the distinct performance of the work of either, separate entrances, convenience of access to the reading-rooms and library, and ample ingress and egress to the hall.

We wish, in conclusion, to recall the attention of the Reading Corporation, if their minds are not wholly made up, to the points that appear to us to demand consideration. From a further examination of the three plans which have been premiated in the very unreasonable and indiscriminate manner we pointed out last week, under the gratuitous assumption that none have complied with the conditions—although, from what we have since heard, eight designs were at first selected by the committee for the referee's opinion—we think the only just course to the other competitors would be to make a further selection from the other designs before a final plan is decided upon, placing them in the hands of a competent judge who has had experience in municipal structures—say, Mr. Waterhouse—for that purpose. The council have asserted that none comply. They are therefore bound to let the competitors, or a selection of them, have a further trial before the building is carried out. Only this course, we believe, will satisfy the competitors, who have been told that not one design has complied with the condi-

tions, although three have been awarded an honorarium.

THE DOORWAY AND ITS TREATMENT IN ANCIENT AND MODERN DWELLINGS.

THE revivalists of the domestic architecture of the Stuarts among a number of questionable features are introducing one that is pre-eminently social and English—namely, the wide-hooded doorway. Whatever our habits as dwellers in cities may become, it is quite certain the old English doorway—that external symbol of hospitality—will long remain a feature of interest. A strong case was, however, made out the other day for its almost entire abolition from crowded cities and central sites. An expounder of the Parisian system of dwellings in flats showed that the reduction of private entrances, in the main frontages at least, would be a great saving, and that a much larger frontage for shops would be secured. The British tradesman will welcome any plan that will add to his often narrow frontage and give him a greater display of plate glass. If eight or more private entrances could be reduced to one common doorway in a central passage or court, giving access to the residences above the shops, considerable extension of shop frontage would be the result. The idea, if not artistic or English in sentiment, has at any rate a commercial advantage, and we may regard it as one step towards utilising ground. We can group our chimney stacks together; why cannot we group our doorways and staircases? But there is another set of architectural antiquarians who are in face of this movement to economise space, proposing the old doorway, with its wide panelled door architraves and massive hood supported on carved trusses. They have a great national sentiment in their favour, and it is difficult at present to see which set of revivalists will gain public approval. The two classes are certainly irreconcilably opposed. One is for the French block, with all its commercial and communal advantages, while the other desires to reinstate the English plan of isolation in all its antiquated completeness. At any rate, in the mean time, there is room for the admirers of both modes of living to express their views. One thing is pretty certain, and it is this—that the Parisian plan, though admirable for crowded localities where blocks of three or four story buildings may be bought cheaply and pulled down, to be reinstated by the *maison-à-loyer* of from five to seven or eight floors, will not be remunerative in residential neighbourhoods, or not at least till English prejudices are vastly more shaken than they are at present. Another thing is equally evident—it is, that the Queen Anne style can never realise the expectations its votaries have set out with, if the French system takes root. The Stuart revivalists will, therefore, act wisely by expunging from their favourite style those features that cannot stand the crucial test of utility; they must set their houses in order—in our cities, at least—for practical people will naturally inquire what advantages each system offers. We have for too long a time been playing with Italian palaces and Gothic castles and cloisters, and we must, sooner or later, be called upon to draw decided conclusions between this or that style of habitation, and to cast up the features that command the approval of common sense and economical consideration. Facility of communication between apartments, economy of service, lighting, and heating, will have to be included in this reckoning, and the sooner the architect sets about the solution of this problem the better it will be for him. Somehow or other it is generally left to an ingenious amateur, or to some

speculative builder to invent a new system of building, and the architect, after decrying the plan, has at last to adopt it. Concrete, for example, was pooh-poohed by nearly every architect some years ago; now there are several that are using it, and who have produced pleasing buildings with it. We might even name one follower of Queen Anne who has largely adopted concrete.

But there is much to be said by both sides on the subject of the entrance. If the Parisian idea prevails, the doorway, as a special and significant feature, will be lost; while, on the contrary, should the isolation plan of the seventeenth century come into favour, the doorway will resume its prominence as an essential part of the system. Every Englishman likes his own doorway or undivided portal. To enter a wide common passage or lobby before you reach your door is not John Bull's notion of privacy, though it is true the tenants of our rows have often a very flimsy wall between them when they reach their doorsteps. In the days of the Stuarts and early Georges, a spacious portal or lobby entrance was the fashion; it certainly added dignity to the front, and it stamped the house with an appearance of unselfish hospitality. There is, undoubtedly, something remarkably repellent in a doorless house-front, it has a prison-like exclusiveness; it lacks politeness to the passer by. We look at such entrances as those we see in drawings of old Cleveland, Burlington, and Clarendon Houses with their flat or heavily-carved broken pediments resting on rich consoles, with extreme interest; the whole art of the architect, carver, or plasterer seems to centre in these features; in truth, they fairly express the wealth and hospitality of the owner, and the skill of the artists engaged, who apparently lavished their best art upon them. In many of the old houses about town, in country towns, and cathedral cities, we see charming models of the flat or semi-circular hood or pediment, the tympanum often hollowed out in a niche or shell-like form. The carved ornament, moulding, and plaster enrichments of these hoods are frequently choice bits, worthy to be reproduced in the Queen Anne sketch-book. The consoles are sometimes profusely enriched, and the cove adorned with some allegorical or classical subjects, in which we trace the genius of a Mantegna. The door itself is massive, and through a century of paint we discern the genuine mouldings and carved work. The jambs are pilastered, have well designed caps and bases, and are often panelled on the face, and enriched with carving. Choked by paint they are still works of Old English art, and recall the festivities of the period when sideboards and tables were all designed in Tudor or Jacobean taste, and were laden with ponderous barons of beef. The hall, too, was a fitting sequel to the wide doorway. Panelled in oak, frequently to the ceiling, round which a massive block or enriched cornice was run, it was spacious, well-lit, and comfortable-looking, with its settles and its sideboard; while its richly carved and hooded fireplace and dog-grate invited the wayfarer, and has become by consent the picture of English cheer, and the background of all that is homely and hospitable.

The question that arises, then, is whether the English entrance, as a prominent architectural feature, will revive the endeavour to bring in a new system, or whether it will sink in importance. It is now known that in nature a disused organ dwindles in size till it becomes merely an adjunctive feature. Will the English doorway and hall suffer in like manner—still more than they have done—from the spacious proportions they assumed in the Tudor days when the hall was the main feature? To this question we may reply that the demands of space in our great towns, and the

introduction of more economical arrangements, will quickly determine whether we are to retain our separate entrances, or whether they will be combined—and this question of entrance appears to determine the principle of building: it seems to be the crucial point between English and French systems of planning, and the architectural conception of our national style largely depends upon the issue.

THE BRITISH MUSEUM LIBRARY, AND THE LATE CONFERENCE OF LIBRARIANS.

NOT quite so much attention was given as we cannot but think there ought to have been to the important conference of librarians so recently held on the subject of the British Museum and other libraries. To us the Museum library is, of course, the most important; and it would, indeed, be a puzzle to know what we should do without it. It would be quite impossible to exaggerate its importance, for in the labours of "research" it would be impossible to find anywhere a substitute for it. It is a world of thoughts in itself. Books in these days do a work unknown in past times, and it would be difficult to imagine what the change would or could be if we were without them, or could not readily get at them. There is no end of them hardly, and it may surprise some readers to be told that there are in the Museum library no less a number than three millions of books, and two thousand volumes of catalogues of them. Miles of shelves and whole warehouses are required for so vast a mass of human thought, and it is no wonder that those who have care of it, however able they may be, are at times puzzled to know what best to do. One is simply appalled at it; but yet, great as the task is, it has somehow or other to be done, and the conference did a somewhat to help.

No one, we are sure, has read the "address" of the principal librarian—Mr. Winter Jones—who has not felt intense interest in it, and wonder, too, at the immense number of items compressed in so short a space into it. Indeed, a mere catalogue of the leading headings of the contents of so vast a place would in itself afford matter for a lecture or address. But, with all this, we felt just a little disappointment at the way in which the principal librarian treated his matter—or rather at the want of utilitarian detail, and suggestions of what he would do if opportunity and means offered themselves. Consider for a moment what it is, and needs must be, to have no less a number than three millions of books to arrange and put into some order, and thus to be able to find volume by volume, and to point to, as divided into sections of knowledge, all that is known at present to humanity anywhere and everywhere. A wonderful comprehensiveness of mind and grasp of human thought must be needed, and must be ever present here. There is science, and art, and general literature—as the wide term is, including the most rare as well as the commonest things of human existence—to be dealt with, and to be coguisant of. And these have all to be thought of, and had constantly in mind. Yet no man can possibly know all things—he can but glance at them.

Now, the first thing that struck us in the able and industrious address of the principal librarian was a wish that he had been a reader in his library as well as its keeper. If he had been one he never would have declared, as he did, to the surprise of not a few, that it was impossible to print the catalogue of the vast library under his charge. We hardly can tell what he could possibly mean by such a statement. In the first place if any one will consult the

old catalogue, as it is termed, he will see that at least a beginning has, as it is, been made, and that there is a printed catalogue—*i.e.*, a catalogue in type. It is interesting, in passing, to note here the existence still of a yet older compilation, on dust-coloured paper, of an all but primeval catalogue of the museum library; and it certainly does require a very powerful imaginative faculty to call up those who, indeed, and in very fact, did compile and consult these venerable volumes. We sometimes more than half believe that these forms do, indeed, contain matter which the newer and fuller volumes do not contain and cannot. There may possibly be others who think so too. We certainly never actually counted the volumes, taken all together, of the British Museum catalogue; but there are, as we have said, not less than two thousand volumes (folio) of them, so that some idea may be formed of the task before the guardian of such a list as is indicated by the mere numbers.

We do not dare to dwell too long on the books and book catalogues, even of the British Museum; but would suggest to the authorities, if nothing better can be done, to in future print in type the slips now written and lithographed, and then pasted on the blank leaves of the catalogue volumes. This alone would be an immense improvement, and for clearness and towards readiness of reference would be a boon. As some readers will remember, a "class" catalogue has been more than once talked of, but very few can hope for it, or we should have been inclined to ask, by way of trial and specimen, for a catalogue of some one section of the library of the Museum—Science or Art, or whatever else. Such might, indeed, guide to a more general catalogue, and might make the work of it the easier. A map and a music catalogue there now is, quite separate from the general catalogue, and there is a catalogue of the Royal Library, the foundation of which is printed with MS. additions and corrections. Truly it is a gigantic work before all who shall ever engage in it, and the principal librarian may well be excused when he declares it to be impossible, and shrinks from the mere contemplation of so huge a task. But is not all difficult and exceptional work like this and such as this? We fancy we know those who would begin even this.

There are many other things which press themselves on our notice here, and we pass them by with no small reluctance; but there is one which we cannot but think all who use this vast collection would consider a boon if it were thought over and eventually carried out. It is this. The what may be termed conveniently the "Reference" library, on the ground floor of the reading-room, contains, as it should do, a huge store of general encyclopædias and encyclopædic knowledge and general books and dictionaries, and it is certain that nothing can be more handy and useful than such; but there is a something more we would have, and it is a select and well-considered selection of those primitive authorities from which encyclopædias themselves are compiled. These should be quite as ready of access as the dictionaries are. A cyclopædia is good enough in its way, and most useful and handy at times, but to our minds there is nothing like the original source from which all these useful books are compiled. We would specially, without going into details, cite by way of example all the original travels and voyages giving descriptions of newly-discovered lands and peoples: indeed, generally, what may be termed without exaggeration the foundations and beginnings of human knowledge. Some of these are here, it is true, but not all, and they are without due arrangement. We would include all first-histories. Would it

not be a good plan—we merely suggest it—to appropriate the first gallery of the reading-room to this special purpose, with a way to it thus to be accessible to the general readers? We would but touch on the subject of the library itself as a room and as a piece of architecture, and on the arrangement of its desks and seats, and the placing of the books, or rather book-shelves, and the position in the room of the catalogue. Many pages might be needed to go into all these and other "details," but that there is a wide opening for improvement even here no one who really makes use of the library can or will deny. This reading-room, as most readers of this journal know, is circular on plan and dome-covered, and the general idea of it was taken from the world-famous Roman Pantheon. We have an old "section" of this now before us, and, looking at the "ornamentation" of its vaulted roof and at the mode of lighting, one cannot but wonder at what is sometimes meant by "improvement" and "progress." More than 2,000 years have passed since this Roman building was designed and put together, and the "details" of it thought out, and no one who has studied it will doubt of the artistic skill of the workman and artist who designed it. Why should this vaulted room in the British Museum, in the centre of the mightiest city in the world—and the wealthiest—come short of the Roman vaulted room? The panelled vault of the Roman building is of stone, while that of our own is of "iron ribs" only and "plating." It may seem a small matter this to the industrious book-worms here, but it must have its mental influence even if it be unnoticed. We name it here with the books because books, after all, are not the sole teachers.

There is, again, among so much else, one item in this reading-room as contrasted with its Roman prototype, that involves considerations of no small importance, and, in the present day of much that is missed and lost sight of, but which in ancient days were never neglected. We refer to the method of lighting it. The Roman building, as is so well known, is lighted simply enough—*viz.*, by a large circular hole in its domed roof. This circular opening, without glass covering or skylight of any kind, is about, in diameter, one-fifth of that of the diameter of the floor of the building. Nothing can possibly surpass the simple and magnificent effect of so simple a mode of lighting, the blue sky of Italy always visible through it. Now it is quite true that this sublime simplicity has its inconveniences, for the rain and the sunlight came through this opening inconveniently enough some times, so that it would not do in the British Museum Library. But may not the advantage of the occasional sight of the blue sky and sunlight be got without their inconveniences? We think so? The museum skylight, as it now is, is of dull ground glass, and over this a tarpaulin of still duller canvas has been spread, so that this room is more than usually gloomy and depressing. Might not, then, the experiment be tried of quite clear plate glass, in one sheet it might be, and then over this a light canvas tent some feet above it, to keep out the direct sunlight? Thus would the blue of the sky and its changes be visible between the edge of the ring and the canvas roof and the pure light of day let in. Anything but the dull gloom as it now is. There is work for another conference yet. C. B. A.

On Wednesday week a new public hall and assembly-room was formally opened at Whitby. The hall has been built by Mr. James Gladstone, from the plans of Mr. Falkingbridge, architect.

A statue of the late Dr. Graves, which has been erected in the Hall of the King and Queen's College of Physicians, Dublin, was unveiled last week. Mr. Albert Bruce Joy was the sculptor.

BUILDING NEWS DESIGNING CLUB

REVIEW OF DESIGNS.—NO. XXI.

A Cemetery Chapel.

WE have a large number of designs for this subject, and a few have grasped the idea with success. "Début" we place first. The plan is cruciform, about 40ft. long, with circular apse at end. We do not like the awkward way in which the seats terminate at the chord of apse. No altar or desk is shown. One transept contains an organ recess and vestry; the opposite one the porch, and a small waiting room which is too small. In external design "Début's" idea conveys admirably the expression of a mortuary; there is an almost death-like severity of line and feature in the Classic style he has chosen, and the calm horizontal repose of the lines and roof are thoroughly characteristic, though to some minds the treatment is not sufficiently suggestive of a Christian's burial. One end is treated with a series of five lights, relieved by Ionic pilasters between them. The side and apsidal end have circular windows between plain broad-faced pilasters, which spring from a set-off about 6ft. high, below which the walls are perfectly plain. There is a simple bell gable over the porch, the transepts being hiped. The roof is a plain barrel vault. "B" in circle comes next in the conception of a cemetery chapel. It is an octagon in plan, 25ft. diameter, with two opposite groups of 18 sittings. There is a porch at one end, open, with side arcades, and a chancel at the opposite end, with altar raised on two steps, and railed off, and a vestry at side. No waiting-room. Externally the author has selected a pleasing model. A plain bell niche or gable rises between the porch and octagon; the roof is pyramidal and high pitched, and surmounted by a plain metal cross at apex. We do not like the porch, which is too small to be of service, and the detail is roughly drawn. "Loisir" is a plain chapel, with waiting-room in the form of an apse at one end, an open carriage porch, and a passage entrance, with a vestry at the other end. There can be little doubt in our minds of the source of the author's inspiration. We published a cemetery chapel a few weeks ago that was almost an exact counterpart—open porch, bell gable, and all—though the copy cannot be regarded as an improvement upon the model. "Tom Pinch" is a small rectangular chapel, 50ft. by 18ft., with an altar raised at one end, and an ante-chapel at the other—a vestry, dead-house, lavatory, &c., being placed on one side, forming an aisle-like projection. The seats are not well planned. An open porch is placed at the ante-chapel end. There is a well-designed bell gable for two bells, but the design is redundant in detail, and scarcely pronounced enough. Estimate at 53d. amounts to £1,581 5s., the materials provided being concrete for walls, and Ketton stone dressings, with brown tile roof. "Prêt" has a plan about 50ft. x 20ft., with a porch for hearses and foot passengers (open) at one end, and waiting-room and vestry projecting from the side at the angles. In design the side elevation is passable, but the German traceried intersecting cross-bar window in the gable front is out of character and wanting in the quality of repose. A small desk is provided at one end on a raised platform, the coffin being placed at the other end under the window; seats for thirty-six mourners are provided on each side. "Discere Volo" exhibits a chapel with side seats and centre bier 38ft. 6in. x 20ft., a raised altar at east end, and an organ recess at the west, with side stairs to it, and a side open arcaded cloister on one side, straight with and beyond which is a vestry and stove. The plan is compact in its arrangements, and the external design is suitable, a double bell gable flanking the west end, and an arched porch being shown in front of cloister entrance. "Sirius" has a plain chapel, the seats being at one end, and the bier placed in the centre with a reading desk. A waiting-room, porch, and vestry form a side lean-to. The design has too near a likeness to a small chapel of the usual type. The side elevation is better. Estimate at 9d. per foot cube = £1,224. "Excelsior" shows a mortuary chamber at the side of chapel, which has a porch and a vestry

at the other side. No bier is indicated, and the design bears too strong a resemblance to a church in the Classical style. The style adopted, Greek, is suitable but severe, and the tower and cupola are unnecessary. "Student" is a neat drawing of a chapel with a small apse of oven-like proportions, which might have been omitted, a vestry, centre mortuary, transept, and porch being on one side, with a second porch on the other side of chapel. A screen separates the mortuary from the chapel, which latter is arranged solely for seats in two groups facing the apse and reading desk. The style is too chapel-like, and the turret and detail mimic rather a Nonconformist than a cemetery chapel and mortuary. "Cave Canem" has a small chapel, 32ft. x 22ft., with side seats and a centre bier, a small recess, with altar and a vestry, an open porch being at the west end. The details were plain, but they are hardly characteristic of a mortuary chapel, and the provisions for one are not perfect. In a second order of merit we place a very long plan with hearse porch, ante-room, chapel, vestry, inquest-room, and dead-house, all in a row, priced out at 7d. = £1,366. "Nil Desperandum" (unfinished), "Trefoil" in circle (exceedingly like a church), "Ambition," "A. L. B.," "Medicus" (a good plan, simple and expressive, but detail poorly drawn, which would otherwise have claimed a higher place), "Cleo" (a right-angle arrangement, one arm being the Church, and the other the Dissenting chapel, with attendants' and ministers' rooms in angle), "Jack," "More Firmior," "R. J." (a church in miniature), "Naivété" (try again).

Dining-room Decoration.

We have received two or three creditable designs for this. "Début" sends the most artistic sketch; the wall is panelled, and the doorway is framed with panels round it as architraves. The door is in nine panels, with the head and real enrichment in the mouldings, and the lock rail is sunk with a carved honeysuckle pattern, which is also carried round the wall paneling. The buffet is simple but effective, has a sideboard top, a locker above, and angle shelves for bric-à-brac, and the top has also shelves for ornaments. Below the sideboard is another locker, and the whole is raised from the floor by truss-like legs. A Classical feeling prevails. "Fleur-de-lis" shows a pleasing design in Jacobean taste. The wall has a dado of stamped leather, of a rich lake colour, the wall surface is distempered of a light cinnamon, with lines of darker tint dividing it into squares, the frieze is panelled with foliage of a sage green ground with leaves of subdued colours. The woodwork is proposed to be in oil of dark tones, the upper panels of door having three figure subjects and twofoliac panels above in rich colours. The buffet is simple, and framed with a sideboard, drawers, and cupboards beneath a centre mirror, and side lockers and under recesses for china. Brass sconces flank the buffet, and blue Nankin vases and brass dishes make up a pleasing grouping. "Tom Pinch" is a clever study. There is a high dado with panels of Japanese design, a wall surface of rouge royal, and a panel frieze also Japanese in conception. The door is in two large and two small frieze panels, the latter decorated with flowers. In the design of buffet there is good taste exhibited in the general outline and forms. It is canted at the angles with angle shelves and centre locker, over which is the top, above which are shelves for glass and china. The detail is in good keeping, and the drawing well executed. "J'Espère" we place next. The author shows a panelled wooden dado, a recess with buffet, and traceried light above, and a six-panelled door. The wall is treated with natural foliage in panels, and its surface is divided into three horizontal divisions by bands. A kind of Flemish Gothic, for which the author has a penchant, is adopted, and the drawing is well executed. "Bee," in circle, is a clever Japanese treatment; the woodwork of door and buffet is very plain, and consists chiefly of small and sunk mouldings. There are two cupboards, a foot space, three drawers above, and a top shelf for bric-à-brac. It is intended to be of polished oak, and the door and skirting of room of dark bronze. The wall consists of stems in parallel lines and leafage disposed as branches, breaking irregularly as

panels with medallions having birds on the wing in them. "Boz" shows a too fanciful door with ornamental lower panels, and a plain upper one, and a buffet in questionable style. The wall is supposed to be sage green, and the frieze to be panelled in blue on a buff ground. There is a want of rhythm and harmony in the composition. "Johnny Morgan" is another design wanting in character, and the lower door panels are too small and out of proportion.

Foliated Hinges.

"Début's" sketch for wrought-iron door-hinges is by far the best. The idea of ironwork has been kept in view, and the style partakes of a free Gothic character. "Silkworm's" design we place next. It lacks freedom; the crossed branches look stiff, and the foliations are too crowded and meaningless at the thick part of hinge. "Naivété" has taken a great deal of pains. His hinge is 3ft. 6in. in length. The foliations are a little too flat in the curves one way, and the diminution of the foliated parts as they extend has not been kept in view. The details are shown.

THE CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE first meeting of the session took place on Thursday week, at 7, Westminster-chambers. A vote of thanks having been accorded to the retiring President, Mr. R. M. Bancroft, the President, Mr. H. Valpy, read the opening address. He expressed the hope that Mr. Dixon, who read a paper last session, before this society, on the "Transport of Cleopatra's Needle," might soon see his labours crowned with success. Allusion was made to the ventilation of sewers, and a plan was advocated for exhausting the sewer gases, and for burning them at a station, out of London, instead of allowing them to force their way into the streets and houses. The designs for a new bridge in continuation of Northumberland-avenue were spoken of, and the advantages to traffic in the saving of half a mile of distance, and in the unusually easy inclines to the approaches, were set forth. A short examination of the value of electric lighting was entered into; and whilst its use was highly recommended as a concentrated light for light-houses, for the heads of coal and other mines, for the loading and unloading of steam vessels at night, and in large factories where motive power was at hand, it was shown that now, as a quarter of a century back, when the light was used at the works of Westminster bridge, its subdivision and distribution, as in the case of gas, was utterly impracticable. Wherever it was used there must be motive power, which was a matter of considerable outlay and annual cost; so much so, that for places using an electric light of about 1,000 candles, the cost would be from three to five times that of gas, and smaller lights would cost still more in proportion.

AMENDMENTS OF THE BUILDING ACTS.—III.

(Continued from p. 585.)

SECTION 8 of the Metropolis Management Amendment Bill is an interpretation clause, and provides that "the term 'site of a house, building, or other erection' shall mean the whole space to be occupied by such house, building, or other erection between the level of the bottom of the foundations and the level of the base of the walls." This part of the bill is intended to give the Board of Works power to make and enforce bye-laws to secure good foundations, so as to remedy the evils of building on damp sites and on "made ground." And it is important that the definitions in the bill, which will largely govern the operation of the bye-laws, should be thoroughly comprehensive, at the same time precise. In this respect the above definition is unsatisfactory, and if not amended will undoubtedly fail to answer its purpose. Indeed, it is hardly too much to say that the clause is not intelligible. Everything depends upon the meaning of "foundations," and there is no looser term in the whole building vocabulary. If "foundations" were defined first, the meaning of "site"

could be made clear. Definition is difficult, almost to a proverb, but as criticism should sometimes be constructive as well as destructive, we venture to suggest a definition of "foundations" for the purposes of this bill, which can doubtless be improved, but will serve to indicate what is desirable:—"The term 'foundations' shall mean the artificial formation, bed, or substructure upon which the footings of the walls shall rest or be supported." It is provided by this section that in this part of the bill terms to which meanings are assigned by the Metropolitan Building Act, 1855, shall have the same meanings respectively. And the Building Act defines "the base of the wall" to mean the course immediately above the footings. The meanings of these terms "foundations" and "base of the wall" having been determined, a definition of "site" could be framed somewhat as follows:—"The term 'site' shall mean the cubical space included by the horizontal superficies which the building shall occupy or cover, and by the vertical superficies extending from the level of the bottom of the foundations to the level of the base of the walls."

Section 9 is not cast in the most elegant mould, and in some parts is not English. It gives the Board of Works power to make bye-laws with respect to the following matters:—

(1) The foundations of houses, buildings, and other erections, and the sites of houses, buildings, and other erections to be constructed [erected] after the passing of this Act, and the mode in [which], and the materials with which such foundations and sites shall be made, formed, excavated, filled up, prepared, and completed for securing [insuring] stability, the prevention of fires, and for purposes [the preservation] of health.

(2) The description [nature] and quality of the substances [materials] of which walls are authorised to be constructed by section 12 of the Metropolitan Building Act, 1855.

(3) The powers and duties of district surveyors in relation to such foundations and sites and substances [materials], and for the guidance and control of [modes in which, and the means by which] such district surveyors in the [shall] exercise and discharge of such powers, duties respectively, and the fees to be paid to such district surveyors in respect of any duties imposed upon them by any such bye-laws or by this Act.

Section 10 provides that if the site or foundations of any building erected after the passing of the Act shall not be in accordance with the bye-laws made under the Act, the owner, occupier, or builder shall be liable to a penalty of from ten to forty shillings a day until the building is taken down; and the board may demolish the building and sell the materials.

Section 11 gives power to appeal within 7 days against any notice of a district surveyor.

All such appeals shall stand referred to the Building Act committee appointed by the board for hearing appeals, who may [shall] hear and determine the same, and may order the district surveyor, or any other surveyor, to inspect any such foundations, site, house [or], building, or other erection, and may on such evidence as they shall think satisfactory either confirm the notice served by the district surveyor, or may confirm the same with such modifications as they shall think proper, or refuse to confirm the same, and the decision of the committee with respect to the requirements contained in any such notice, and the justice of the same shall be final and conclusive, and binding upon all parties.

The working of this regulation will be sufficiently humiliating to the district surveyor without that curious clause empowering the committee to pronounce on the justice of the surveyor's notice. There seems also to be a want of some safeguard against the abuse of the power to appeal. It might be expedient to provide that, in cases where the surveyor's notice is confirmed, the appellants should pay at least the costs of the surveyor, and of any witnesses whom he might call.

The remaining clauses are not of any general interest.

On the whole the bill must be welcomed as likely to be a valuable addition to the Metropolitan building regulations. The fault in-

herent in it is that it will be another instance of piecemeal legislation. Nothing of the kind can be quite satisfactory until a Metropolitan Building Act is passed which will gather up into itself all existing building enactments, with all needful additions and improvements, and serve as a basis on which to frame a General Building Act for the whole country. Such a work will require some time, and much wisdom. And it may, perhaps, be questioned whether the system of close hatching adopted by the Institute and the Local Government Board in the preparation of the new scheme is the method most likely to produce the desired result. The new model bye-laws recently issued by the Local Government Board furnish an example of a courageous but rather unsuccessful attempt to settle a multitude of difficult questions without the aid of the proverbial multitude of counsellors, and the severe handling which the bye-laws have received from the Liverpool architects can scarcely be said to be unmerited. The framers of the bye-laws certainly consulted the Institute, but a circular addressed to the district surveyors, with a draft of the proposed regulations, would probably have called forth such suggestions, dictated by experience, as would have effected a material improvement in the rules. It is, of course, too much to hope that such measures may be discussed in detail in the professional journals before reaching the stage of legislation. Nevertheless it must be said that such a mode of treatment is "devoutly to be wished."

W. G.

THE LAW OF EASEMENTS.*

THE easement of the owner of a dominant tenement to have his light and air unobstructed by newly-erected buildings is not lost or diminished by the circumstance that, by means of clearances effected in the neighbourhood by other parties shortly before the alterations, he has acquired more lights than the buildings could obstruct. The Prescription Act has not altered the law as to the nature and extent of light to which the owner of an ancient light is entitled. The case of *Leech v. Schweder* is one of considerable importance. The facts in this case were these: L. was the assignee of the lease of a tenement in the City of London, used as a manufactory and warehouse, "with all lights, easements, advantages, and appurtenances whatsoever thereto belonging or in anywise appertaining." The lease contained a covenant for quiet possession. S., claiming under the same leases, proceeded to erect a new building, and in doing so raised the party wall. When the bill was filed the wall had been raised about 15ft. above the original height of the party wall, and according to the plans was to be raised to the height of about 15ft. more. Lord Selborne, upon an interlocutory application, restrained S. from proceeding with the building till the hearing of the cause. At the hearing Sir George Jessel granted a perpetual injunction, following the words of the covenant; and, in delivering judgment, made the following observations:—"It is clearly established by authority that there is sufficient to justify the Court interfering if there has been a breach of the covenant. It is not for the Court, but the plaintiffs, to estimate the amount of damage that arises from the injury inflicted upon them." Upon appeal the Lords Justices held that there is no difference in the right of an owner of land to the ordinary easement of light, whether it is acquired by twenty years' user or by grant from the owner of the servient tenement, and if the grant is accompanied by a covenant for quiet enjoyment of the premises, such covenant does not enlarge the right of the covenantee so as to entitle him to an injunction to restrain an obstruction where the damage is not sufficient to enable him to maintain an action at law. But it is otherwise where the right to light claimed is not the ordinary easement, but a special right created by the covenant, in which case a court of equity will grant an injunction without regard to the amount of damage. The sole difference between the court below and the Court of Appeal—most important, no doubt, as it is—was simply this: the Master of the Rolls held that

upon the contract "he must decide whether there was any molestation or disturbance at all," and the Lords Justices held that a covenant for quiet enjoyment accompanying a grant of lights conveys no greater or other right in equity than the covenantee would have at law, and consequently unless you can show that the right you claim falls within the terms of the demise you cannot succeed on the covenant. The laws relating to ancient lights were again reviewed by the Master of the Rolls in *Aynsley v. Glover*, in which his lordship decides that, whenever an action can be maintained at law, and considerable damages can be recovered at law, then the injunction ought generally to follow in equity. His lordship added, "If I had found by the evidence that there was in this case a clear instance of very slight damage to the plaintiff—that is, some £20 or £30, or £40, but still very slight, and a very large material substantial damage to the defendant, I should be disposed to hold that that was a case in which this Court would decline to interfere by injunction, having regard to the new power conferred upon me by Lord Cairns' Act to substitute damage for it." And in the still more recent case of *Kino v. Rudkin*, the further very important rule was laid down by Mr. Justice Fry:—"That an inquiry as to damages for an alleged obstruction to light will not be directed where the plaintiff has opened a case of substantial damages and has failed to prove it. It is impossible to lay down any rule as to what would constitute sufficient damage upon which to ground an application. But the result of the authorities may be shortly stated thus:—It is not every impediment to the access of light or air which will warrant the interference of the Court by way of injunction, or even entitle the party alleging himself to be injured, to damages. In order to found a title to relief in respect of such an impediment some material or substantial injury must be established, and the onus of proving the injury rests upon the plaintiff. Some few observations as to the doctrine touching the statutory rule touching the angle of 45° may be useful. The Metropolitan Board of Works, under statutory authority, by a bye-law passed in 1856, prescribed in effect that every new street within the limits of the Metropolis must be of the width of 40ft. at the least, but if the building fronting any street be more than 40ft. high from the level of the street, then such street must be of a width equal at least to the height of every building above such level. And by the Metropolitan Local Management Act, 1862, it was provided that: "No building except a church or chapel shall be erected on the side on any new street of a less width than 50ft. which shall exceed in height the distance from the external wall or front of such building to the opposite side of such street, without the consent in writing of the Metropolitan Board of Works; nor shall the height of any building so erected be at any time subsequently increased so as to exceed such distance without such consent, and in determining the height of such building the measurement shall be taken from the level of the centre of the street immediately opposite the building up to the parapet or eaves of such building." Lord Selborne in the *City of London Brewery Company v. Tennant*, said "the fact that 45° of sky are left unobstructed after the erection of new buildings, may, under ordinary circumstances, be considered *prima facie* evidence that there is not likely to be material injury." The question again came under consideration by the present Master of the Rolls in *Hackett v. Baiss*, who said "that on being satisfied that 45° are unobstructed, he ought *prima facie* to come to that conclusion, unless there was something special in the case. Now, what is special in this case was in favour of the plaintiff. In the first place Jewry-street was rather narrower than it ought to be [only 38ft. in width]. In the next place there was some positive evidence that the present height of 46ft., a little over 45°, had interfered with the access of light not to an inconsiderable extent, and had actually caused personal inconvenience to one of the occupiers of the houses." And an injunction was granted to restrain the defendants from erecting the new building at a greater height than 46ft. from the pavement or base line. This was not, however, to prevent the defendant from

making a sloping roof of a greater height, so long as the angle of incidence of light over the roof to the centre of the ground floor windows of the plaintiff's house did not exceed 45°. The subsequent case of *Theed v. Debenham* is another illustration of what the Court will consider a special case, to which the rule as to the 45° does not apply. In this case the ancient lights of a sculptor had a north aspect in a street in the metropolis, 31ft. wide. In the course of his profession he required, not only a direct light, but what is technically termed an under or low light, and which he had hitherto enjoyed. Some of the ancient windows had been enlarged within twenty years. The defendants' old buildings on the opposite side of the street were, as to part, exactly 31ft. high, and as to the other part, a little less than that height. They intended to raise their new building so that their new parapet would be 38ft. from the pavement, and their ridge of roof about 7ft. above the new parapet, and they claimed to have a statutory right to raise their building to a height subtending an angle of 45°, measured from a base line, level with the centre of the plaintiff's light. It was proved that if the defendants raised the new building to the height proposed the plaintiff would sustain a serious diminution of light, and it was held by Vice-Chancellor Bacon that the statutory regulation as to the height of buildings in streets is not to be taken as limiting the right of prescription to ancient lights, but that such right depends upon the degree and amount of obstruction in each particular case. On the other hand, where there are no special circumstances, the statutory rule has been held to apply. There is yet another subject relating to the alteration of ancient lights which ought to be discussed at length, but it is impossible that I can do justice to the subject here, and I think, therefore, that I ought merely to refer you to the decision of the House of Lords in *Tapling v. Jones* which (overruling *Renshaw v. Bean* and *Hutchinson v. Copstake*) decided that the opening of a new window, being in itself an innocent act, could not therefore destroy existing rights in one party, or give new or revive old rights in another, and that, consequently, when there was an ancient light, and then others were added, and an obstruction was raised against the added lights, which, from their position, could not be obstructed without obstructing the ancient light, such obstruction was illegal. And to refer you also to the recent most important case of *The National Provincial Plate Glass Insurance Company v. Prudential Assurance Company*, in which, not only the question as to the alteration of ancient lights, but the considerations on which the question of injunction or damages depends were fully discussed. In that case a building containing ancient light was pulled down and replaced by another, in which the front was set back and a dormer window converted into a skylight, and it was held that the right to accept of light was not lost. That any substantial alteration in the plan of the windows destroys the right, and that the right remains where any portion of the light which would have passed over the servient tenement through the old windows passes also through the new windows.

At the last meeting of the Bethnal-green Board of Guardians eight tenders in number were received for the execution of certain structural alterations necessary to provide for the accommodation of two resident medical officers of the workhouse, the highest being by Mr. Enfield £138, and the lowest that of Mr. Beale £55 10s. One of the guardians gave notice of his intention, at an early date, to move for the appointment of a surveyor to the board, the absurdity of the tenders just submitted being, in his opinion, a strong proof of the necessity of the guardians taking such a step.

Arrangements are being made for bringing *Cleopatra's Needle* from Ferrol. Mr. Dixon has given bail in the Admiralty Court to the owners of the *Fitzmaurice*, which picked up the *Cleopatra*, to meet such salvage as shall be awarded. Captain Carter, the master of the floating needle-case, has been sent to Ferrol with a picked English crew to resume possession of his ship. He has inspected the *Cleopatra*, and found her in better trim than might have been looked for. The necessary repairs can be completed, he says, very soon, and a tug is to be sent to tow the *Cleopatra* across the Bay of Biscay.

* Conclusion of abstract of a paper read by LOCOCK WEBB, Q.C., Honorary Associate, at the Royal Institute of British Architects, December 17th, 1877. See p. 654 ante.

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CHAPEL—NEW REREDOS IN ST. PAUL'S CHURCH,
NOTTINGHAM.

OUR LITHOGRAPHIC ILLUSTRATIONS.

STONYHURST CHAPEL.

The chapel, like those at Eton, King's College, Cambridge, &c., is a simple parallelogram, 90ft. x 35ft. inside measurement, designed in the Early Perpendicular style, with moulded and carved hammer-beam roof and panelled ceiling of that date. One side of the chapel has a row of confessionals, treated externally like a corridor, with flat roof and ornamental parapet, and above are six large windows filled with rich and delicate tracery. On the other side of chapel are tribunes, to which access is gained from the west wing, the building containing the professors' rooms. The east end being a blank wall, is almost entirely filled by an elaborate reredos reaching to the roof, filled with niche work and sculptured panels, representing various scenes from the passion of Our Lord, the figures of the rood crowning all, and rising into the central arch of the roof. Externally the elaborate tracery windows are well set back under deeply-moulded arches, and between each are buttresses of 12ft. projection. On the lower story the space between the buttresses is thrown in the lavatory, then the confessionals occupy this position on the level of the chapel floor, and above the chapel wall appears some ten feet further back, with its windows and buttresses, and finished at the top by a panelled and embattled parapet, broken by pinnacles that crown each of the buttresses. We give a view of the chapel which forms one side of the Priests' Quadrangle.

ST. PAUL'S CHURCH, NOTTINGHAM—NEW REREDOS.

The reredos occupies a semi-circular recess, which is part of the original structure of the church, which was built by Wilkins, the architect, in 1822, in the Grecian Doric style. The reredos is constructed of Caen stone, with pilasters of blue Greenmore stone, and the patera in the centre of the cross is veined Nottinghamshire alabaster or gypsum. The ledge above the inscription, "Do this in remembrance of me," forms a super-altar. Gold has been sparingly used to bring out the effect of the incised work, and to form a background to the central cross. The central carved panel has the grapes and corn, symbols of the bread and wine of the Communion Service; the side panels have the lily as an emblem of the purity of the faith of Christ, and the passion flower as representing the sacrifice of His death. The execution of the workmanship is first class, and is from the workshops of Mr. Charles Lowe, of Nottingham, and Mr. Birchenough, carver and sculptor, from designs prepared by Mr. S. Dutton Walker, F.S.A., of Nottingham, architect.

"BUILDING NEWS" DESIGNING CLUB.

We illustrate this week the best designs for a hall fireplace. For critical review see p. 584, published a fortnight since.

HOUSE, ELSWORTHY-ROAD, PRIMROSE HILL.

The illustration shows a detached house, lately erected by the owner, from the designs of Messrs. Batterbury and Huxley, architects, 25, Great James-street, Bedford-row, W.C. The walls are faced with plum-coloured Luton bricks, the dressings being of red bricks. The roofs are covered with brown Broseley tiles. The owner was responsible for the plan adopted, and for the omission of the plaster cove, and the substitution of flat overhanging eaves.

CARVINGS FROM ST. ALBAN'S ABBEY.

OUR double page plate to-day illustrates Mr. Neale's paper on St. Alban's Abbey, read at the last meeting of the R.I.B.A., and reported in our last and present issues. The selection of drawings we publish to-day was made from those which Mr. Neale exhibited on the occasion of his lecture, and they illustrate in a very interesting manner the four several periods of carving adopted in the ornamentation of the four great architectural styles of England, and are drawn from examples existing in the abbey of St. Alban. For further particulars we refer our readers to Mr. Neale's paper.

NORFOLK ISLAND AND CHILI PINE.

THE Norfolk Island pine, which forms a distinct species, grows to a height of 160 and even 180ft., and Governor King informs us that he measured some in Norfolk Island which were 228ft. high, and 11ft. in diameter. It was first discovered by Captain Cook on his second voyage, on that extremity of New Caledonia called Queen Charlotte's Foreland, and on a neighbouring island named by Cook Botany Island, also on another island, which received the name of the Isle of Pines, from its being almost covered with the above-mentioned tree. Captain Cook writes of it "If I except New Zealand, I at this time knew of no other island in the South Pacific, where a ship could supply herself with a mast or a yard, were she ever so much distressed for want of one. My carpenter was of opinion that these trees would make exceedingly good masts. The wood is light, close-grained, tough and light. Turpentine had exuded out of most of the trees, and the sun had inspissated it into a resin, which was found sticking to the trunks and lying about the roots. These trees shoot out their branches like all other pines—with this difference, that the branches of these are much smaller and shorter, so that the knots become nothing when the tree is wrought for use." Forster, speaking of them in his account of the above voyage, says: "Peculiar to Norfolk Island, and to the east end of New Caledonia, we found a species of coniferous tree, from the cones seeming probably to be a cypress. It grows here to a great size, and makes useful timber." Captain Hunter, in his journal of the transactions at Port Jackson and Norfolk Island, says: "The pines, which have been particularly spoken of by Captain Cook and by others, are the most conspicuous of any trees here; they grow to a prodigious size and are tall in proportion, being from 150 to 200ft. in height, and from 12 to 14ft. in circumference, some being as large as 28 and 30ft. These trees, from their immense height, have a very noble appearance, being in general, very straight, and free from branches to 40 and sometimes 60ft. above the ground; they have been thought by some fit for masts for ships of any size, and in length and diameter they certainly are." Captain Hunter does not, however, consider the quality good enough for masts, owing to many being unsound, and he states that in providing a topmast and a top-sail yard for a seventy-four gun ship, twenty-seven trees out of thirty-four were found to be defective. His experience, however, appears to have been more unfortunate than that of others, and we must also remember that a defect, which would be fatal in a mast, would by no means of necessity prevent the wood being used for building purposes. Indeed he says, "I think it fit for house-building, for which we know it to be very useful." When fresh cut down, five out of six trees will sink in water, and for naval purposes the difficulty of getting whole trees from the interior of the island to the sea, if designed for masts, would operate

against its use, were our navy great consumers of wooden masts, but if used for building purposes, it could be cut up where felled; and the transport would be comparatively easy. Lieut. (afterwards Governor) King says of it: "These trees are in general sound, but the upper part is too knotty and hard to be useful. The pine is very useful in buildings, and being dispersed in various parts of the island, is well calculated for such buildings as may hereafter be necessary. From what I have observed it is very durable, as that which we had used in erecting houses stood the weather very well."

The wood of the Chili pine is of a yellowish white, fibrous and full of very beautiful veins, capable of being polished and worked with facility. The resin abounding in all parts of the tree is white, and its smell like that of frankincense. There are large forests of this tree, which rises to the height of 150ft.; its trunk is quite straight and without knots, ending in a pyramid formed of horizontal branches, which decrease in length gradually towards the top, and is covered with a double bark; the inner is 5in. or 6in. thick, from which, as from almost all other parts, resin flows in abundance. The outer is of nearly equal thickness, resembling cork cleft in various directions, and equally resinous with the other. It is probably the best adapted for shipbuilding, as has been shown by the experiments made in 1780, in consequence of which orders were given to supply the squadron commanded by Don Antonio Bacaro, then at anchor in the port of Talcaquano. The resin is put to a variety of uses; it is applied in plaster, as a powerful remedy for contusions and ulcers; it cicatrises recent wounds, it strengthens fractures, and mitigates headaches. The Indians make use of the fruit of this tree as a very nourishing food; they eat it raw, as well as boiled or roasted, and with it they form pastry and distil from it a spirituous liquor.

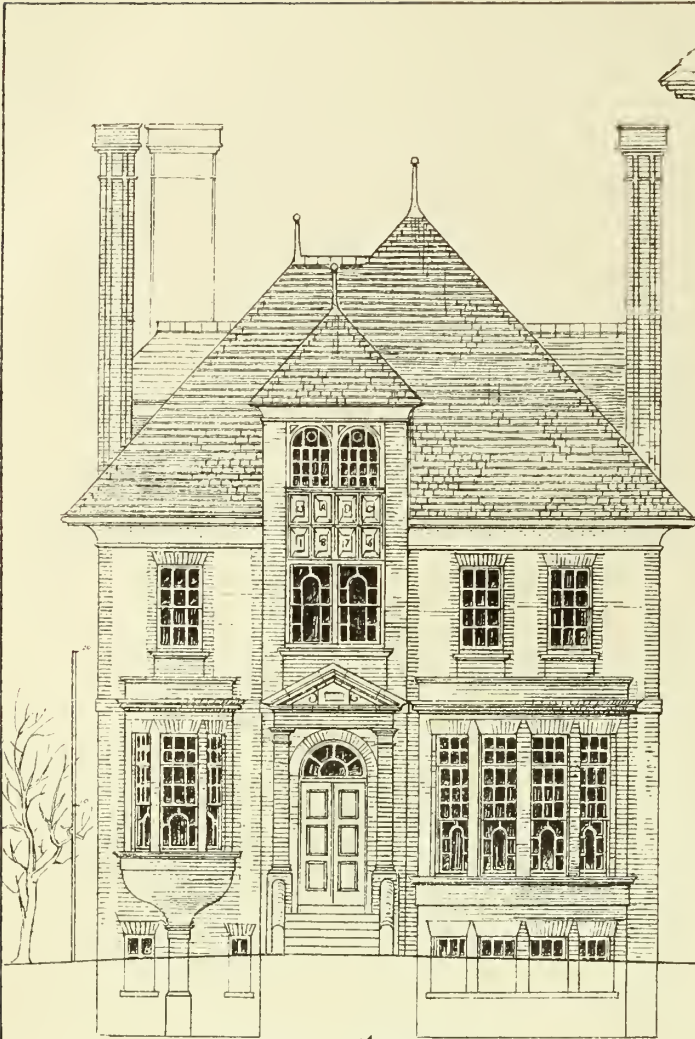
Although in a state of nature these pines possess many excellent qualities. It is quite possible that the quality of the timber they furnish might be greatly improved by a little cultivation, but the Swiss saying, "trees and weeds grow everywhere," illustrates the indifference with which trees are generally looked upon. "To hate a tree like a Spaniard" is also another illustration of the same negligence. So far as our own possessions are concerned it is to be hoped that the authorities are looking better after the forests than our European neighbours have done, for on turning over the leaves of our consular reports we come across such expressions as these:—

Austro-Hungary: "In the alpine regions the decrease in the yield of timber is attributed to the wanton and irrational destruction of the trees by the peasants, far more than to the unfavourable influence of the climate. In other places the inhabitants have been industriously destroying the forests for the last two centuries or more. In Bohemia and Hungary, whole forests have been uprooted." Sweden: "The productive power of the forests is rapidly getting smaller, owing to forest fires and the indiscriminate felling of immature trees." Norway: "The same causes which have led in Sweden to the diminution of the productive capacity of forest lands, have led to a similar result here." Switzerland: "The annual production of the Swiss forests, is considerably less than the amount they are called upon to supply." United States: "No steps appear to have as yet (1875) been taken to prevent waste or to renew the supply of timber." Cuba: "No systematic official precautions have ever been taken to prevent injuries to the forests. And thus has valuable timber been diminished."

These few extracts will serve to show that we cannot know too much concerning building timber in various other parts of the world, which have not yet appeared in our market, but with which we may some day be glad to make better acquaintance.

Mr. Longden, of Malton, has been elected borough surveyor of Warrington.

At an early hour on Christmas morning the premises of Mr. James Stirling, builder and decorator, of North-road, Uxbridge, were broken into by thieves, and property to the value of about £2,000, consisting of tools, and a large amount of brass work and gas fittings, were carried away.



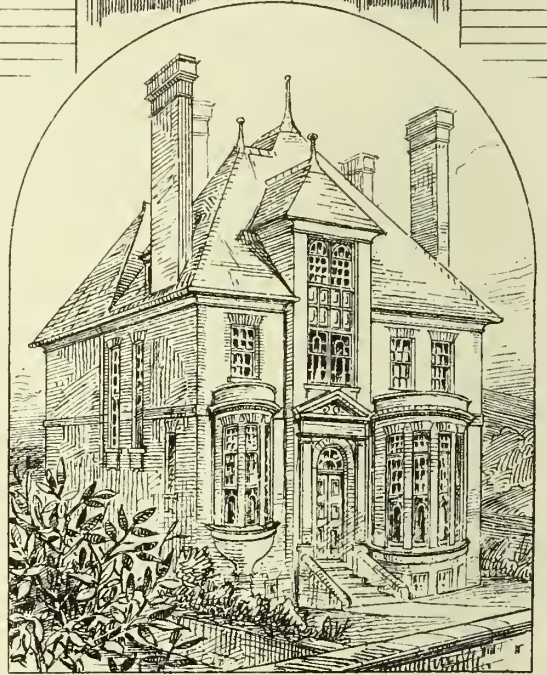
Front Elevation



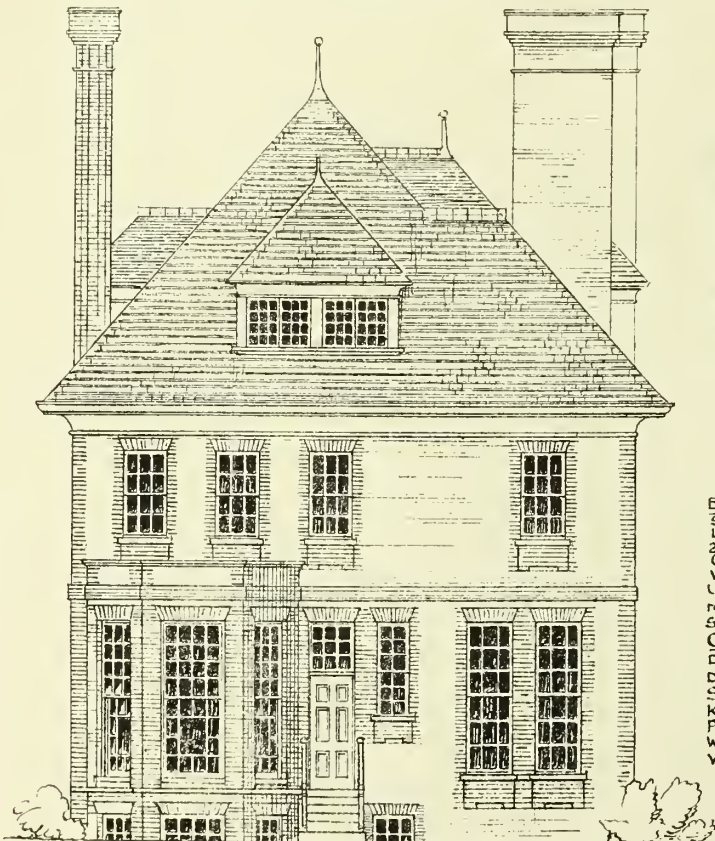
Plaster cove

HOUSE: erected in:
ELSWORTHY: RD:
Prim-rose Hill:
Messrs: Batterbury & Huxley:
25 Gt. James St: Bedford Row Architects:

Wood Panel in Front

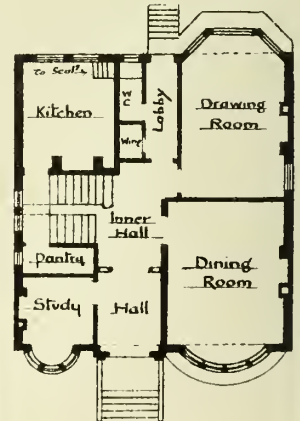


Sketch View



Back Elevation

- BASEMENT**
- Sevitory 14' 0" x 7' 6"
- Larder
- 2 Store Rooms
- Coats
- W.C
- Under two principal rooms laid out as a skating rink.
- GROUND FLOOR**
- Drawing Room 22 x 15
- Dining Room 22 x 15
- Study 10 x 9
- Kitchen 14 x 12
- Pantry
- Wine cellar
- W.C
- FIRST FLOOR**
- 4 Bed rooms
- Dressing room
- Bath room
- ATTIC FLOOR**
- Large Nursery
- 2 Bed rooms

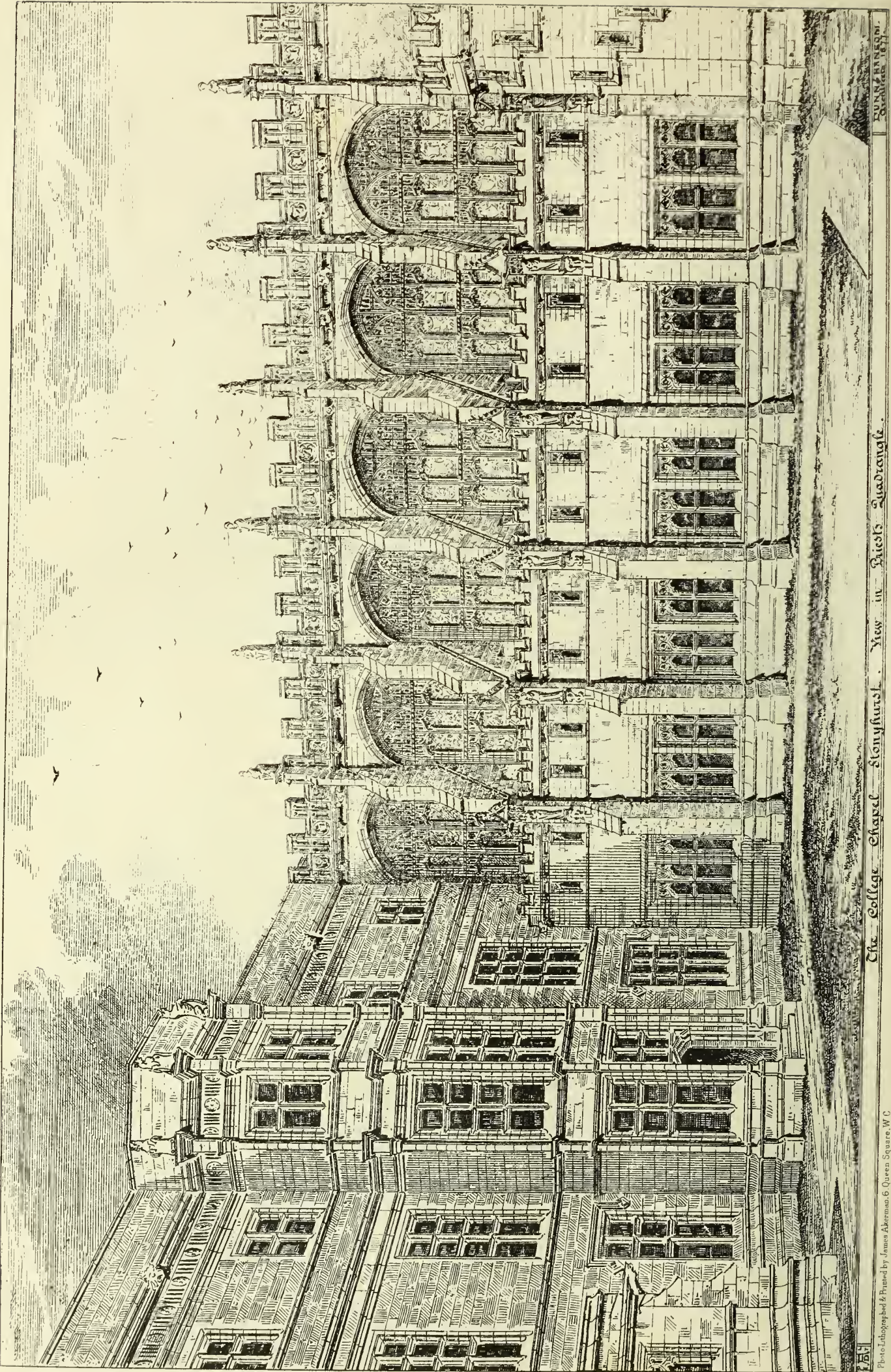


Ground Floor Plan

The walls are faced with Linton bricks; purple; the chimneys, strings and mouldings being of red brick.

W. Pennington del.

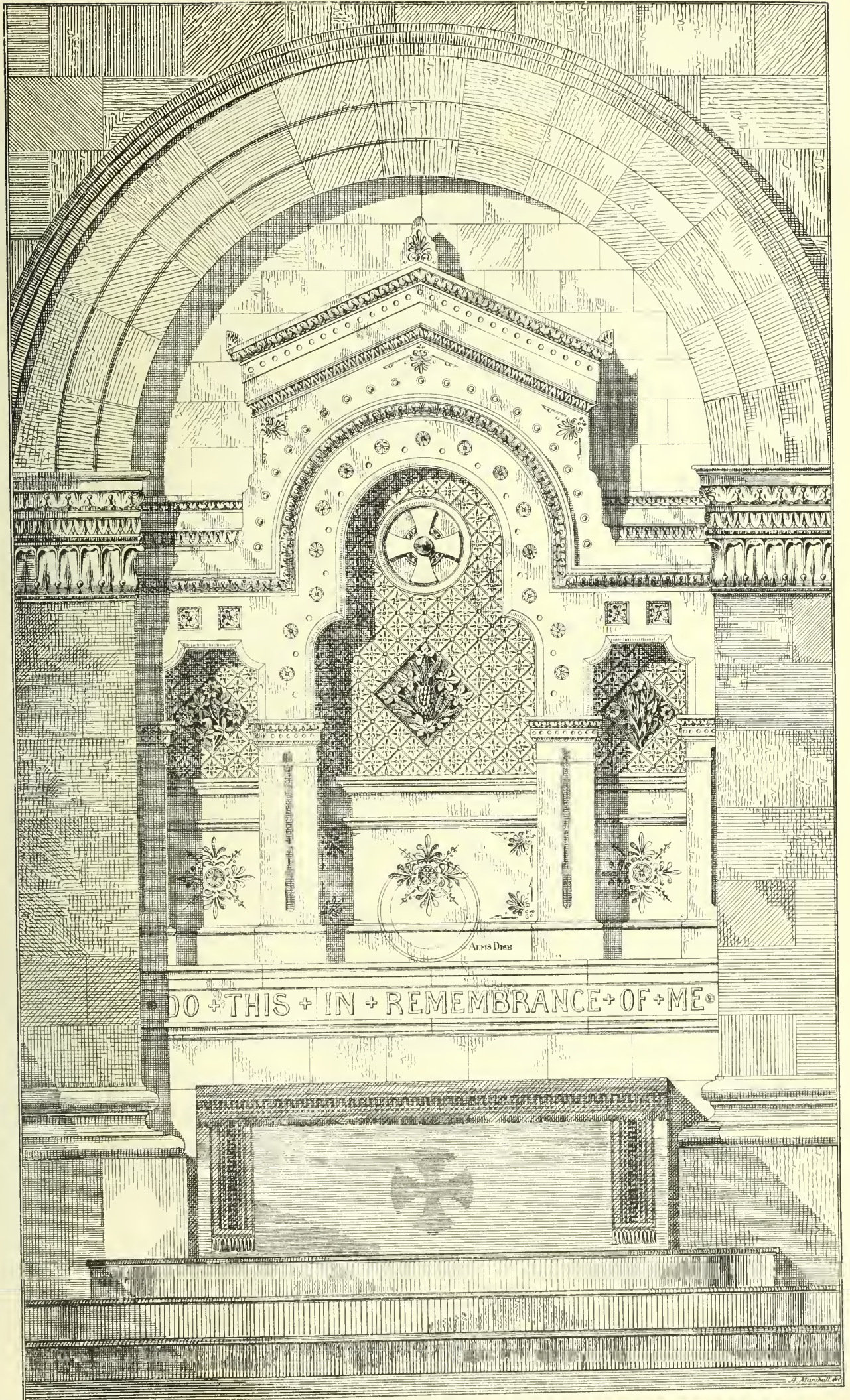
THE BUILDING DEWS, DEC 28, 1877.



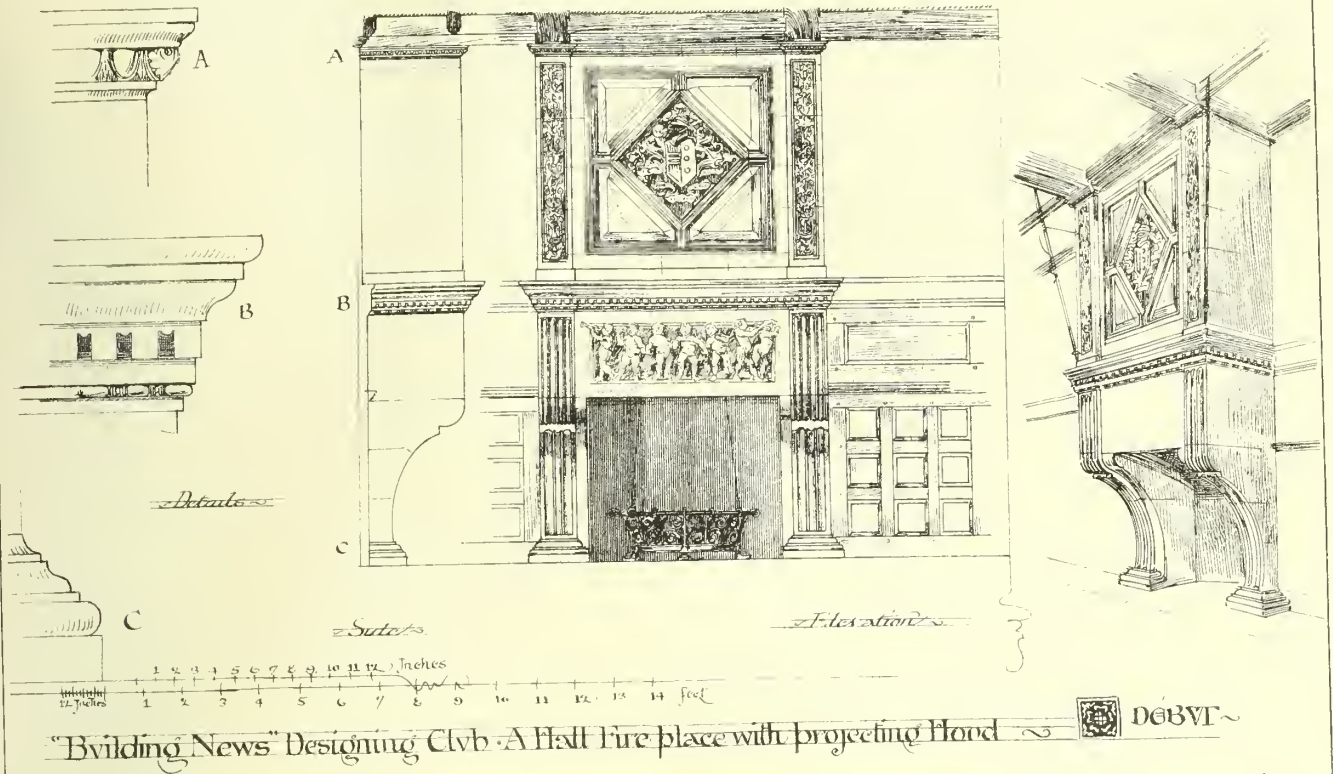
The College Chapel Stonyhurst. View in Ladies Quadrangle.

Photo-Lithographed & Printed by James Akerman, 6 Queen Square, W.C.

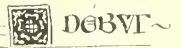
DUNN & BARNES
LONDON



NEW REREDOS, ST PAUL'S CHURCH, NOTTINGHAM, S. DUTTON WALKER & SA ARCHITECT

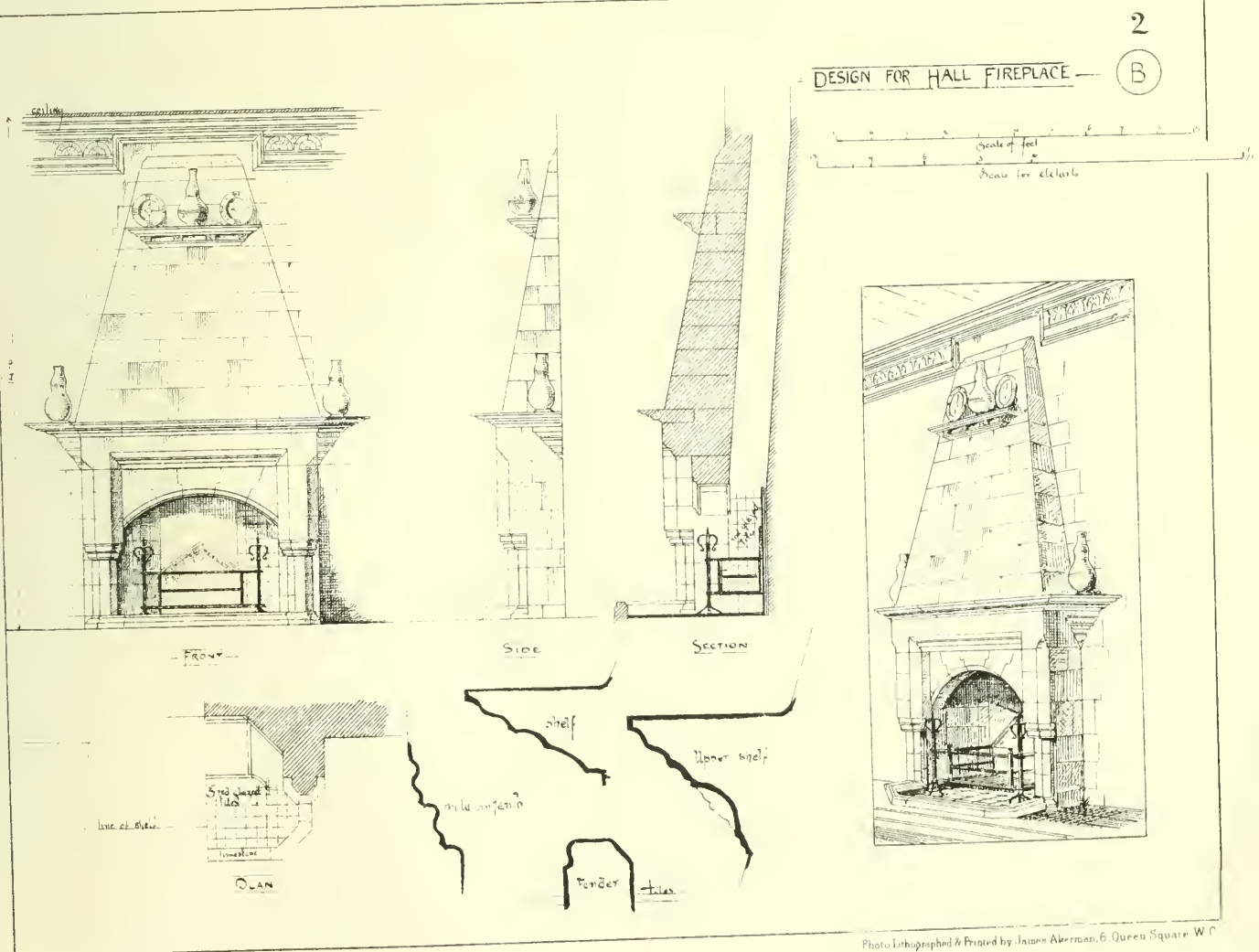


"Building News" Designing Club A Hall Fire place with projecting Hood

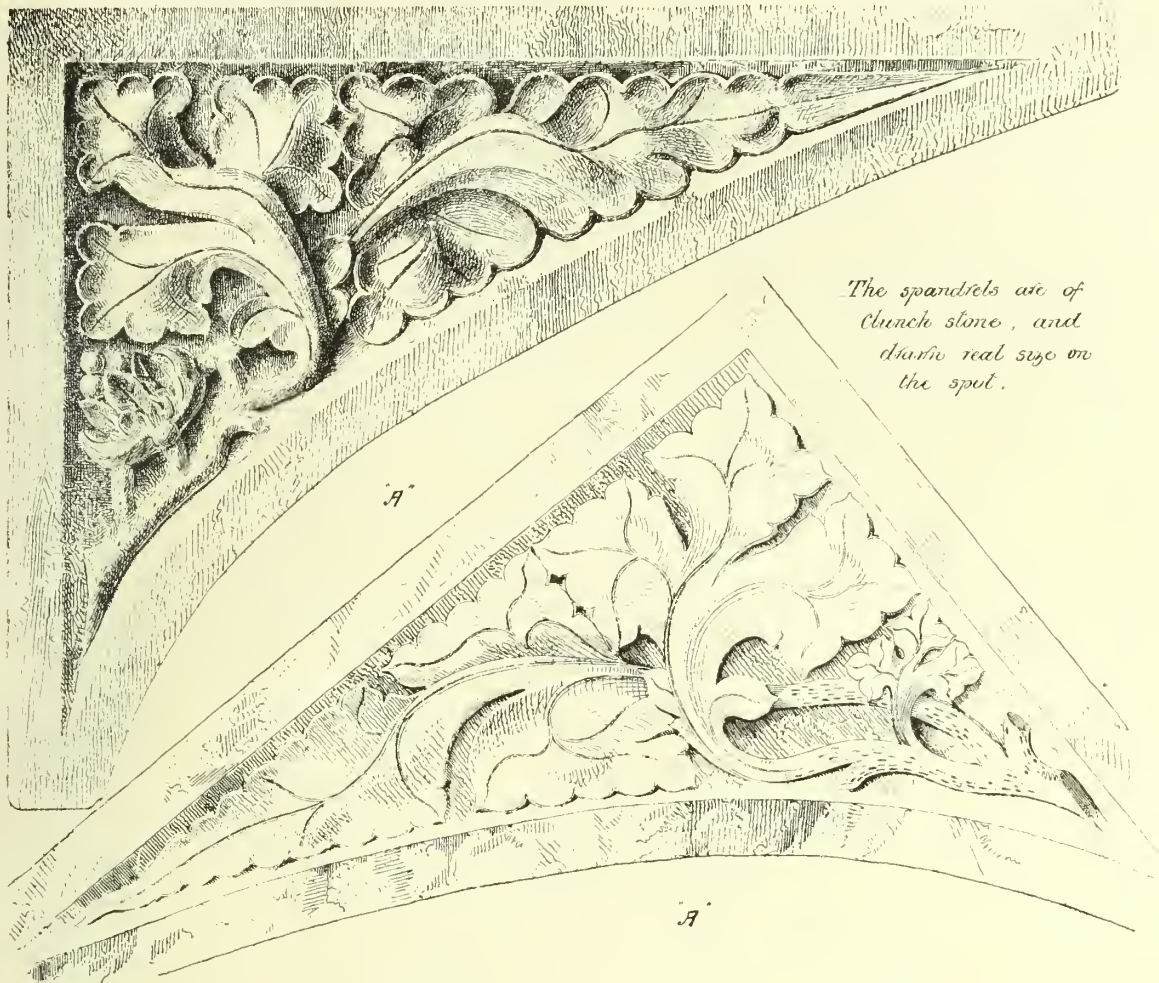


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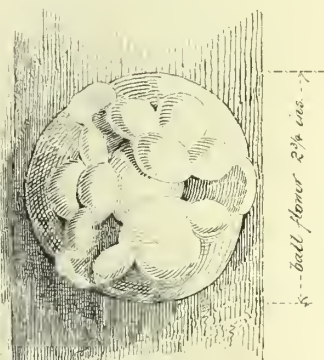
"BUILDING NEWS" DESIGNING CLUB



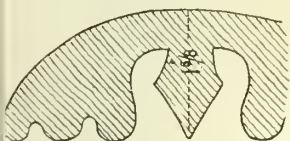
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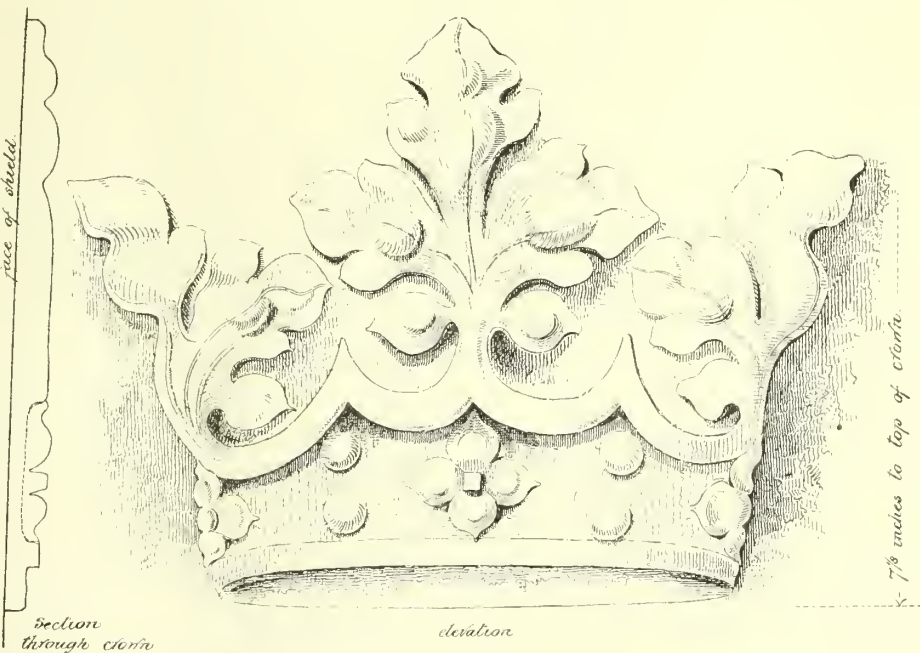
The spandrels are of
church stone, and
drawn real size on
the spot.



ELEVATION OF "BALL FLOWER" FROM
ARCH MOULDINGS TO TRIFORIUM ARCADE



PLAN THROUGH FLOWER AT "A"
TAKEN DIAGONALLY.



CROWN FROM A SHIELD JUST UNDER TRIFORIUM ARCADE

This carving was drawn out real size and
finished on the spot, it is here reduced
by photography - For position see elevation.

FROM S. ALBAN'S ABBEY
"TES·ON·S·ALBANS" BY J. NEALE F.S.A

THE
LIBRARY OF THE
MUSEUM OF MODERN ART
1000 MUSEUM AVENUE
NEW YORK, N. Y. 10028

ARCHITECTURAL NOTES ON
ST. ALBAN'S ABBEY.

WE give this week in continuation from p. 652 a condensed report of the second portion of Mr. James Neale's paper, and a résumé of the discussion which followed its reading before the Royal Institute of British Architects, on the 17th inst. In our photolithographic pages will be found selections from the lecturer's drawings, which, as will be seen, illustrate the four great periods of carving, from typical examples in the Abbey.

The roof (said Mr. Neale) between the roof screen and the tower has twelve principals, with tie-beams and centre posts. The scantlings of the tie-beams average 15in. by 12in., with a clear bearing of 40ft. The beams, which project 3in. below the ceiling boards, are chamfered on the lower edge, and by means of these and of painted decoration, the whole surface is divided into panels. The whole of the nave ceiling was treated in the same manner, but at some comparatively recent date it was repaired. To save morticing and tenoning the new ceiling joist boards were simply nailed to the under side of the original beams. A flat unbroken surface was thus given instead of a surface broken by projecting beams, as in the choir. This flat surface, 211ft. long by over 30ft. broad, was divided into panels, in imitation of the more ancient design, by daubing in strong colours. The greater part of the original beams still remain within the roof, above the ceiling boards; they are morticed for ceiling joists, and chamfered exactly the same as the choir beams, and fragments of the original painting are discoverable. Only a few new beams were inserted. The choir ceiling boarding is of chesnut. Part of the old boarding was re-used in the nave, but the greater portion is in thin deal. In the centre and the western parts of the nave ceiling the joists are rudely sawn out of moulded and decorated beams; and braces to wall pieces, painted with stripes and stars (as in the choir) are re-used as common timber. Towards the eastern end of the nave there are indications under the present distemper painting on some of the re-used boards of an earlier design—possibly fifteenth century work. There is much difficulty in deciding whether the roof timbers are of oak or chesnut. Some are clearly of oak, but the greater part appears to be chesnut. This ceiling—which is 40ft. wide—is not flat, but rises about 1ft. towards the centre; obviously for the reason of hindering the beams from appearing to sag when viewed from the ground. During the summer of 1875 the choir ceiling was repaired, and the distemper painting touched up. Whilst replacing one of the panels, a workman accidentally rubbed off some of the new paint, and beneath it indications of an earlier design were brought to light. One by one the panels—66 in number, arranged in 11 rows of six panels each—were cleansed by peeling off the outer coat of distemper, and a painted design of much beauty was exposed to view. The two central panels of the middle row contain representations of our Lord and the Virgin, in each of the other rows three of the panels are charged with shields supported by angels; the three alternating panels bearing monograms, *I.H.S.*, surrounded by wreaths and vine leaves. The date of the painting has been put at between 1368 and 1376, but the lecturer thought it much later, probably about 1440. The apsidal sanctuary of the Norman church, with the exceptions of a few alterations by Trumpyngtone (1214-1235), seems to have remained entire until 1257, when the whole of the eastern part of the church was pulled down. At the rebuilding, which was immediately commenced, about 50ft. of the north and south walls were left standing in order to form buttresses to the great tower. All the work eastward has been removed. The square east end of the new design was built upon the connecting wall which crossed the Norman church at the springing of the apse. The two first bays occupied the space between the tower and the second Norman buttress to the eastward. Sufficient space was not left between this point and the east end for four bays of the same width; three bays somewhat wider than those to the west were therefore erected, making five in all.

These bays of the sanctuary were erected just at the change of the style from the Early English to the Decorated. The latter style was not sufficiently far advanced to bring about an alteration in the outline of the clerestory windows. During the excavations in 1872, a cylindrical hole, sunk in a block of stone, was discovered in the south aisle of the ante-chapel; in this hole was found the lid of a small wooden box of oriental workmanship, which probably contained the heart of the builder or special benefactor of this chapel. The manuscript in the British Museum states that, although the body of Roger de Nortone reposed elsewhere, yet his heart was buried before the altar of St. Mary of the four tapers, in the south aisle of the ante-chapel. This documentary evidence confirms what the architectural details and mouldings would have led us to conclude—namely, that the southern portion of the ante-chapel was erected during the abbacy of Roger de Nortone (1260—1290). Some portions of the ante-chapel appear a few years later, and most likely were a continuation by the succeeding abbot, John de Berkhamstede (1291—1301). The sanctuary and the ante-chapel made rapid progress towards completion, but at the accession of Hugh de Eversdone, in 1308—fifty years after the insertion of the foundations—the Lady Chapel walls had only reached the level of the under side of the window sills, 10 feet above the ground. During this period architecture had greatly developed, and the change in the mouldings and other details clearly prove the work could not have been continuous. The vaulting of the ante-chapel was never carried above the stone springers. Hugh de Eversdone, abandoning the beautiful features of the central nave and aisles with their vaulting, removed four of the piers, cut down the stone springers, and covered in the space with a panelled ceiling, and thus entirely altered the design of his predecessor. Hugh had much difficulty in obtaining money, was anxious to complete the ante-chapel, and thought it would be wiser to do so quickly, even at the sacrifice of a portion of the original design. For the Lady Chapel he received a bequest of 200 marks, with which he erected a vaulted roof and put in glass windows. Some few years since, when the Lady Chapel was used as a grammar school, the vaulted roof being somewhat shabby, laths, plaster, and white-wash were applied on the boarding. The lath and plaster is now being removed, and some painted decoration is exposed to view. The group of chapels offers examples as exquisite as it is possible to find of two of the most interesting phases of English mediæval architecture. The earlier portion is hardly equalled in beauty of design by any contemporary work; the traceried windows, wall arcading, and clustered piers must be ranked amongst the most perfect specimens of the period anywhere remaining. The modifications are by no means improvements. Some of the mutilations betray a hardihood that might have made Trumpyngtone blush for his own meekness. Some 300 years ago the beautiful shrine of the Protomartyr was shattered by sacrilegious hands into thousands of pieces, which were used with the common rubble masonry for walling up the arches at the eastern end of the Saints' Chapel, when the public passage through the church was formed. When these arches were opened out in the spring of 1872, about 2,000 fragments of Purbeck marble were discovered. Under the guidance of Sir G. G. Scott, these fragments have been ingeniously put together by means of shellac, and the structure was found to exactly fit the marks in the pavements in the centre of the Saints' Chapel, traditionally regarded as the site of the shrine of St. Alban. The pedestal is of Purbeck marble, with the exception of the vaulting to the niches, which is of clunch stone and painted. The general dimensions are about 8ft. 6in. long by 3ft. 2in. wide, and 8ft. 4in. high from the top of the steps to the cresting. Mr. Ridgway Lloyd, in his pamphlet, attributes it to the time of Abbot John de Marynes, chiefly on the authority of a reading in the "Gesta Abbatum." De Marynes died in February, 1308. If by the end of 1307 the whole was completed, we may safely infer the pedestal must have been completed long before this time. The mouldings and carvings do

not, however, contain a single detail that would identify this work with so early a date, for (1) the carving is later and more natural-looking than that in the Lady Chapel (circa 1320); (2) Some tracery on the sides of the niches has the same peculiarity as the tracery of two windows in the north wall of the Lady Chapel, but of a still later form; (3) The earliest specimen of good flowing tracery is in the restored portion of the choir of Ely Cathedral, by Alan de Walsingham, commenced in 1322, but this is not reticulated work; whereas that in the shrine is thoroughly so; (4) There are not elsewhere rosettes so early as 1307 identical with those on the shrine; and (5) the finials have the same descriptions of crumpled foliage as those of the east window in the Lady Chapel, but of a later character. Is St. Alban's the longest cathedral in the kingdom? For many years past it has been stated, and with local pride, that St. Alban's is the longest church (now cathedral) in the kingdom, and each history of the building has gladly availed itself of this tradition. Good amount of length and other dimensions go to the making of grand architecture, and are, therefore, not to be lightly spoken of. Still this controversy is a little trivial. Unless the length involves superiority in other ways as well, and the whole are discussed together, a little matter for whimsical drivelling is provided, and nothing more. However we will give the result of no little painstaking of our own and Mr. Colson's, a fellow of the Institute, the surveyor to the Dean and Chapter of Winchester, who took dimensions specially for these comparisons. It is somewhat difficult to measure the total length of St. Alban's, and the dimensions taken by the north and south walls vary. The whole of the long dimensions have been taken on the axis of the building with an accurate steel tape in 100 feet lengths.

Winchester: From plinth of buttress of east wall of Lady Chapel to plinth of west porch	ft. in.
St. Alban's: From plinth of buttress of each wall of Lady Chapel to face of buttress of west porch	557 9
The extreme length of Winchester Cathedral exceeds that of St. Alban's by	7 7½
Although the extreme length of Winchester Cathedral exceeds that of St. Alban's (with its unfinished porches) by 7ft. 7½in., yet the nave of St. Alban's is 8ft. 10½in. longer than that of Winchester.	
St. Alban's: From western face of main west wall to western face of tower	284 5½
Winchester: From western face of main west wall to western face of tower	275 7
The extreme length of St. Alban's nave (as seen on the outside) exceeds that of Winchester Cathedral by	8 10½

The nave of St. Alban's is not only the longest in the kingdom but the longest in the world. This 8ft. 10½in. does not fully represent the apparent excess of length of St. Alban's—as seen on the outside—beyond Winchester. The aisles of the Winchester transepts take off 25 feet from the length of the nave aisles. There are no aisles to the transepts of St. Alban's. The repetition of the strong unbroken lines of precisely similar length at different levels in the nave and aisles at St. Alban's, drives home to the imagination in a way quite unique the impression of length. Mr. Neale added some general notes on the Abbey, remarking that, contrary to general custom, at St. Alban's the architecture on the north side is richer than that on the south, a peculiarity which arose, in Trumpyngtone's case at least, from want of money. The average size of the stones in the tracery, it may be mentioned, is 2ft. 6in. by 2ft. Many examples were exposed during the restoration of lead dowels in the joints of detached shafts, so skilfully inserted that the neck mouldings remain perfect to the present day. Sinkings were cut in the upper and lower surfaces of the joints. Holes about one-eighth inch diameter were drilled through the upper stones in each case, and melted lead poured in, which, when set, formed the dowel. The shafts were often

sunk into both capitals and bases; in some instances, however, the shafts were not let into the capitals, but the same system of dowelling was employed. In the construction of the fourteenth century bays on the south side of the nave oyster shells are used with the mortar. In many cases there is a complete bed of shells at the springing of the main arches. The mortar is very hard, and contains much lime. In the ante-chapel wall arcading the new shafts put in during the restoration are of clunch stone, and not let into either capitals or bases, but dowelled with slate into both. When fixed, the joints were so tight that the thin blade of a knife could not be inserted, yet within a few months the stone had shrunk $\frac{1}{2}$ in. in circular shafts 3ft. 3in. long and $3\frac{1}{2}$ in. diameter. In the old work the shafts of like dimensions are mostly in Barnack stone. Nearly every joint in the arches of the new work (executed in clunch) has shrunk since the time it was fixed. Some laid at 1-16in. thick are now 3-16th. These points, however, do not affect the solidity of the construction. The clunch used in the interior is in wonderfully good preservation, but wherever exposed to the weather it has decayed. The abaci to the capitals of the ground-story piers of the Early English work are in a stone much harder than the clunch, and apparently from Barnack. The architects evidently distrusted the bearing power of the clunch, as in the abaci of the main arches, annulets, strings, &c., at different dates the hard stone was used. As to the tooling, the Norman stonework is axed; the Transition, chiselled; the Early English, bolster-tooled; the Decorated (including the bays on south of nave and the Lady Chapel) ashlar is claw-tooled, the mouldings scraped; and the Perpendicular is finely scraped. The building may be considered as a huge architectural museum, containing work of almost all dates from the beginning of permanent building in England to the suppression of the monastery in the sixteenth century,—Roman in part of its materials; Saxon in the turned stone balusters; Norman in the eastern part of the nave, the transepts, and the central tower; Transitional in the slype; Early Early English in the western porches; Middle Early English in the western part of the nave, the choir windows, &c.; Late Early English in the sanctuary; Early Decorated in the upper parts of the sanctuary, and the sanctuary aisle windows; Middle Decorated in the ante-chapel; Late Decorated in the Lady Chapel, the bays on the south side of the nave, and the shrine; Perpendicular in the screens, north and south windows of transepts, great west window, watching loft, &c.; and Tudor and subsequent styles in the tombs, brasses, stalls, pulpit, &c.: altogether a series extending over a period of about 1,000 years. Mr. Neale closed his lecture as follows:—Probably there is no building in the country which has such peculiar interest for the architect as St. Alban's Abbey. Its antiquity, its vast size, its majestic form, the exquisite proportions of many parts, the wealth of original detail, attracted me first to its study, and my reverence and interest have grown deeper continually as I have laboriously sought after the principles of its designers. An architectural student may well be thankful that good fortune has given him a training by which he may be able to follow through the work of his life in the footsteps of the men of old time. An expression of hearty gratitude to many such old masters in our art is also due from me; especially now to those who at St. Alban's have left for our learning such monuments of their skill and their devotion.

Mr. R. RIDGEWAY LLOYD thought that ancient records should not have been thrown aside by Mr. Neale except on very strong architectural grounds. That the Decorated bays at the west end of nave, south side, were the work of Eversdone there were two documentary evidences in early chronicles, showing that it was executed between 1323-33, and two mediæval writers also testified that the lower part of St. Alban's shrine was removed in 1308 by Abbot John de Marynes. In a recent instance he had found a confirmation of one of these ancient chronicles. The stone of the great west window was said to have been brought from the North country (*in partibus boreæ*), and attention having been called to

this, Sir Gilbert Scott and Sir Edmund Beckett had the material examined, and pronounced it to be millstone grit from Yorkshire.

Sir EDMUND BECKETT, Q.C., said much of what they had been told that evening had been published before. Mr. Neale had, however, taken much pains with the dimensions, a point of interest about which every one had different figures, and had shown that the St. Alban's nave was slightly longer than Winchester after allowing, as he (Sir Edmund) suggested to him, 25ft. for half the width of the transepts at Winchester. The screen in St. Alban's, although very fine, was a nuisance, as it shortened the choir and obstructed a view from end to end. The central tower was perhaps the finest and largest Norman one in the kingdom, and owed some of its effect to the present low roofs. If their pitch were raised, as sometimes proposed, it would be well to add a slight spire turret to the tower. In the west front the staircases for the turrets remained, not at the angles, but some 7ft. or 8ft. from them. He should like to see them finished or rebuilt, as they were the only examples placed in such a position. He also wished to see the south wall at the west of nave pierced with windows instead of being left in its present bare unsightly state. It might be said that this was an evidence of the Abbot's house, which formerly stood against the nave at this point, but the wall was not an old one, but a rebuilt one, and there should be no hesitation in opening windows between the buttresses Sir Gilbert Scott is adding. Sir Edmund concluded by appealing for funds to carry on the work of restoration, in which plea he was followed by the Rev. W. J. LAWRENCE.

Mr. S. F. CLARKSON said the paper had dealt with much discussible matter. The existence of an apse in the Norman church was probable, but the only evidence for it was the word "Concomeracionem" in the "Gesta Abbatium"—a word that might stand equally well for a barrel vault. He doubted whether the Norman church extended so far westward as the present west end, for the existing foundations of flint, with courses of tiles worked in them, did not appear below or beyond the science of the 13th century builders. Much might be added to all that had been said as to the dominant influence of the Norman structure on the works which in each succeeding age modified its original form, but it was difficult to go with Mr. Neale so far as to attribute the floor levels in ante and Lady chapels to the carrying forward of the Norman levels in the sanctuary aisles; nor could he admit Mr. Neale's claim that the so-called Saxon balusters came from the sanctuary triforium. There are six in the south transept and only two in the north one. As to the change of floor level in nave, introduced by John de Cella, his own belief was, that the Abbot had no very definite purpose before him. It might have arisen from a desire to decrease the external acclivity westwards of the doors, or to reach a more solid substratum for his foundations. One portion of Trumpington's work in the south transept evidenced an itching to meddle more and more with the eastern parts of the church, and would form an admirable text case in the contention on principles of restoration. To get more light Trumpington opened two large windows in the west wall of this south transept, but they were probably blocked up when the passage over the cloister roof was formed, before the immense south window was inserted. They have been now re-opened, when the clear glass of all the windows admits an excess of raw light into the transepts.

Sir GILBERT SCOTT, R.A., proposed a vote of thanks to Mr. Neale. He could not agree with him as to the different dates of the northern and middle west portals. He believed they were both by De Cella. He had compared the mouldings in each by means of templates; they differed from each other certainly, but were of the same age and character, and both ranged in courses with the undoubted work of De Cella closely.

Mr. STREET, R.A., seconded the vote, speaking in high terms of the skill in draughtsmanship and industry in research displayed by Mr. Neale.

Mr. NEALE, in responding to the vote of thanks (which had been carried by acclamation), replied to Sir Edmund Beckett that he

claimed originality for his paper, adding that his object had been to make it entirely fresh. As to the portals, it was by a comparison of the mouldings with templates that he was led to believe them to be of different dates.

ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of this association was held on Friday evening, the President, Mr. B. A. Paice, in the chair. The following were elected as members:—Messrs. J. Shillcock, Angelo W. R. Simpson, J. Martin Brooks, R. Sparrow, jun., and Lewis H. Duval.

THE REVIVAL OF THE LATER STYLES OF ENGLISH GOTHIC.

Mr. J. D. SEDDING read a paper upon this subject, illustrated by examples of mouldings from abbeys and churches of the fifteenth century.

The LECTURER said he should endeavour in his essay to prove—1. That the Later English Gothic is essentially noble; 2. That it is relatively superior to the Earlier Gothic; 3. That a hearty revival of the later styles is needful to the well-being of the existing Gothic school, and to architectural design at large. In this he was conscious that he was at issue with generally-received opinion, and ran the risk of wide dissent. For a long series of years the later Gothic has been treated of with unsympathetic sternness, and spoken of with disapprobation and contempt. It has been neglected as a subject of appreciative study, or as a source of inspiration for modern effort, and in the case of modern restorations has not unfrequently been destroyed to make room for insertions of an earlier style. But not only have its good points been overlooked, but every blemish has been exaggerated, and its imperfections have been dwelt upon with delight, while the relics of the earlier middle ages, upon which the modern Gothic school is founded, have been eulogised as "the best, the most pure, the most vigorous, and the most perfect types of Gothic art." The disparagement of the "detestable Perpendicular" has been enforced by appeals to reason, taste, and conscience, so that it is not easy to disturb a faith supported by such a body of authoritative opinion. Yet there was much that was accidental and transient in the causes for the flowing of the stream of romance and antiquarianism—of which the Gothic revival is the concrete symbol—in the one direction, and not in the other; and now that profligacy has succeeded puritanism, the younger generation has risen in revolt, and it is seen that the "Perpendicular" cannot be demolished without shaking the very foundations of English Gothic, along with its chances of acceptance and extension in the nineteenth century. At the outset of an examination of modern criticism on the two main clauses of mediæval art, we are confronted with the fact that new architectural laws have been invented, new tests applied, and theories advanced for the purpose of passing judgment. Formerly the three indispensable questions in a building were stability, utility, and beauty; and it was sufficient if the edifice combined in itself the elements of proportion, harmony, and symmetry. But the nineteenth century critic represses his own impulses and tastes, and with purity and perfection for watchwords, he feels equal to any valuation of the productions of his sires. Although creative art is just now rather at a low ebb, research was never so active. The result of this inquisitorial attitude has been that the great whole of English art was split up into opposed sections; the Elizabethan and Queen Anne were accounted doubly dead, and were buried by the Goths without ceremony, and the English itself was divided into Early and good, and Late and bad, by a rigid arbitrary line of demarcation—the difference between noble and ignoble architecture being deemed simply a question of chronology. The fact has been ignored that in all living art the workman's capital is not merely in rules and principles, but in himself, and it is overlooked that every phase of national art alike represents development and growth, illustrates the spirit of a period, and the change of popular mood. The facts on which it is intended to rely to prove the nobility of Late Gothic are the vigour and

variety of its types, the dignity of its effects, the greatness of its aim, its power of developing fresh ideas, new capacities of imagination, new skill in work, and new scope of structural device and decoration. It is not within our scope to travel into sixteenth-century work, otherwise it is capable of proof that finality was never recognised, even to the last stroke of English Gothic. That contrast which is ever the best way of illustrating character will be of service in concluding between the relative claims of Early and Late Gothic art—Early English or thirteenth-century being taken to represent one class, and the Perpendicular, or work ranging from 1350 to 1520, as typical of the other. Fourteenth-century art being an intermediate art will be little dwelt on, as it more or less harmonises with the salient features of the two main groups. In this comparison Salisbury Cathedral and Rievaulx Abbey may be taken as typical of the early, and Winchester Cathedral and Sherborne Abbey of the later styles. Salisbury, by common consent, has a pre-eminent place among buildings of its class, and it was erected continuously without alteration of original conception. We will consider the three points of composition, of sculpture, and of imaginative effects, and inquire what was the state of these three heads. The west front is a not unfair example of the imaginative capacities of the architect and the possibilities of his art. Here we have the gable of nave roof surmounting all, the gable being flanked by a high wall on each side that runs horizontally from the parapet of the nave roof and terminates at each extremity with a square tower. The whole of the wall surface is covered with sunk panellings of various devices, but the design of the nave front has not much visible relation to the front of the aisles, nor do the surface works of the towers and aisles fit comfortably together. There is nothing of the quiet mastery of true composition anywhere. It is pieced work, fidgety and broken up; there seems an absence of regulative power in the design, even of any instinct of law, and a want of conscious governance of effects, for the various features are neither appositely chosen nor pleasantly combined. True, in all northern work there is something of caprice and incongruity, but here things everywhere stand on end, and we wonder whether it was innocence, accident, or perversity that dictated this *malapropos* joining of parts that could never meet with propriety, or whether high "purity" and "perfection" and "vigour" demanded the attempt. Large arches standing in high relief from the wall run round the towers to intersect—arches, labels, and all—in the most awkward manner at the angles, with no pretence at any continuing lines. In the three lower stages the tower arcades abut upon other arcades and windows that have no relation to them as to line, size, or form; while the lower main arcading of the nave surface is abruptly broken by a buttress. Of carving (speaking generally of the whole building) there is some dog-tooth ornament in the arches, a zig-zag of leaves to string-courses and to the capitals, a few figures in niches, and four small gurgoyles to each of the three western entrances; some delicate tracery of leafage fills a hollow mould of the central door, and the spire and spire windows are studded with bell-flowers. The capitals' carving is of the universal Early English type of foliage—curled leaves rising on stiff stalks from the neck of the capital, turning over under the abacus with graceful curves. The capitals to the corbel tabling consist of an infinite number of groups of four little balls; round balls also occur at the intersecting line of the projected moulding in the labels of the nave arches—and no more infelicitous objects could be conceived. In the imaginative elements of the structure as a whole we have much to admire. The two most beautiful points in this cathedral of Salisbury are its monotony and its grace—both quiescent, not active qualities. Much of the pleasure derived from the building is obtained by the simple variations of one thought—in the changing number of combined lights. In the sides of the nave we have two lights next the ground, with three in the corresponding space in the clerestory above; in the transepts the numbers run 2, 4, and 3; in the west towers

they run 3, 4, 2, 3; in the transept fronts, 3, 6, 4, and so on. There is a limited number of changes in the chiming—the melody is played on an instrument in which harmony is out of the question. The main interest of the structure lies not in the masonry of walls, but in the arrangement of the lines that divide the walls. The delicately traced lines of slender shafts, or lancets "long drawn out," or sharp arched panellings, or close-set tiny mouldings of arcades, are everywhere insisted on as the great source of effect, with the persistency and self-satisfaction of a child that has discovered new combinations of its toys. We get nothing deep or awe-inspiring or majestic; there are no heavy lines to thicken the gloom, no richness nor mystery no interest in the details. Simplicity, grace, and repetition of thought are its characteristic qualities, yet even here the work is far from flawless—its virtues are not perfected, and although it never appeals in vain to our sense of beauty, its charm is only a limited one. It is no dispraise of buildings of this class to say that in their absence of ornament, their austere line, and timid venture, they have a true parallel in the spring growth of nature. The slim pillars are the lithe trunks of the young sapling; the plain unadorned ribs of quadripartite vaulting that stand out in strong relief are as the stiffened boughs ere the summer has worked its magic upon them. Whereas the later fabrics have all the signs of a more bounteous time, they combine grace and grandeur, majesty and beauty; they have fuller sunshine and thicker gloom, higher lights and denser shadows. The slender-pillared and scantily-clothed ribs of the spring-time of art have developed into a forest of welded trunks, which mount from floor to roof with grand trenchant lines, and then break suddenly into a crown of innumerable branches, that creep and spread upwards and outwards, gaining richness by the intricacy of line, mystery by their fantastic indistinct shadows, variety by embossed carving of foliage and flower, and harmony of softened line by the tender gloom of rich-toned colour. Rievaulx is as simple as Salisbury Cathedral, but more vigorous; as graceful as Salisbury, but more manly. It works on the same lines, but, though somewhat earlier in date, it goes deeper than the other. We must, however, content ourselves with illustrating the condition of early art by a look at its mouldings and sculpture. The mouldings are bold and effective, and manifest the ready discursive method of a great architect. Instead of the ordinary plain cylinders of the Salisbury piers, we have a graceful composition of filleted rounds, the fillets being carried into the capitals and bases, and there is a profuseness and hilarity of genius in the fanciful corbelling which abounds all over the building, and which makes one of its most interesting features. The changes of treatment in those corbels of hard Yorkshire stone are marvellous. For instance, one corbel changes from segments of circles to irregular octagons, from octagons to circles again, from seven facets to five, from five to three, from three to the final one—eight changes of shape in less than 6ft. of masonry. We will compare some of the mouldings of Rievaulx (c. 1200) with those of Winchester (c. 1350), supplementing them with other examples. In the jambs of one of the lancets at the eastward of Rievaulx the mouldings outside follow a wide splay arranged in square with three simple hollows of uniform size, ranging with the splay, the square nooks being filled with circular shafts. The inside is rather more varied. The arches are moulded, and rest on moulded capitals. Ruskin's definition of composition in design is that there must be the laws of principality (or the subordination of inferior portions to one chief feature), of repetition, and of continuity. Let us bear these in mind as we examine the classes of moulding at Rievaulx and Winchester, remembering that "the decision of inferiority in these rests only on questions of degree." In the Rievaulx mouldings there is no conformity to the law of principality, for each of the three orders is similar to the rest; those of repetition and continuity are complied with, but only in their simplest and least interesting phase. But Winchester complies with all three laws in a high degree. In each class of work there is a

pleasing array of lines; but how much more is the imagination exercised by the later work—how much loftier the range of mind and gift of composition in the later workmen! Easby Abbey is another famous example of thirteenth-century work, of later date than Rievaulx. Compare the window moulding of the muniment-room of Easby with the cloister window of Cleeve Abbey, Somersetshire, of two centuries later. At Easby we have a wide splay with three curved flutings of equal size, then a break of 2½ in., and a further flute similar to the rest; and inside a repetition of this flute, and then a long splay. This is also inferior composition. At Cleeve the mouldings are contained within an imaginary line, which the members touch here and there; but there is increased ingenuity and complexity in the design. Further than this, the earlier mouldings are almost wholly mechanical, whilst the later ones have hardly any compass work—their subtlety of motive could alone be executed by the cunning of a man's right hand. Instead of the old grouped cylinders, plain chamfers and recurrent flutes, we have in the later work counter-set waves, opposed concave and convex lines, hollow beads and fillets, arranged with the nicest sense of proportion and most delicate harmony of line. In comparing the imaginative sculpture of English thirteenth-century work with that of the fifteenth-century we touch a really crucial point. Architecture should have something more than mere proportional lines and massed effects to be Art of the highest class, and we draw particular attention to the paucity of imaginative sculpture in the Early English work—first, to endeavour to give the work its true place in relation to other periods; and secondly, to show the delusion which the popular mind labours under in this respect. No one can say that in the examples of thirteenth-century work before us the workman is not doing his level best everywhere. We have given a category of sculptural ornamentation at Salisbury; at Rievaulx we have even less—only dog-tooth and beak-head ornaments sparingly applied, and some carving in one of the corbels. The thirteenth-century worker was only displaying beauty of line in mouldings and proportional construction; he knew of the capabilities of sculpture, as shown in the wondrous carvings, so brimful of human interest, of the still earlier buildings. The germ of art was inherited, but he had not the power of developing more than one line at once. A glance at the walls of Winchester will show that the Perpendicular workman developed every side of his art, and that English sculpture has recovered itself. Taking technical points first, there may be much "detestable" in Winchester to those who can only admire the Early Gothic; yet William of Wykeham looked with pride on his four-centred nave arches, the depressed arches of his aisles and clerestories, the grating tracery, the lierne vaulting, the scheme of wall panelling, the elaborate and well-considered mouldings which have in modern times been so eloquently condemned. In a comparison of buildings it may be taken for granted that the more comprehensive the edifice, the more varied its adjuncts, the more intense its spirit, the more complex its composition (within the laws of harmony), so much higher its rank in the order of human creation. To the majority of spectators Winchester is not so pleasing as Salisbury, probably because one is simple and easily comprehended, while the other is complex, and has a more intense personality, more elaborate construction, more imaginative vigour, and it is not possible to gauge the powers of its architect as you can at Salisbury. In the one you have simple grace—in the other living force. Winchester, with its heavy masses, trenchant lines, artful contrasts of light and shade, and bold carving, gives the sense of redundant, unresting, unsatisfied, hardly restrained vigour everywhere. And Wykeham is a far better interpreter of nature than Poore, and shows a great advance in sculptural device on the Early English workers. The structural lines of Winchester are simple to severity, and ornament is but sparingly used—only the large cornice under the triforium gallery, the bosses on the roof, and the capitals of the vaulting shafts are carved. The cornice sculpture is wrought in

large hold blocks, and include angels in different attitudes, masses of rich foliage, and heads of ecclesiastics and laymen—a whole portrait gallery of Winchester notables of the time. Of later date is the magnificent reredos of beautiful canopy work, with a crowd of saints in the niches surrounding the cross, on which is the figure of the Redeemer. In the Lady Chapel are the noble oak stalls, with fine tracery, and mouldings and varied carvings; the screens of the two chapels are second to none in the kingdom for exquisite beauty. Throughout the building we see that the aim of English mediævalism was to give pleasure by familiar portraiture and by simple facts and adhesion to local things. But there is something still higher in Winchester for which Salisbury has no parallel—the dominant quality of Wykeham's work is force learned at the feet of Nature, and the charm of Winchester is that some of the sublimest aspects of Nature are reflected in the heavy hulk of the masonry, the magnitude of the details, the depth of the shadows, the solemnity of the colossal arches and great piers that loomed from floor to roof with unbroken lines (for this work is not as Mr. Stevenson says it is, "Horizontal.") The same character is seen in the close-ranged piers and the traceried wall space, like rock surfaces. Sherborne has much the same qualities as Winchester, but in a different dress. There is masculine vigour and breadth of treatment, richness, variety, and scientific skill, and there is also a bluff English massiveness; but all this is relieved and brought into complete harmony by the rich tones of stained glass and coloured masonry. The presence of two centred arches throughout this noble example of Late Perpendicular affords opportunity of contradicting the idea that depressed and four-centred arches are universally employed in Perpendicular; on the contrary, the prevailing form of arches of arcades, doors, and windows in the five renowned Perpendicular counties—Somersetshire, Suffolk, Norfolk, Devon, and Cornwall—is two-centred, often well pointed, besides typical examples external to those counties. As to the title of the style the old name is true to a shade, while the newly-suggested one (Horizontal) has no authority. In the interior of the best buildings of this style every line leads up to the roof, the vertical lines are emphasised throughout. The same applies to the towers, as, for instance, in their buttresses, and in the wall panelling the leading lines are vertical. In conjunction with this assertion from Mr. Stevenson came another equally fallacious, that "the Pointed style arose from vaulting necessities, and, indeed, to the use of wooden roofs in England may be traced the abandonment of the pointed arch." We have already seen that the pointed arch never was abandoned in windows, doors, and nave arches anywhere in England till the last stroke of Gothic, and, moreover, in the whole of the Devonshire and Cornwall, and a large proportion of the Somersetshire churches every rafter has its arched rib from end to end. A little further actual experience would have prevented this assertion, and a glance through Brandon's "Examples of Open Timber Roofs" should dispel it once for all. The Pointed style prevailed in Italy (which was not mentioned by Mr. Stevenson but always in conjunction with flat roofs). As to the use of wooden roofs in England having anything to do with the fall of Pointed architecture, the "Horizontal" character of English Gothic should, according to this theory, be apparent from its first stroke, because wooden roofs always prevailed in England, and you may count on your hands the examples of vaulted parish churches of all styles, not including the Norman. We come now to our third proposition, that a hearty revival of the Late Gothic is called for in the interests of the Gothic school and of architectural design at large. The lecturer had been surprised to hear Mr. Stevenson at their last meeting treat "Old Gothic" architecture as a beautiful but obsolete science, not to be altogether lost sight of, but to be kept handy as an illustration of negative excellence whenever the supremacy of the nineteenth century is in debate. We heard that the whole of the past labours of the Gothic school were to be wiped out as a blot on the

page of nineteenth-century progress, hut, alas! nothing was settled for the future. One fact alone loomed out of the darkness and confusion—there was to be henceforth but one style practised, and that was not to be based on anything that went before; we were to have no more insipid reproductions of bygone times. The speaker would not attempt to rebut Mr. Stevenson's charge of copyism against the Gothic school, although he denied it totally, but he would inquire whether this brand-new school is free from such a censure? Has it no relations with the old Classic, the old Gothic, or the Mediæval Renaissance? No one believes the curly dormers, the tapering pilasters, the attenuated sash-windows, the moulded cornices, and frisky foliage of the so-called "Free Classic" school are new-horn features, evolved out of the inner consciousness of nineteenth-century designers. Any one who has travelled at all in England and on the Continent can give chapter and verse for every fragment of design embodied in works of this class. Nay, still more than this, every one knows that this so-called "Free Classic" is neither more nor less than Gothic thinly veiled. Still, although this is so, the new school is worthy of our heartiest commendation and encouragement—life and freshness must be welcomed from whatever quarter they come. We do not say that the Perpendicular or any style whatever is the one only answer to all the wants of the age. To take merely the question of ecclesiastical architecture, we would say let the Early styles be confined to the country, where cheapness and simplicity are a necessity, and small churches are needed. Use the Perpendicular for country towns and the Renaissance for cities, for a Renaissance building has an especially modern aspect, suited to the modern surroundings of a city, while a country town will probably have, besides plenty of modern structures in its streets, some historical remains or traditions or picturesque qualities of site to recommend the adoption of an historical and picturesque type of English architecture like the Perpendicular. Further, a church in a country town is one of two or three conspicuous objects; in a city it is inconspicuous among factories and warehouses, houses, and crowded squares and streets, so that you do not so much regret that the least worthy side—the outside—of a Renaissance structure is little observed or observable in the closely-populated spot in which it is planted. There is a still further reason for the employment of the Renaissance for cities. It is a noble style, marvellously well suited to 19th century ideas and wants, and should therefore have its chance equally with other styles. It were mere folly to ignore the tastes and wants of the age whose ministers we serve; we should serve to imhine its spirit, to test our work by this, and be ever ready to accept the conditions it imposes upon us. Now, if there be one thing which appeals more than another to the modern mind it is vastness, size, and space. The Perpendicular of all the English styles comes nearest both in tone and spirit to this age, and can respond to its wants by honest developments of its original character, and therefore is most suited of all the Gothic styles to this time. But the Italian Renaissance runs close by the side of English Perpendicular, and can therefore be used for the same ends, and can respond to the same requirements. Taking our model from the best Renaissance of Italy we have a style that will adapt itself freely to all our wants, in the employment of which the best side of modern art can pour out its products at the feet of God, where our Burne Jones, Morris, Poynter, Rosetti, Watts, Minton, and Salviati, and Royal Academicians and sculptors employ their genius without any sense of inconsistency, without any fear of transgressing precedent, or denying the primary intention of the art dealt with. You may cover the walls and arches of a modern Renaissance church with lovely carved subjects, terra cotta, and inlaid marbles as at St. Francesco, at Rimini; you may have a church painted all over, every feature and every particle of wall space having its one place in one vast scheme of coloration as at St. Andrea, at Mantua; or you may aim at stern effects as at St. Spirito, Florence. We Gothic revivalists may grant all this sphere of usefulness to the

Renaissance, and yet have our hands full. Art is a city, and the immortal citizens of Art speak but one universal tongue. Giotto of Florence and Poore of Salisbury, Brunelleschi of Florence and William of Wykeham, are brothers in a commonwealth, where glory of rank is measured not by what individual style was employed, but by the genius of the artist, and the everlasting worth of his work. Yet there is something after all in National Art, and it seemed to the lecturer that a style which is native to England—a style which was the most active in the whole range of English Art—which has illimitable resources—is not to be shelved by an essentially reproductive age like the present, without detriment to the hopes of modern architecture. A style native to England in her palmy days must naturally have within it those conditions which best enable the Englishman to express himself for all time. Like the art of Phidias, the Perpendicular style sums up the best of the complex gifts of a race once for all. It is the index of the English mind at the time when the English genius is roused to the full height of its varied powers. All that the Englishman has instinctively of sense of grace, of majesty, of judgment in proportion, of mystery, of grotesqueness, of refinement of humour—all the lights and shades of his character have a home there. The truly great spirit of English Art, as seen in Perpendicular, is the self-same in the deep solemnity of Winchester, the massiveness of Sherborne, the elegance of Gloucester, the spaciousness and large quietude of Salle and Lavenham, the richness of Cawston and Southwold, the majesty of Wrington and Leigh-on-Mendip, the sober picturesqueness of Haddon, Coventry, and Hever. It is not that one county is ahead of another, but that our forefathers were at the full height of their artistic stature everywhere alike. We hold to the fellowship of the English genius through all times; we draw no hard and fast line between the works of one period and another; to us they are not conflicting, but harmonious and sympathetic. And while we would allow the "Free Classicists" perfect liberty to assimilate all manner of alien matter in the elaboration of their own system of composition, we claim like toleration in the free development of the Gothic architecture of England, in its entirety and fulness, without partiality or restraint.

The PRESIDENT said they had listened to an interesting and instructive paper, in which, perhaps, there was considerable matter for discussion. He himself was unable to appreciate the greater beauties of the Perpendicular mouldings over Early ones; but all must agree as to the grandness of the interiors of these Perpendicular churches—a notable instance, fresh in the memory of all who took part in the autumn excursion, was St. Michael's, Coventry.

Mr. ALEXANDER PAYNE was unable to follow all Mr. Sedding's poetical allusions, but he understood him to say in plain prose that there was a section of the Gothic school who were always "running down" Perpendicular work. The remark required some proof; if any Gothic men did so, they were very few in number. At the same time that Mr. Sedding was pleading for the more generous treatment of the Perpendicular, he used what appeared to be most ungenerous remarks about Salisbury Cathedral—admittedly one of the grandest buildings in Europe or in the world. Having quoted some of those strictures, Mr. Payne added that a generous critic would hardly have taken as examples of that edifice the treatment of its west front and towers. The lecturer did not seem to have quite made out his case, however, and there were many other buildings—as the abbey churches of Yorkshire—to which he might have gone for illustrations. As to the mouldings exhibited by way of contrast, for himself he considered them not more vigorous and, indeed, decidedly inferior to the Early English examples placed by their side. The lecturer had admitted that Early English was best suited for the country churches, and Renaissance for those of towns. He did not understand where, then, he wished his Perpendicular style to be adopted. He wished to propose a vote of thanks to Mr. Sedding for his lecture.

Mr. PORTER seconded the proposition, and in doing so urged the necessity for building in

lasting materials. The great fault of Perpendicular, in his opinion, was that it was unsuitable for granite or any durable and hard stone. Still it was a good style, and needed some encouragement; they remembered how a late President of the Association (Mr. White) had condemned it in unbridled terms as consisting of "hammer-beam failures and soft-stone dressings."

Mr. FLORENCE thought Mr. Sedding had dealt very fairly with the various views prevalent, and had given due credit to the merits of the earlier styles. He was afraid, however, he had been a little unfair in the selection of his mouldings. He had shown great courage and liberality in suggesting the adoption of Renaissance for town churches. It was a style that lent itself very well to the arts of sculpture and painting, and was in harmony with the modern style in those arts.

The motion of thanks having been heartily accorded,

Mr. SEDDING replied, vindicating his choice of examples of mouldings, by showing that they were taken from all parts of England, and from buildings considered typical examples of their respective styles. The first speaker had been answered by the second on the point of the treatment of Perpendicular by some of the leaders of the Gothic school. Mr. Payne had misunderstood him as to the places in which Perpendicular should be used—he had suggested that it be adopted in the smaller country-town churches.

SIR HENRY COLE ON ART SCHOOLS.

SIR HENRY COLE who distributed the prizes to the students of the Manchester School of Art on Friday last, delivered an address in which he said that it was 25 years since he was called upon by Government to see if he could do anything to promote science and art in this country. Twenty-five years ago a school of art might have been a school of physical art, a school of chemical art, and a school of mechanical art, but a school of art was now understood as a school of fine art, in which were practised the methods of painting, modelling, and carving. Schools of science of different kinds meant schools of knowledge. Then there were the technical schools. Whether or not they meant a kind of national workshop he would not say. We had a great of art which the great artists and doctors of fine art looked upon more or less with contempt, and yet the works of fine art—what he ventured to call fine art—could only originate with the artists, though they might hereafter be reproduced by mechanical agencies. A work of fine art was the work of a handicraftsman, but he maintained that when the work was repeated so well that the artist himself could not distinguish it from his own handicraft it was for all those purposes for which fine art ever existed in the world worthy of being called fine art. He had no doubt that we should get into a better mode of expressing our ideas upon this subject as schools of art went on; he meant that these schools would be able to see and appreciate and produce forms of beauty by means of drawing, painting, and modelling. But there were some half-dozen pedants who said that schools of art did not produce artists. They never were meant to produce artists. An elementary school did not produce a poet. A poet was something quite beyond the means of elementary schools, or colleges, or, he might even venture to say, of universities. Heaven had a hand in a genius. He might be educed out of a multitude of other people, but as to the creation of a genius nobody had ever discovered how to set it going. The genius of the artist was, like the genius of the orator and the poet, in the main the work of Heaven. It could not be created by any school. Genius might be helped and cultivated, but could not be created by schools of art. If Shakespeare had not learned to read and write the world would not have had his dramas perhaps, and yet the genius of Homer was manifested even without reading and writing as far as they knew. According to the old proverb a poet was born and not made, and so was the artist, the painter, or the sculptor. John Henry Newman had said that works of genius fell under no art and that heroic minds

came under no rule, but he insisted upon the importance of teaching. He said, "I am no great admirer of self-taught geniuses. To be self-taught is a misfortune, except in the case of those extraordinary minds to whom the title of genius justly belongs, for in most cases to be self-taught is to be badly grounded, slovenly finished, and to be preposterously conceited." Mr. Poynter, a man of talent—he was almost disposed to say genius,—the present art director of South Kensington, at the Social Science Congress last year uttered some enormous fallacies. He said that "to calculate on any general artistic sentiment becoming a part of our national life would seem more hopeless now than it ever had been." A most monstrous fallacy! He (Sir H. Cole) should say that if ever there was a chance of fishing up a genius and setting him to work for this country, it was by the creation and extension of schools of art. Mr. Poynter also said that the accession of the high standard of the glorious epoch of Greek art could never be repeated in the world's history. Did Mr. Poynter mean to say that the world was not now the same world that it was 2,000 years ago? He should say that England had just as great a chance as Greece—a better chance probably—of producing great works of art which would be standard works at some future time. Mr. Poynter might just as well say that there was no chance of a future Homer. In one sense that was true. England, however, had had one nearly as immortal. We had had Milton and Shakespeare, and Italy had had a Dante. It seemed to him to be utterly fallacious to be howling about and saying that what had been in the world would not be repeated. General propositions were extremely dangerous. Never indulge in a general proposition. They might be precise if they said that two and two made four, but never say if they added up figures that they were sure to come to a correct result. (Laughter.) Mr. Poynter further said it was better to have no decoration at all than such as was purely mechanical. If that was so, he hoped that Mr. Poynter lived in a white-washed room, and that he had no room papered with patterns by Morris or by Owen Jones. He hoped he had a dull neutral piece of druggit in his room instead of a Turkey carpet, and that his nerves were never distressed if he saw any lady that he admired in a Cashmere shawl. All these things were mechanical; they were not decorative; and when he said that he preferred to have no decoration rather than decoration produced by mechanism, he thought his hearers would agree with him when he said he had gone a little beyond the mark. Sir H. Cole went on to describe the improvements that had of late years taken place in architecture, terra cotta, stained glass, pottery, and tiles, and said that competent judges had declared emphatically that the finest things exhibited in the Paris Exhibition of 1867 were the result of British industry and fine art applied to industry. The problem we had before us was how to give the fine-art power a democratic influence—to unite the artist with the workman, not to gratify one person but millions; and that, he maintained, was being done, and successfully done. Aristotle said, "Of possessions, those rather are useful which bear fruit; those liberal which tend to enjoyment." By fruitful he means which will yield revenue; by enjoyable where nothing accrues of consequence beyond the using. The possession of fine-art power and able handicraft was both useful and liberal, and it bore the fruits of both money and enjoyment. Art-culture was taught by schools and museums. The system was shown by the fruits, and by local and annual exhibitions. To those who decried our system, and there were some perhaps who did, he would say that almost every European nation, including France, the United States, and the colonies, had more or less adopted the system which had been brought to completion here. It was partially extended and methodised by his (Sir Henry Cole's) colleague, Mr. Redgrave, who had not yet received the recognition to which he was entitled for the work he had done for his country. The practical effect of this system in Manchester was, that whilst in 1851 there was a School of Design attended by 250

students who paid £256, last year at that School of Art, which took the place of the School of Design, the number of students was 429, and the fees £961. But in addition to that there was in Manchester a second school of art at the Grammar School, which had 838 students, paying £549. Besides that there were 586 students in small art schools throughout the city—principally in night classes—and 7,129 children were learning drawing in the elementary schools. He had no doubt that with the activity of the committee of that institution, and the opinion which was evidently growing in Manchester, they would soon double those figures. It was true they were badly in want of proper premises for their School of Art, but he believed they would have premises soon if they would look upon the school as something like a factory or workshop. If they went on the right line they would make a fine thing of it. But they might desire to know what the system of which he had been speaking had done throughout the country. In 1851 there were 17 schools, and these had now increased to 141. He hoped the young men present would, at the end of the next 25 years, see these schools increased to 500. For himself, he thought the schools would so increase, particularly if the people got the right to spend their own money in support of the schools, which right at present they only had in a certain way. They had to dance their hornpipe in fetters, being trusted only to spend a penny in the pound for this object. The 141 schools which he had mentioned had 27,900 students; there were 883 night schools, teaching 31,000 students; and nearly 4,000 public elementary schools, teaching elementary drawing to 460,000 children. He had no doubt before long the whole of the two millions of children who ought to be in the elementary schools of the country would be able to draw a little, just as they were learning to write, to the great advantage of trade and to the nation at large.

COMPETITIONS.

BARROW-IN-FURNESS.—We find the hint we gave last week as to the authorship of the first premiated design for the erection of the new Town Hall and public offices at Barrow-in-Furness turns out to be correct. The architect who adopted the nom de guerre of "Ima" is Mr. W. H. Lynn, of Richardson Buildings, Belfast. The author estimates the cost of carrying out his design at £31,000, calculating it at 9d. per foot cube. We hope shortly to illustrate this and the other premiated designs.

MAIDENHEAD.—One or two complaints have reached us respecting the unfairness of the decision of the Maidenhead Corporation, in connection with the Hospital competition. Mr. Ernest Turner's letter to the Corporation was read the other day after a discussion, but the council have refused to entertain the idea of a reconsideration of their decision, and confirm their previous decision. We think that Mr. Turner, Mr. A. L. Cooper, and a few others who have produced good plans, should at least have been invited to send in guarantees of the cost of their designs before a final decision was arrived at. To say the least, they have much ground for complaints, and the anonymous letters the town clerk asserted he has received are the results of decisions conducted upon the defiant principle.

ARCHÆOLOGICAL.

ROMAN LONDON.—Through the kindness of Mr. W. H. Cross, of St. Bartholomew's, Mr. John E. Price, F.S.A., had, on Saturday last, an opportunity of inspecting some discoveries recently made while excavating within the precincts of the hospital. In clearing what was once the site of Pye-corner for the erection of a new library and museum two stone sarcophagi were exhumed. They were 11ft. from the surface, and situated 50ft. from the new buildings in Windmill-court, and at no great distance from the line of the City wall. They lay east and west, are about 7ft. long, of coarse oolitic stone, have massive lids or covers, and can at once be identified as Roman. In one two skeletons were found: one of a man with his head to the west, the other of a woman with hers lying towards the east. Both the skulls

and the teeth are in good preservation. In the other tomb a leaden coffin had been placed. It is much corroded, and has been considerably injured by the efforts of the finders to convey it away piecemeal for sale and the melting pot. It has fortunately been saved, and sufficient remains entire to identify the ornamentation upon it. It shows the rope or cable moulding disposed in a diamond pattern, and resembles similar coffins found years ago at Old Ford, Stratford, Bethnal-green, Stepney, to say nothing of those at Colchester and other places. The sarcophagi both resemble that found a year or two since near Seacoal-lane and on the bank of the old Fleet River. This is now preserved in the Museum of the Corporation of London at Guildhall. At the head of one of the tombs appeared a short stone pillar, a portion of a column with sufficient of the moulding remaining to indicate its origin. It is such as have been frequently seen among the débris of Roman buildings and probably served as a headstone or other memorial, the forerunner, doubtless, of the "Shattered Column" so familiar in our modern cemeteries. Smithfield has long been known as the site of one of the extensive cemeteries attached to Roman London. The remains, however, usually found are simply bones, charred or otherwise, cinerary urns, and broken pottery, and there is no published account of so important an interment as that now before us. It fortunately happens that the discoveries have found a chronicler on the spot. Dr. Norman Moore, M.D., who was the first to make them public, is still devoting attention to the subject, and as the works are still in progress further relics may be revealed.

TEMPLEBOROUGH.—The works at Templeborough were continued last week. The material drawn out seems to be now almost entirely composed of large stones, some dressed, some boulders. On Friday week a portion of a quern, or hand-mill, having had two orifices for putting in the grain, was found, and also a portion of a Samian vessel, without pattern. In cleaning the interior of the Prætorium, a tile with an almost perfect stamp of the fourth Cohort of the Gauls was discovered, and, oddly enough, not far from it, and at the depth of 4ft. 6in. from the surface, an English halfpenny of the reign of William and Mary. On Monday week, a coin which seems to be a second brass of Hadrian was turned up, and another coin which has almost entirely perished was found about 5ft. deep in the rampart, near to the paved surface in front of the southern colonnade, together with four fragments of Samian in good preservation, and the neck of another vessel with a beaded pattern. The coin of Hadrian was found in the Prætorium.

WESTMINSTER ABBEY.—The window erected by the Dean of Westminster in memory of Lady Augusta Stanley, over her grave in Henry VII.'s Chapel, has been unveiled. In the upper compartment the subjects are taken from events in the history of the Bruce family, and in the lower compartment the subjects represent Lady Augusta in the six acts of mercy. The window is executed by Messrs. Clayton and Bell, who have also just completed a window in St. Michael's Chapel, in memory of the sufferers in the Ashantee war, representing St. Michael in heaven, and St. George and St. Maurice on earth.

NOTICES OF NEW BUILDINGS.—Metropolis Local Management Acts.—Wandsworth Police-court.—Henry James Erastier was summoned by Mr. Corsellis for building in Park-hill, Clapham, without giving notice to the Wandsworth Board of Works. Mr. Corsellis said it was the practice of builders to commence their works without notice. The board had directed the proceedings to show builders it was necessary to give notice. The defendant endeavoured to show by his questions that he gave verbal notice to the board's surveyor. Mr. Corsellis said the Act required seven days' notice in writing. The defendant said not a builder in Clapham had been summoned. Mr. Southam, the surveyor, said this was an exceptional case. Mr. Paget said builders must take care to obey the regulations, as it was not a light matter. He fined the defendant 20s., and 2s. costs.—George Shaw, a contractor, of Page-street, Westminster, was next summoned for commencing to lay and dig out the foundations of a new building as an addition to Maurea House, a Roman Catholic college at Rotherhampton, without giving to the board seven days' previous notice thereof. The defendant said he gave notice to the district surveyor. Mr. Corsellis explained that the notice to the surveyor was for the purpose of superintending the building, but the notice to the board had reference to the drainage. Mr. Paget said it was a case of more importance, and fined the defendant 40s., and 2s. costs.

Building Intelligence.

BRADFORD.—The foundation stone of a new Primitive Methodist chapel at Bradford was laid on Monday. The design is in the Italian style, by Mr. T. Howdill, architect, Leeds, and shows a building 70ft. by 48ft., with a height of 31ft. in the interior, capable of seating 800 worshippers. The cost, apart from the land, is estimated at £4,000, and altogether the expenditure is estimated at about £5,000.

BRADFORD.—On Saturday week a new church at Bolton, in the barough of Bradford, was consecrated. The architectural treatment is an adaptation of Early English. The plan comprises nave, aisles, chancel, organ chamber, and vestry, arranged in cruciform plan, the transeptal wings occupied by the organ chamber and vestry respectively. Accommodation is provided for 400 worshippers. The east window has four lights filled with stained glass, the work of Messrs. Shrigley and Hunt, of Lancaster. The architects are Messrs. Andrews and Pepper, Bradford.

CHALGROVE.—New schools have just been opened at Chalgrove, in the county of Oxford, providing accommodation for 114 children, with a residence for the master. The contract was taken by Messrs. Howland and Wells, of Thame, for £1,208, including furniture, but there have been no extras and deducting provisions inserted in the specification, the actual cost has been £20 below the contract sum. The architects are Messrs. Morris and Stallwood, of Reading.

DEVONPORT.—The foundation stone of the buildings for the accommodation of the pupils connected with the Devonport High School for Girls, was laid on the 11th inst. At present only a portion of the complete design is to be erected. Eventually the entire building will accommodate 250 pupils, the number to be now provided for being 150. There will be three floors—the basement, containing a large play-room 50 × 17, and a day-room 25 × 19; classrooms and other provision for the Kinter-garten department; rooms for the care-taker—heating chamber, and all conveniences; the ground floor, comprising cloak-room, head-mistress's room, secretary's office, and three large class-rooms; the upper floor, containing a room for the assistant mistresses, and four large class-rooms. All the rooms are lofty, those in the basement being 11ft., and the others 13½ft. clear height. The general arrangement is a central corridor, east and west, flanked by rooms on north and south, and communicating with other rooms in a wing at each end. Externally, the structure will present a symmetrical front to Albert-road; the central range, with three dormer gabled windows, being flanked by projecting wings which are carried up as gables of Elizabethan or Tudor design. The south elevation will present a somewhat dwarfed appearance until the intended future additional story is erected, and will also suffer architecturally from the absence of the future block of building at either end. All the external facings will be of Portland cement, which has been adopted on account of the great difficulty experienced in otherwise erecting a building impervious to moisture. The architect is Mr. H. J. Paull, F.R.I.B.A., of London and Manchester. The contractor is Mr. Berry, of George-lane, Plymouth. The clerk of works is Mr. Siddall.

METROPOLITAN BOARD OF WORKS.—At Friday's meeting of this Board it was decided to advance to the City Commissioners of Sewers the sum of £30,000 towards local improvements in the following proportions:—114 to 117, Newgate-street, £8,000; 14, 15, and 16, Aldgate, and 1, 2, and 3, Jewry-street, £4,000; 17 and 18, Aldgate, £1,000; 93, Great Tower-street, and 10, Little Tower-street, £6,000; 28 to 31, Lime-street, £2,000; 34, 40, and 41, St. Mary-at-Hill, £1,000; 23 to 31, Poultry, £8,000. The solicitor was directed to take steps for opposing the proposed application to Parliament by the London School Board for compulsory powers to take property comprised in the Whitechapel and Limehouse and the Bedfordbury schemes under the Artisans' Dwellings Improvement Act, 1875.

£3,000 is to be advanced to St. Pancras Vestry towards the expense of building the new bridge at Gloucester-gate, Regent's-park. Sanction was given St. Luke's Vestry to borrow £79,000 for the Golden-lane improvements, repayable with 5 per cent. interest in 50 years. In the list of candidates for the post of assistant draughtsman in the architects' department the name of "Mr. Ebbetts" appeared last week; it should have been "Mr. T. C. Ebdy, of Hull."

MUCH DEWCHURCH.—The Church of St. David, Much Dewchurch, was re-opened on Sunday week, after restoration under the direction of Mr. Thomas Blashill, of London. Mr. W. Cullis was the contractor, and the total cost has been about £2,400. The walls of the church have been thoroughly repaired and consolidated. The building is well warmed by one of Musgrave's stoves. The soft, rich-coloured local stone harmonises well with the original walls, so that no glaring new effect is produced. Every feature of the old church has been preserved, and nothing new been introduced as mere ornament. The fabric consisted originally of a nave and chancel, the massive walls of which were built in the twelfth century, and contained the very small windows, placed high and deeply splayed within, which are often found in this country. The circular-headed chancel arch is very low and plain. The chancel was probably apsidal, but its eastern part was rebuilt in the fifteenth century, and contains a good three-light window. Windows were also inserted in the nave and chancel in the fourteen and fifteenth centuries. The nave walls were slightly raised and a new roof put on in the fifteenth century, the timber being very massive and in excellent condition. A low screen of veined alabaster, combined with iron work, has been placed in the chancel arch. The altar, of oak and walnut, has been carved by the vicar in his leisure moments. The floors of the chancel has been laid with Goodwin's tiles; the floor under all the seats in nave and chancel are of prepared wood blocks set on a bed of concrete.

TADCASTER NEW BOARD SCHOOLS.—These schools will be opened at Tadcaster at the beginning of the new year. The buildings, which are in the Gothic style, have been erected from the designs of Mr. E. Birchall, architect, Leeds. Cream-coloured bricks from Laisterdyke have been mainly used in the construction of the outer walls, whilst the stone was obtained from the Bramham Moor quarries. The buildings have a total length of 175ft., and have an elevation generally of 30ft., being of one story, with the exception of the master's house. Accommodation is provided for 250 children. The cost has been £3,800.

WHITSTABLE.—New Board schools have recently been opened at Whitstable, in the county of Kent, erected for the united district of Whitstable and Seasalter. Accommodation is afforded for 110 boys, 170 girls, and 200 infants. The boys have a school-room and one class-room; the girls, a school-room and two class-rooms; the infants, a large school-room, class-room for seniors, and babies' room. To each department is attached a spacious cloak lobby, with lavatories, and also extensive playgrounds, and the infants have a covered marching shed, with paved floor, 160ft. long. There are two good residences each, with parlour, living-room, scullery, pantry, fuel-shed, and usual offices, and three good bedrooms, open staircase, and landing. Very much care has been bestowed upon the ventilation of all the school and class-rooms, which is by means of upright shafts for admission of fresh air, and extracting shafts with small roof gables for taking off vitiated air. The heating is by means of Shillito and Shorland's Manchester grates, which form also a valuable addition to the means of ventilation. The schools and class-rooms are furnished with desks and seats on the dual system, while galleries are provided for the junior infants and babies. The work has been carried out by Mr. Foad, contractor, of Whitstable, at a cost of about £4,900, which includes the complete furnishing of the schools. Mr. Jarvis, of Huntingdon, acted as a most efficient clerk of works, and the architects were Messrs. Morris and Stallwood, of Reading.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

All letters should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

To OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

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J. T. (We have already noticed the competition, as you will see.)—V. W. (Yes, early in the year.)

Correspondence.

COMPETITIONS AND COMPETITORS.

To the Editor of the BUILDING NEWS.

SIR,—The pages of your last issue are, as usual, full of complaints about the results of competitions. I used to be as indignant as any one at the barbarous treatment which the profession continually experiences at the hands of public bodies—for they are the invariable offenders in the greater number of cases where competition is invited—but at last I have come to the conclusion that it is no use running one's head against a stone wall. We must take things as we find them. We have no remedy. Our profession has no legal standing, no powers of control over its members, no authority to lay down rules in such matters which shall have any binding power over employers or competitors. Employers will, therefore, do whatever, from their own point of view, may seem fit to them, without the smallest reference to the feelings or convenience of the profession. It should be understood that competition work is nothing more nor less than gambling—a staking of time and

money upon a remote and perfectly uncertain chance of succeeding in a lottery. That the best man in any given competition should be the winner is no more a consequence than that the best-dressed man in the "salons" of Monaco should break the bank. Of course, I know that competitions will go on just as at present, because there will always be numbers of young men with time to spare and ambition. But I cannot help thinking that it would be as well to cease these endless grumbings, which can do no one any good, and are in no way dignified or worthy of imitation. I have competed myself, but never complained; I thought that "le jeu ne valait pas la chandelle."—I am, &c., J. B. FOWLER.
Breon, Dec. 24, 1877.

CHURCH OF ST. MARY, SOUTHAMPTON.

SIR,—Referring to the view of this church in your last number, I beg to suggest that the angle piers of the upper stage of the tower are much too weak to carry the load and thrust of the heavy spire above, in consequence of the openings being placed so near the angles. In all old buildings we find this portion of the tower made especially strong, both inside and out.—I am, &c., E. W. T.

READING TOWN HALL COMPETITION.

SIR,—I hope your readers see that the award of the committee can have but one object—viz., that of placing the design of the local firm on an exactly similar footing with the other two premiated designs. Now they cannot all three be of equal merit. Would you kindly inform your readers of the order in which the three should have been placed? Thanking you for your bold article of last week, I am, &c., A COMPETITOR.

[The order in which the designs are named in the award is the only clue the profession has to the ideas of the Building Committee as to the pre-eminence of the designs. Our opinion as to their respective merits may be gathered from our article on the competition elsewhere. "A Competitor" has indicated exactly the point which deserves the serious consideration of the rest of the competitors who took part in this most unsatisfactory and ill-managed competition.—Ed.]

PAVING APPORTIONMENT.—At the Wandsworth Police-court Thomas Grant was summoned by Mr. Corsellis, clerk of the Wandsworth Board of Works, for the sum of £9 18s. 6d., being the sum apportioned upon him for the repair of College-street, Putney, in respect of certain premises of which he was the occupier. Mr. Reeves defuded, and elicited that the order was made by the Board in July, 1870. He then submitted that the Statute of Limitations applied. Mr. Paget overruled the objection. Mr. Corsellis said that he could not take proceedings earlier, as the premises had been vacant. Mr. Reeves then submitted that it was a charge upon the owner, and referred to the 77th section of the Act of 1862, under which the summons was issued. Mr. Corsellis also referred to the 96th, which, he said, must be coupled with it, wherein it would be found that it was a charge upon the present or any future owner. Mr. Paget made an order for the amount claimed.

Intercommunication.

QUESTIONS.

[5227.]—Architectural Charges.—A contractor who was unfortunate became in time a quantity surveyor. A gentleman called on me a few days ago, and asked me to make him a few designs for an entrance lodge. I made him ten sets of ground floor and one elevation, which he returned to me, as he did not like any of them, but I have since got instructions to go on with another set of plans for him. What (if anything) can I charge him for the original ten sets of drawings, not being properly an architect? T. R.

[5228.]—Maidenhead Infectious Diseases Hospital.—I should be glad to know if the committee have determined to carry out the plan which, according to the criticism in the BUILDING NEWS, contains many faults of arrangement? Are the many excellent plans sent in by competitors to be returned to their authors? Architects have cause for complaint when they find a committee absolutely rejecting plans that exhibit considerable ingenuity in the requirements of hospital construction.—JUSTITIA, BUT NOT A COMPETITOR.

[5229.]—Concrete as a Building Material.—I shall be pleased with the results of any recent experiments that have been made relative to—(1) The alternate action of water and air on concrete; (2) the best mode of wall-building with this material; (3) the strength of floors, landings, and arches of the material, and the data of experiments; (4) any decorative means that has been used to relieve the surface of concrete; (5) the cost per yard of concrete walling of ordinary thicknesses.—H.

REPLIES.

[5179.]—Binding the "Building News."—I think it best for reference to bind the plates separately from the letter-press—the year's illustrations making one volume, and the letter-press another. An architect or student frequently wishes to turn for information, say, in relation to a certain kind of building, as a hospital or a school, or to some other scientific, technical, or legal intelligence; he wants to make himself clear upon certain facts, figures, or data, and a volume free from plates has the advantage. On the other hand, it may be that he wants to refer to some plans to refresh his memory, or to some particular buildings or details, and it is preferable to turn to the plates alone. Of course, the complete bound volume has its advantages, and for the general student it is the best; but there are some who like to have the illustrations at their fingers' ends. My plan has been to bind plates and letter-press in one volume.—A SUBSCRIBER FROM THE COMMENCEMENT.

[5191.]—Inaccessible Heights.—The formula of N. L. Derby, New York, published last week, though with a misprint or two, is a useful one, and may frequently be adopted by architects and others. Perhaps, however, a simpler mode that I have sometimes used is the following:—Select horizontal ground. Find a position at which an angle of 45° will cut top of object, then it is necessary to measure the horizontal distance to find the height. A common 2ft. rule may be set to a right angle, and the ends of limbs ranged by eye, if an angular instrument is not at hand. Knowing trigonometry, the problem is simply performed by multiplying tangent of angle subtended by horizontal distance.—G. H. G.

[5220.]—Roofs.—The best work on roofs is Tredgold's. There are several modern editions. Hurst's and a smaller edition published in Lockwood's series will afford all the information required. Nicholson's "Principles of Carpentry" also is an old but useful work containing the chief varieties of roofs, trusses, and scantlings.—G. H.

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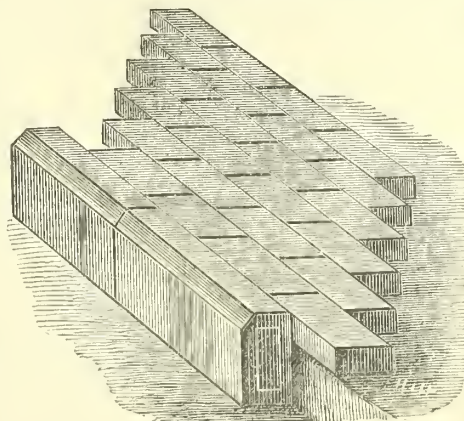
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Our Office Table.

PHILIP VEIT, the great painter and restorer of the ancient Christian style of art in Germany, has just been buried at Mayence. Veit was born at Berlin in 1793, and was the son of the banker, Simon Veit, a member of one of the wealthiest Jewish families of the capital. His mother, Dorothea, a daughter of the philosopher, Moses Mendelssohn, eloping with the poet Friedrich Schlegel, subsequently married the latter, turned Roman Catholic, and caused her two sons to be received into the bosom of the Papal Church. Dorothea distinguished herself by translating nearly one-half of the pieces contained in the famous German version of Shakespeare known as Schlegel and Tieck's version. One of her sons became a priest; the other, Philip, obtained a great renown as a painter, and, with Cornelius and Overbeck, revived the grand mediæval style of Christian art. His picture of "Germany," represented as a young matron, and his portraits of some mediæval emperors established his reputation.

At the meeting of the Court of Common Council, on Thursday week, the City Lands Committee presented their report on the reference to consider whether any improvement be capable of being effected in the design or suggested site for a new council chamber, and recommending that in accordance with the opinion expressed by the committee in the report presented by them on the 17th December, 1874, a new council chamber should be at once erected, agreeable to the plan and model therein referred to, at the estimated expense of about £50,000, exclusive of fittings. A discussion ensued but no decision was arrived at. One of the members was very sensibly of opinion that before building a new council chamber they should know first where the money was to come from. If they had to borrow the money for the purpose he thought they should wait. At the same meeting the Coal and Corn Finance Committee submitted a report on the reference of the 22nd October, 1874, and on having entered into an agreement with the Dean and Chapter of St. Paul's for effecting certain improvements in the enclosed grounds around St. Paul's Cathedral, at an estimated expense of £5,000, and a sum not exceeding £400 per annum for maintenance. The report was adopted.

The vexed question of providing Liverpool with an additional water supply reached another stage on Monday, when a special sub-committee of the Water Committee brought forward a report of Mr. G. F. Deacon, the borough and water engineer, upon the subject. It has been proposed at various times to obtain water from three distinct sources—viz., Ullswater, Windermere, and Bleasdale, and Mr. Deacon now reported upon two other schemes. One of these was to take the supply from Haweswater, a lake near Ullswater, and the other was to go into Wales, and obtain it from the river Vyrnwy, a tributary of the Severn. Of the Haweswater project he reported that it possessed undoubtedly many advantages. The lake was 723ft. above the level of the sea, and the aqueduct to Liverpool would thus have a greater inclination than could possibly be obtained from any other northern source; the quality of the water was of the best, and its quantity would be sufficient to meet the increasing demands of Liverpool for a long time to come. All these advantages, however, and many other advantages which Haweswater did not possess, were offered by the Vyrnwy scheme, of which, therefore, the engineer proceeded to speak in detail. The river Vyrnwy, he said, hitherto little known, except to the angler, was a tributary of the Severn, taking its rise in the Berwyn range, within forty-five miles in a direct line from Liverpool. The consideration of the report was deferred.

A most melancholy accident happened at St. David's Station, Exeter, of the Great Western Railway, on Saturday afternoon, to an architect well-known in Exeter, and has, unhappily, resulted in his death. The deceased was Mr. Joseph Neale, aged 42, residing at Weston-super-Mare, and having offices in Exeter. Mr.

Neale had taken a ticket with the intention of going home to spend Christmas, and intended travelling by the 3.5 train from St. David's. He was told by the guard that he could not go on, but eagerly announced his determination to proceed, and the inspector on duty, who knew him, anxious to assist him, opened the door of a second-class carriage, although the train was in motion, as he ran on. Mr. Neale, who was following close after the inspector, ran round him, and attempted to get into the carriage, but was struck by the open door, or tripped, was dragged some distance along the platform, and then rolled on to the line in the space between two of the carriages. The carriages were uncoupled, the former part of the train moved forward, and the unfortunate gentleman extricated. It was found that his right leg had been horribly crushed from the thigh downwards, and his foot almost severed just above the ankle, the toes of the left foot being also crushed. He was at first unconscious, but soon afterwards spoke. A stretcher was procured, and Mr. Neale was conveyed to the Devon and Exeter Hospital. He was found by the surgeons in such a low state that amputation of the leg could not be undertaken. Every effort was made to rally his strength, but all was of no avail, and he died about 1 o'clock on Sunday morning. The deceased was an able member of his profession, and architect for the new chapels at the Wonford House Hospital for the Insane, and the Exminster Asylum. His design for the restoration of Heavitree Church tower recently obtained the first premium. He leaves a widow, who is in infirm health, and four children.

The memorial stone of a new Baptist chapel and Sunday school about to be erected in Warwick-street, Deritend, Birmingham, was laid on Wednesday, by Lieutenant-Colonel Ratcliff. The amount of the contract is about £600, exclusive of fittings, for which, with contingent expenses, an additional £200 will be required. The front is to be of Gothic design, and will be wholly in brickwork. Mr. Lee is the builder, and Mr. George Ingall the architect.

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MEETINGS FOR ENSUING WEEK.

WEDNESDAY.—British Archaeological Association, Roman Fort recently discovered at Badgersley, by T. W. Grover, C.E.; Ancient Herbal Folk Lore, by W. G. Black; Ancient Sculpture in Breadsall Church, by A. Wallis; 8 p.m.

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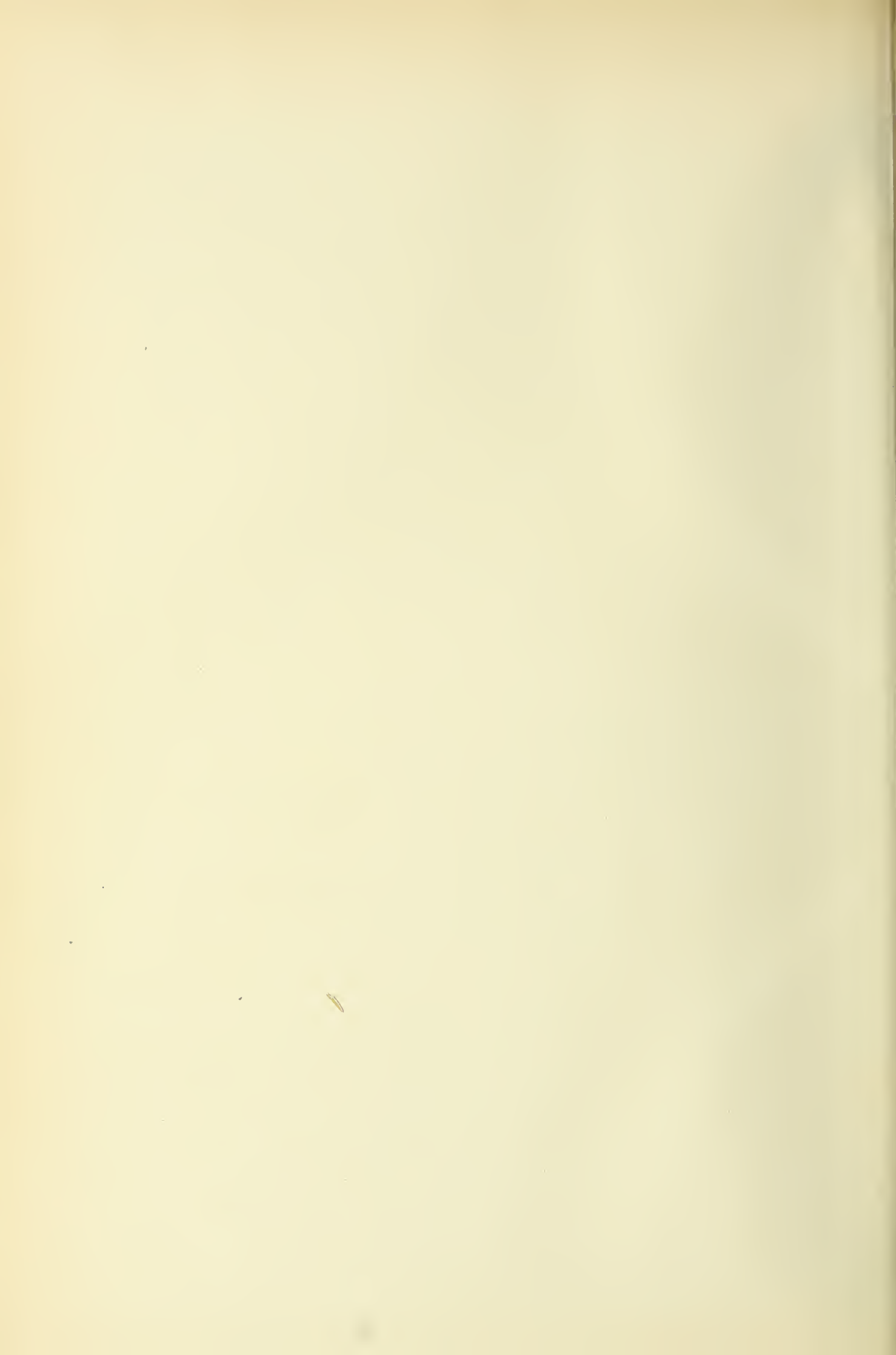
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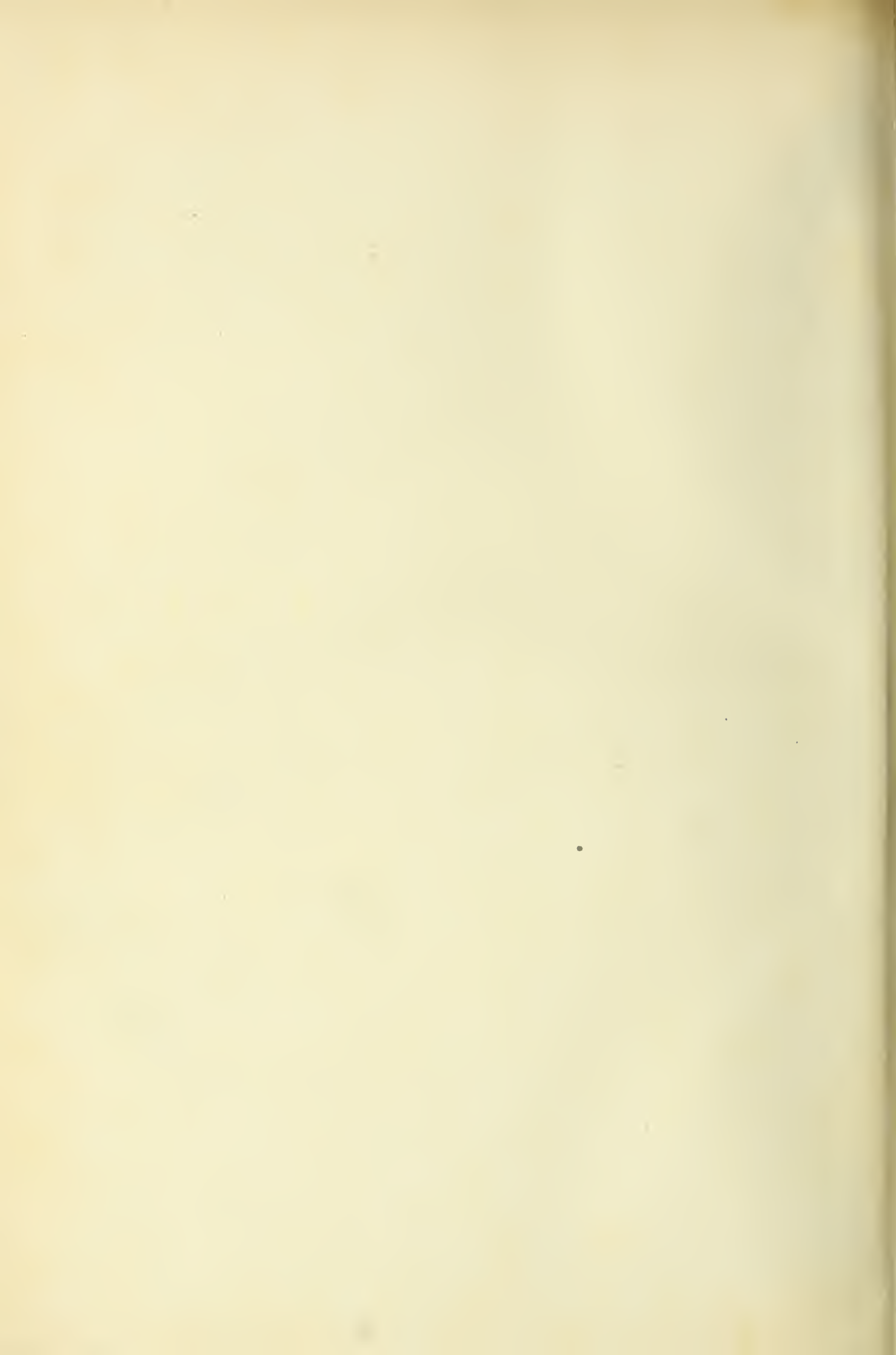
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