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## CONTENTS.

### SUMMARY:—

|                                                                                                                                                                                                                                                                                                                        |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| An Attempt to prevent the Acquisition of an Easement of Light.—Fall of a Warehouse at Baltimore, Md.—Burning of a School-House, Philadelphia, Pa.—Death of General Henry W. Benham.—Water obtained from Driven-Well on Manhattan Island.—The Customs of Foreign Architects.—Roman Relics discovered in London. . . . . | 277 |
| SPANISH ARCHITECTURE.—XV. . . . .                                                                                                                                                                                                                                                                                      | 279 |
| ARCHITECTURE AT THE ROYAL ACADEMY.—I. . . . .                                                                                                                                                                                                                                                                          | 280 |
| STAIRCASES.—I. . . . .                                                                                                                                                                                                                                                                                                 | 281 |
| THE ILLUSTRATIONS:—                                                                                                                                                                                                                                                                                                    |     |
| Stable, Brookline, Mass.—House, Somerville, Mass.—Burgos Cathedral, Burgos, Spain. Porch, Las Huelgas, Burgos, Spain.—U. S. Quartermaster's Depot, St. Paul, Minn.—Country Seat on the Hudson. . . . .                                                                                                                 | 283 |
| ARCHITECTS, CLIENTS AND CONTRACTORS. . . . .                                                                                                                                                                                                                                                                           | 283 |
| WILL OFFER BRIBES IN SPIKE OF PROTEST. . . . .                                                                                                                                                                                                                                                                         | 286 |
| A PRECIOUS RELIC. . . . .                                                                                                                                                                                                                                                                                              | 286 |
| COMMUNICATIONS:—                                                                                                                                                                                                                                                                                                       |     |
| The Indiana Chapter, A. I. A.,—Efflorescence on Brick-Work. —A Girder's Duty. . . . .                                                                                                                                                                                                                                  | 286 |
| NOTES AND CLIPPINGS. . . . .                                                                                                                                                                                                                                                                                           | 287 |

A PHILADELPHIA man has undertaken to claim in the courts certain rights in regard to which legal decisions are rare in this country. It seems that the plaintiff is the owner of an estate on Walnut Street, on which is a dwelling-house, and the defendant has recently bought the adjoining estate, on which, at the time of his purchase, was also a dwelling-house, and a stable. Both properties extend through to Sansom Street. The location is a good one for business, and the last comer has thought fit to utilize his estate by pulling down his stable and the extension of his house, and erecting in place of them a six-story printing-office. The western wall of the printing-office is a party-wall, half of it standing on the plaintiff's ground; and in this wall the defendant has begun to build three windows, which receive light from over the plaintiff's estate. According to the report in the *Philadelphia Press*, the latter now petitions the Court "to declare the erection of the wall in the proposed shape unconstitutional," and to grant a restraining injunction. It is much to be feared that reference to the constitution of the State of Pennsylvania will fail to cast any light upon the subject of party-walls; but the Revised Statutes of that Commonwealth may very possibly have something to say about the matter, and if the statute has, by a fortunate chance, been so expressed that its meaning cannot be mistaken, the aggrieved owner may expect to succeed in his suit. If there should be no express law on the subject, it will be interesting to learn whether the plaintiff has any remedy against his neighbor except in the exercise of his undoubted right to build up his half of the obnoxious windows with brick. Amongst us, the establishment of party-walls is almost always a matter of private agreement, and the terms of the agreement regulate the use which shall be made of the walls, subject, of course, to the laws for the regulation of building, which limit the privilege of cutting doors of communication between adjoining structures. Whether, in the absence of any statute, a court would hold that the common law imposed any restriction similar to those which form the subject of so many articles in the French Code, for instance, seems to us doubtful, and all architects and builders, as well as owners of real estate, will await with interest the result of the suit.

ONE of the most substantial warehouses in the city of Baltimore tumbled down the other day without any warning beyond a little rumble, crushing to death six men, and burying four more under piles of timbers and bricks, to be brought out alive, but severely injured. It is hardly necessary to say that the catastrophe was caused by "putting too much weight on one of the floors," and not at all by making the floors too weak to bear the load placed on them, so that no blame attaches to any one. In fact, the structure had been converted from a tobacco warehouse into a general storehouse, and an immense weight of bales of cotton-duck and netting had been placed in the second and third stories, so that it is quite possible that no one deserves to be blamed for carelessness except

the owners or lessees, who put the building to uses for which it was not intended, without first ascertaining whether it was safe to do so. As usually happens, the third floor first broke down, precipitating the merchandise upon it into the story below; and the impact of this falling weight was sufficient to carry everything before it to the basement. One of the most noticeable things in the account of the accident given in the *New York Herald* is an assertion that the loss was "covered by insurance." As no fire is reported to have followed from the fall of the building, it seems to us that either insurance policies in Baltimore must be written in a form different from that which prevails elsewhere, or that some company must exist there which takes unusual risks. If there is really any insurance corporation, either there or in any other city, which makes a business of insuring buildings against the consequences of imperfect design or construction, or defective foundation, we should be glad to know of it.

A RATHER singular fire took place in Philadelphia not long ago, in the Seventh Section Grammar School, which was almost completely destroyed in the middle of the night, when no one was in or near the building. It is said that within five minutes after the fire was discovered the stairways were cut off by the flames, and if the rooms had been occupied by the seven hundred children who ordinarily assembled there in the daytime, the loss of life must have been deplorable. Interest of this kind being lacking, however, the newspaper reporters seem to have occupied themselves in trying to find out how the accident occurred, and it appeared, on the evidence of the janitor, that there had been no fire of any kind in the building for at least two weeks. On investigation, the starting point of the fire was traced to a flue, built of bad bricks and poor mortar, and used to carry off the smoke from a furnace in the basement. The pine wainscoting of the rooms was laid directly upon the walls of this flue, probably with no plastering between; and the smoke and heat had carbonized the wood in those places, making it, as every one knows, nearly as inflammable as tinder. As even tinder, however, requires a spark to ignite it, and as no sparks could have reached the wood from the interior of the flue since the furnace was last in use, two weeks before, it follows with tolerable certainty that the spark which started the combustion must have passed through the fissures of the chimney at least two weeks before the fire; and must have smoldered in the charred wood, without detection, during that time, to be fanned into a blaze in the dead of night by some unknown cause.

THE profession of architecture, as well as that of civil engineering, have to regret the death of Brevet Major-General Henry W. Benham, of the United States Army, who, after a long illness, expired last week at his house in New York. General Benham was one of the most skillful engineers in the army, and since his graduation, with high rank, from West Point in 1833, he was almost constantly employed in works of construction. We well remember, when engaged, some years ago upon an important building in the place where the General was then stationed, the interest which he took in the work, often coming to watch it, and talking with the utmost kindness to the young architect who was only too happy to listen to his instructive comments. Nearly every important fortification on the Atlantic coast owes something to his skill, and many works of peace, such, for instance, as the sea-wall at St. Augustine, Florida, the light-house at Buffalo, the Potomac Aqueduct and the Washington Navy-Yard, were carried out under his charge. As a military man he was highly distinguished, and was advanced in less than four years of action and successful service to the highest rank. As was natural, his eminence among engineer officers brought upon him the responsibility of many of the most difficult undertakings of the war, and he was engaged alternately in the direction of battles and the construction of improvised fortifications and bridges, one of the latter being a pontoon-bridge, twenty-two hundred feet long, which he threw across the James River in the summer of 1864. One must be indeed meritorious to be conspicuous among such men as those who command in the United States Army, but of all the brave and useful officers

whom West Point has given us, it may be doubted whether any one can look back to a life better spent than that of General Benham.

THE *Fireman's Journal* quotes a paragraph of ours in relation to the driven-wells which are so commonly used in the lower part of New York, but objects to our statement that the water from these wells is "brackish and undrinkable," saying that in the Western Union Telegraph Company's building, on Broadway, where twenty-five of these wells connected together in the cellar, supply water for the great structure over them, the well-water is used for drinking, and is preferred to the Croton. The *Journal* goes on to say that a proposition has been repeatedly made to the Board of Public Works to allow water from such wells to be pumped into the Croton mains, both for supplementing the insufficient quantity delivered, and for increasing the pressure sufficiently to raise the water to the upper stories of high buildings, but the offer has always been rejected. Our own experience with driven-wells in New York has been confined to a district much lower than that in which the Western Union building is situated, a large part of it, in fact, being liable to inundation from high tides, which bring water through the sewers from the Hudson River, keeping the soil about them saturated with a liquid which must be very different from that which the Western Union tenants find so palatable. A well sunk in this ground of course furnishes the water which comes to it. In one other case, where two or three wells were sunk in the basement of a large building in the "dry-goods district," on comparatively high land, we happened to have inspected the ground on which the building stood, while the foundation work was going on, and were informed that more than fifty cesspools, dating from various periods, were cut through in excavating the cellar. We may be unduly prejudiced, but the idea of drinking water from wells sunk in the midst of such a noisome honeycomb would be very disagreeable to us, and unless some one has well-water to offer of a quality which is likely to be superior to this, we are of opinion that the Commissioner of Public Works has done well in declining to admit it to the Croton mains.

AT the Conference of Architects, held in London a few weeks ago, Mr. Arthur Cates, one of the most prominent members of the profession in England, read a paper on the mutual relations of architects and contractors, giving a most interesting comparison between the practices prevailing in England and in other countries. In regard to the question, about which there is as much discussion abroad as with us, whether it is more advantageous to the proprietor to make an agreement for the erection of his building with a single contractor, or to divide the work among several, Mr. Cates has collected a good deal of information, most of it going to show that the practice varies in other countries just as it does here, depending perhaps, mainly upon the circumstance that a given locality may possess contractors who prefer to keep the control of a building entirely in their hands, and know how to make such a method of doing business conduce to economy and efficiency, so that there the single contract system is more popular, while in other places the absence of any persons possessed of the requisite knowledge and enterprise for combining various kinds of work coöperates with the mutual jealousy natural to men of somewhat similar professions to render the opposite practice common. The general impression, however, seems everywhere to be that under the divided contract system the work is likely to be better done, and at a smaller expense. In Germany it is not unusual for the proprietor to stipulate particularly with the architect that this plan shall be followed, and in France and England there is a strong tendency toward the substitution of separate agreements for the single contract which was once the rule. In this country it is usually the mechanics who favor most strongly the divided contract system, advocating it commonly on the ground that as a general contractor is less likely to be either honest or solvent than the proprietor, the mechanics who take sub-contracts are obliged to add a margin to protect themselves against contingencies which they do not need in dealing directly with the owner; and they can therefore do better work, at a smaller price, as principals than as sub-contractors. There is probably a good deal of reason in this, and although the combinations which have been formed in some places to force this system upon architects and owners have failed of their object, we think that most architects feel

that they can keep a building better under control by contracting separately with the various mechanics than by entrusting the whole to one man, whose authority, together with the disposition to exercise it, increases his responsibility.

IN Germany a very singular custom is in vogue, under which the architect himself sometimes undertakes to erect, for a lump sum, the building which he has designed. Although this is rather shocking to our notions, it can hardly be said that there is anything really objectionable in such a custom. On the contrary, under it the owner, if he has made the architect understand his wishes, can be absolutely certain of having them carried out for the price agreed upon, without extras, since the architect cannot plead that he did not understand the plans, or that something was omitted from the specifications, as an excuse for making an additional charge; and the architect himself, if he has been careless about his plans, will be taught a useful lesson by having to pay out of his own pocket the cost of making good the defects, while, if he has shown care and skill, he will be rewarded by securing the builder's profit, in addition to his own commission, without any diminution. Even in this country engineers often carry out their own designs in this way, and an architect who happens occasionally to be asked to follow their example should not, we think, be too hasty in refusing, although no one would wish to see the custom become general. One of the considerations mentioned by Mr. Cate's German correspondent against the practice of contracting with a single mechanic is worthy of note as suggesting a strong argument in favor of confiding the entire responsibility of buildings of the more decorative class to the architect. In replying to the question whether single or divided contracts are most in favor in Germany, this correspondent, Herr Ende, of Berlin, says that the former are not unusual "for simple and ordinary structures," but are rare in the case of elaborate and ornamental ones, unless the contractor is himself the architect; for the reason that, according to the ideas prevailing in Germany, "an artistic building can never be completely finished from the first design and the first estimate, but the chief and best portion of the work must be designed and worked out during its construction." "There is, however," he goes on to say, "an end to this when a contractor undertakes the building. Alterations can then be made only under stringent and costly conditions, which give occasion for all kinds of disputes."

THE extension of the Metropolitan Railway in London, requiring deep excavation in the very heart of the city, has given occasion for many interesting discoveries. A part of the new line, from the Mansion-House Station to the Minories, on the north side of the Thames, and near the shore, is cut through soil which has been accumulating during much more than two thousand years of continuous occupation, and relics, not only of Roman, but of British London, have been exhumed in abundance. Just south of the Bank of England the excavation crosses a handsome street known as Walbrook, on each side of which is a little eminence, that to the east being reputed to have been the site of the fortress of the British prince Cassivelaunus, who fought against Julius Cæsar; while that on the west formed part of the Roman colony subsequently established. In digging under Walbrook, the bed of the ancient brook from which it takes its name was laid bare, and two small landing-stages, for boats from the neighboring river, were exposed. Both of them were built upon oak piles, and one had a quantity of oak-tree roots thrown in among the piles, showing that the oak-trees used were cut upon the spot, and the roots and useless twigs thrown in among the piles as the readiest way of clearing the ground. Over the piles, in each case, was a bed of concrete, and on this was a pavement of red Roman tiles. It is quite possible that the Roman pavement may have taken the place of a wooden platform, belonging to the original structure, which had fallen into decay, so that two thousand years may have passed since the piers were built. About them were found one or two skulls, of a British type, besides Roman pottery, leaden coffins, of a Roman design, and a perfect bronze statue, of heroic size. Not far off, at the bottom of a shallow well, was found, with its head downward, the skeleton of some unfortunate Briton, who had either been thrown or had fallen in, and had been left there, disregarded alike by his friends and by those who drank the water of the well.





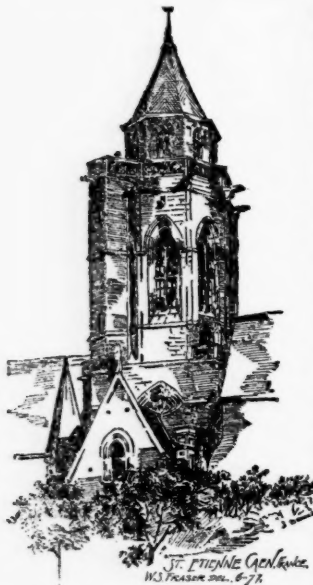
hall of the fifteenth century, with windows high up in the wall arches of the vault. It is the work of Juan de Colonia, the German architect, who was engaged at the same time upon the cathedral. Below the windows are now placed a range of pedimental tablets with pictures—a good arrangement for such decoration. The carved stalls are fine; they are of Renaissance character, with beautifully-carved bas-reliefs. The *coro* has Gothic carvings, varieties of tracery of ingenious but still rather tame designs. There is a great monument of Don Juan II and Isabel, his wife, with effigies wondrously wrought in alabaster, with that minuteness in the rendering of vestments for which the period is celebrated—richer than any I had before seen, but the railing around it was at such a distance that close examination was impossible. The general effect would be better if a less intricate form had been chosen for the monument. It is octagonal in plan, and that figure is broken up into nooks and projections, so that the simplicity of it is lost. There is another notable tomb; that of Isabella, daughter of the last-named, with a kneeling figure in a recess, good sculpture but with late and extravagant architectural detail.

Another day I went west from Burgos to the convent called Las Huelgas. The church is plain good thirteenth-century Gothic. I obtained admission only to the court and the transept, the nave, cloister, chapter-house, etc., being rarely opened to strangers. This is said to be a very aristocratic seclusion, and long ago it was so. The nuns are all of the nobility, the abbess a princess-palatine, mitred, and with "powers of gallows and knife"—that is of life and death. The nave is separated from the eastern parts of the church by a high wall with only a little barred and glazed opening, through which the nuns can see the high altar—if they try. The cloisters are very interesting Romanesque, but to me were inaccessible as the nave. The transept is narrow for its length and height, simple and pleasing. Along the north side of nave is what has been an outside cloister between the buttresses, but it is now all walled up. The porch is a beautiful example of pure early Gothic architecture, with finely-proportioned wall-arcades and a very beautiful rose-window with double shafts and archlets. Of this I was able to secure a drawing, although, as often happens, the enforced nearness of the view prevents its representing the thing in its best aspect. This convent also has a fine tower of early Gothic style, heavy and strong, with a military appearance, and most of the other buildings have somewhat the air of a fortification, windows being few and small, and walls finished with pointed battlements somewhat Saracenic in form.

There are in Burgos some other old conventual buildings and a little domestic architecture dating from mediæval times, and a great number of buildings of the Renaissance and later ages which will repay examination. The old city gate of Sta. Maria is a charming relic. An enormous, ponderous mass of masonry, relieved by turrets of circular form and by late carving, and fringed with battlements; this quaint old castle excels the most picturesque composition that ever resulted from *chic* on a painter's canvas.

#### ARCHITECTURE AT THE ROYAL ACADEMY.—I.

LONDON, May, 1884.



**T**HE display of architecture this year at Burlington House is at once strong and weak, strong in that it has some excellent examples of recent ecclesiastical and domestic work, and weak in any works of great public importance. Weak also as a representative exhibition, as many well-known names are conspicuous by their absence; notably among the latter we must mention Mr. Pearson and Mr. Bodley, as they are members of the Academy, and we have a right to expect contributions from the important and excellent works they are constantly engaged upon. It is with more than a passing regret we miss their names from the catalogue. They are men in the foremost rank of their profession; men whom the Royal Academy has especially chosen to honor; it is, therefore in a sense their duty as it should be their desire to enrich the only collection of architectural drawing exhibited throughout the year, more especially when it is at the Academy. With these regrets which are not lessened by the absence of others we could name, we pass on to notice the principal works here shown. First, as to the members of the Academy who do exhibit. Mr. Norman Shaw again claims our attention with a masterly example of late Domestic work in "Dawpool, Cheshire." It is a house of the Haddon-Hall type; quite a different thing from

the old Cheshire style of half-timber work, and is apparently a stone

house, but English throughout in sentiment and feeling, such architecture as one finds nowhere else but in England. The house is shown in a series of small views, interior and exterior, in one frame; and elevations with a ground plan in another. Here, again, some regret must be felt that none of these drawings are by Mr. Shaw's own hand; admirably as they are done, no one can interpret this master's work as he can himself. The details seem to acquire a new life when touched-in by his clever pencil, every stroke and line of which tells just what is intended and no more. In looking at the plan the great feature of the interior seems to be the picture-gallery, and accordingly we have an interior perspective of this apartment as one of the views. It is large and lofty, with an elliptical roof, and lighted from the panelled ceiling. Across the end runs an elaborate oak screen with a gallery over it, and the doorway is made a prominent feature; all this is admirably designed and detailed. The dining-room, with its great, wide pillared fireplace is also a noble apartment, the windows recalling the type above mentioned by their internal treatment. Externally the house is notable for its broad bay-windows, circular and octagonal, its quaint gables, and picturesque though massive chimney-stalks; the whole place having a quiet old-world air about it which is perfectly charming.

Next in order comes Mr. Waterhouse, with his ever-popular water-colors. The interior of the "Staircase at Owen's College, at Manchester," and the "Queen's Memorial Home, Liverpool," both characteristic works, clever and cleverly rendered in drawing, and looking what they are, typical works of this eclectic age by one of its most typical architects. But when he goes down to Cambridge and gives us the "new Reference-Library and Tea-Room" for the University Union Society, we feel the whole thing is out of sympathy with the place and its surroundings. It is not that the work in itself is bad, far from it, but simply that it is not like Cambridge any more than his work at Oxford is like Oxford. Mr. Waterhouse is of the nineteenth century, Oxford and Cambridge are not, and never seem able to get into harmony with each other the least bit in the world. Manchester and Liverpool belong, so to speak, to our own day, and there he is all right; but in the university towns he seems all wrong. For example, compare his work at Balliol, with Mr. Bodley's at Magdalen; they are both Gothic, but the one is at home and looks it, the other does not.

Mr. Aitchison sends a water-color view of "26 St. James Square," a red brick building of a weak Queen Anne character, not deserving of much notice beyond a little surprise that this should be the work of an Associate of the Academy when so many men of far greater strength and power are outside of it. Mr. Aitchison is more at home perhaps in "A London Drawing-room," where he again discourses on his favorite ideas as to the colored decoration of our houses, and we are bound to admit, most willingly, that he succeeds far better than with the outsides of them.

Taking now the principal drawings as they come in the gallery, where about one hundred and forty works are hung altogether, we may notice the following among the churches: "New Church, at Collier Row, Essex," by Mr. E. C. Lee, shown in an effective drawing; it has a picturesque west end, and a *fleche* noticeable from the clever manner in which it is carried out. A Continental feeling pervades the design which is characteristic of its author, and the same remark applies to his other exhibit, "East End of St. Thomas, Brentwood," though in a less degree, as this is a Kent church, and evidently an addition to an existing building of naturally a more English type, so it is simpler in treatment, and, to our thinking, better.

The "Presbyterian Church, Stoke Newington," by Mr. John Sulman, has still that want of character about it which seems inseparable from Non-Conformist churches. It is nicely drawn and designed, but it might be anything, a lecture hall, a Christian institute, a chapel, if you like, and has really the appearance of being a cluster of all three with other minor requirements thrown in. It is interesting, but not very elevating as a church should be. A great contrast in this respect is Mr. Sedding's "Church of St. Saviour, Sunbury-on-Thames," a simple, dignified church of late character, with a lofty arcaded clerestory and narrow aisles, little more than passages, and a most picturesque tower at the crossing, full of good detail and quaintly designed. The chancel roof is continued at the same height as the nave, so that though this is a comparatively small church the long lines of the roof give it great breadth of effect. It is just what we should expect to find by the side of the Thames also, a riverside church just as there are riverside houses. Another good church is "St. Swithen's, Lincoln," by Mr. Fowler, a town church of English Decorated Gothic, with a fine watch-tower and spire. Another town church is the "New Parish Church, Portsea," by Mr. A. W. Bloomfield, a late Gothic structure of great height, with a fine west tower. Next it is Mr. Anderson's "Parish Church, Govan," in early Gothic, with a very high tower and spire; in fact, the latter is much too attenuated, though it is well designed, and the details carefully studied. Moreover, it looks more like an English than a Scotch Parish Church, which is a pity, for in Mr. I. J. Stevenson's "Tower of St. Leonard's Church, Perth" we see what can be done with the use of the peculiar features of Scotch Gothic to give the local coloring we think so desirable. In St. Leonard's we have a great square tower with an open crown over it, after the manner of St. Giles, at Edinburgh, and other well-known examples, but treated in the spirit rather than in the letter of either of them. A bold, striking design, with very characteristic detail, and very carefully worked out. The



drawing shows it rather too much on the angle: we remember a drawing of this church last year in which this tower grouped much better with the church than it seems to do here.

A most clever restoration is shown by Mr. Brooks in "St. Peter and St. Paul, Northleach." The church is Perpendicular, and so quite outside of Mr. Brook's usual style, but it is very clever nevertheless. It has a fine tower and a large handsome porch. A drawing of the church before restoration would have been interesting. The porch, for instance, seems new, but really it is so cleverly managed, and the drawing so picturesquely treated that it is somewhat difficult to tell.

Probably the most important exhibit in church work is the interior of "St. John the Baptist, Norwich," which Mr. G. G. Scott is building for the Duke of Norfolk. This is a magnificent Roman Catholic church of almost cathedral dimensions, and having the triple arrangement of arcade, triforium and clerestory admirably carried out. It is Early Pointed in style, the nave arcade has massive round pillars with simply-carved caps and very richly-moulded arches. The church is vaulted throughout; across the west end of the nave is an organ-gallery carried on an arcade, and the gable above is pierced with a triple lancet window. The tower is at the crossing, is 40' square, and 150' high, while the length of the church is 280' x 60' high to the crown of the vaulting. The central tower forms a lantern inside, with a ringing-loft and bell-chamber above it. It is impossible to look at this design without a feeling of sadness at the recent events in the life of its gifted author, without feeling what a noble proof it is of his pains, or a deep regret that any cloud should have arisen to darken—however slightly—the honored name he bears. Here, as we look at it, are the evidences of a highly cultivated mind; of strong artistic power; of rare professional skill, which alas in these days we can ill spare for a season, far less be deprived of altogether. With what a thorough knowledge of the style, and the material with which he is working this church is being carried out can be best gathered from the building itself, but even in this drawing in the Academy all must acknowledge it to be the work of a most accomplished artist.

Three other characteristic churches claim our attention, viz.: "St. Mary's, Pulford, Cheshire;" a Middle Pointed design by Mr. John Douglas, quaint and picturesque, as his work usually is. It has a fine tower and a shingle spire, and some good tracery in the windows. "St. Michael's Church, Crewe," by Mr. James Brooks is an Early English church, more in the manner of the author than the restoration already noticed. It is a large church with a north-west tower, well designed, and a Continental-looking *fleche* at the crossing. The east window is rather poor, but otherwise the detail is good, and quite up to the average of this artist's work.

"The Wilson Memorial church, Sheffield," by Mr. J. D. Webster, is a fine fifteenth-century church. It has a very good north-west tower, standing almost detached from the body of the church, of good detail and proportions; altogether a stately-looking building, and shown in a very careful drawing.

Another remarkable work is the "Gustaf-Adolfs-Kyrka, or Scandinavian church, Liverpool," by Mr. W. D. Caröe. A most picturesque design of a central area church, shown in a spirited drawing. The design has quite the Norse feeling throughout, and several of its features must remind the congregation of their Northland. It seems very appropriate for the special purpose for which it is devoted, and is altogether a most original work. In plan it is apparently an octagon with projections for porches, and roofed over with a great high-pitched roof. "The Church of St. Padarn, at Llanberis," in Wales, by Mr. Arthur Baker, seems another example of design appropriate to its site. Here we have a simple Early English church, with a low central tower which seems to fit in with the surroundings of a very picturesque and broken-up situation, such as we should expect in Wales, and finding such a church would not feel disappointed.

"A Presbyterian Church at Richmond," by Messrs. Wallace and Flockhart, makes us almost recall what has already been said about a want of character in Non-Conformist chapels. This design has considerable dignity about it, and though its very simplicity is effective, it has an unbroken roof relieved by a small *fleche*. The west end is well designed, though the two double-light windows are rather weak, and hardly worthy of the much better work in the porch below.

Among drawings of old work is one by Mr. I. Atwood Slater of "The Brick Tower, Albi Cathedral, France." This is a most extraordinary tower, with enormous circular buttresses at the angles, which increasing in diameter by stages as they reach the ground almost swallow up the faces of the tower till there is hardly any of the walling left. These circular buttresses are also continued on a smaller scale between the windows of the nave. The belfry stage, with excellent windows is one of the best features of the work.

In No. 1345 we have a "Suggestion" for the colored decoration of St. Paul's cathedral, by Mr. I. Gregory Crace, which, fortunately, is likely to remain a "suggestion" only, as it would, without doubt, entirely spoil St. Paul's. An artist of very much stronger power than this design indicates is wanted to do the work if it ever is done, which is an open question.

The above comprise the principal exhibits in churches, and we must reserve the domestic work, of which there are many excellent examples for a further notice.

## STAIRCASES.<sup>1</sup>

### PART I.—HISTORICAL AND ARTISTIC.

#### FROM THE EARLIEST TIMES TO THE COMMENCEMENT OF THE FOURTH CENTURY.

"The more extensive your acquaintance is with the works of those who have excelled, the more extensive will be your powers of invention; and what will appear more like a paradox, the more original will be your conception."—SIR JOSHUA REYNOLDS.



FEW particulars can be gleaned as to the staircases of the ancients. In the early habitations of primitive man such adjuncts were unnecessary, as the houses rarely, if ever, exceeded one story in height. In the remote periods associated with the architecture of Babylonia and Assyria,<sup>2</sup> it can only be assumed that internal staircases of any description existed.<sup>3</sup> The houses and palaces consisted of at least one story over the ground floor,<sup>4</sup> so that assuming communication did not exist by internal wooden staircases, which the lapse of time would soon obliterate, the most probable means of ascent was by continuous inclined planes, or by external flights of stairs leading to artificially-formed terraces,<sup>5</sup> from whence the upper chambers were entered.

Communication by both of these means was not uncommon in Eastern countries. It was an inclined plane—founded upon the principle of the spiral line—which led to the staged pyramid of the temple of Belus at Babylon, erected soon after the flood.<sup>6</sup> In one of the mosaics at St. Mark's, Venice, depicting the building of the Tower of Babel, inclined boards are shown for obtaining access to the scaffolding in place of ladders, a custom which has descended to the present day in Venice, and forms a curious instance of the tenacious survival of an ancient custom.<sup>7</sup>

We may make a slight digression here to note that many centuries later, and far on in the present Christian era, similar methods of forming stepless staircases were in use. In Giotto's rich and famous Campanile at Florence the ascent is by inclined planes. In the Campanile on the Piazza of Venice the ascent is similarly by inclined planes within two parallel walls, performing the circuit nine times before reaching the summit. Bramante's celebrated stepless staircase<sup>8</sup> in that portion of the Vatican called the Belvedere may be cited; while as a last example of many on the same principle we may take the enormous twin towers erected by Charles VIII about 1490 at the Chateau d'Amboise in the valley of the Loire, where, in towers sixty feet in internal diameter, a continuous ascending plane, groined throughout, and winding round an internal hollow newel (which probably contained another staircase<sup>9</sup>) leads to the ramparts of the Chateau.<sup>10</sup> From collateral evidence, and, from the subsequent architecture of Persepolis, we may deduce the architecture of preceding epochs, and among other facts that large external flights of stairs existed. In the scanty remains of Persepolitan architectural grandeur which modern explorers have made us acquainted with, we find many examples of these staircases. They consist of immense single or double flights of steps leading to artificial, elevated, level plateaux of great height and extent, on which their principal buildings were erected. They formed an approach of the most majestic grandeur, while the buildings themselves were greatly enhanced in architectural effect and nobility from their carefully-studied situation.<sup>11</sup> The walls of these staircases were in many cases richly decorated—in some instances with such multitudes of figures and mythological representations as to absolutely bewilder the onlooker.<sup>12</sup> The immense double staircase leading to the platform whereon stood the Great Hall of Xerxes<sup>13</sup> was thus decorated with magnificent *bass-reliefs* of bulls, lions and figures.<sup>14</sup> All the examples seem to have been constructed with stones of great length, and are of very easy acclivity. According to the measurements of Sir R. Ker Porter the

<sup>1</sup> The Institute Prize Essay, 1881, by Thomas Purves Marwick, A. R. I. B. A., published in the *Building News*.

<sup>2</sup> The oldest Assyrian buildings yet discovered are contemporary with Abraham, twenty-two centuries before our era.

<sup>3</sup> No remains of internal staircases have been discovered in the palaces which the researches of M. Botta and Mr. Layard have made us acquainted with since 1843.

<sup>4</sup> Herodotus says, "numbers of houses were three or four stories in height."

<sup>5</sup> Audsley and Colonel Rawlinson.

<sup>6</sup> Durand's "Parallel of Ancient Edifices."

<sup>7</sup> Geo. Ed. Street's "Brick and Marble Architecture of Italy."

<sup>8</sup> Ciren, 1502.

<sup>9</sup> This feature of a hollow newel containing a subsidiary staircase has also been used by Raymond du Temple in the great staircase at the Louvre, erected in 1365, and destroyed in the beginning of the seventeenth century; in Renaissance times in England by Inigo Jones in Ambresbury, Wiltshire (1661); and in modern times by the late G. E. Street in the eight staircases at the sides of the Central Hall in the Law Courts (see *Building News*, September 21, 1883); in Chambord, Capra-la, and in many other examples.

<sup>10</sup> In Mr. Henry Clutton's excellent work, "Notes on the Domestic Architecture of France," these staircases are referred to as "quite exceptional, either in that or any other country."

<sup>11</sup> Ferguson's "History of Architecture."

<sup>12</sup> Sir R. Ker Porter.

<sup>13</sup> Xerxes 521 to 486, B. C.

<sup>14</sup> See the illustrations of bas-reliefs, including cuneiform inscription of Xerxes in the second volume of "Persepolis," by F. Stolze and F. C. Andreas.

treads were, as a rule, fourteen inches broad, and the rise varied from three inches to four inches—none exceeding four.

The Egyptians do not seem to have used to any extent this means of attaining effect in their principal edifices; while in their domestic architecture the access to the upper floor or floors and to the roof terraces was attained by the use of the simplest description of staircase or ladder.<sup>1</sup> In the private dwellings of the Greeks access to the upper stories<sup>2</sup> and roof was most probably attained by similar means. Sometimes the stairs were on the outside of the house leading up from the street; but it is probable that they led most generally from off the covered cloister which surrounded the central court. In the larger Greek houses there were two courts, the peristyle of the Andronitis and the peristyle of the Gynæconitis, possibly with separate staircases from each.

Where much is conjectural it need only be noted that from these central courts were developed the Roman *Atria*, which, in turn, were the model for the cloisters of conventual buildings, the halls of the Middle Ages and the noble *cortilli* of the *palazzi* of the Italian and the *patios* of the Spanish Renaissance. In temples and in the Greek theatres at Crete it is more than probable that double returning flights of steps existed for giving access to the roof. During the progress of architecture under the Romans, unparalleled as such architecture was for size, magnificence, and for awe-inspiring grandeur, no trace can be found of *scala* of other than the simplest and most unpretending character. The value of stately external flights for giving a majestic and inspiring appearance to a building was, however, well understood; such as—for example—we have good authority for supposing led to the Temple of Fortuna Virilis, to the Temple of Concord,<sup>3</sup> and from the Via Sacra to that of Antoninus and Faustina. In the mighty Pantheon<sup>4</sup> the smallness of the two triangular staircases at the junction of the portico addition with the original circular building; in the Basilica at Pompeii; and in the Arches of Septimius Severus and of Constantine, is accounted for by the simple fact that larger ones were obviously unnecessary, seeing that the sole object was for obtaining access to the roof. In many buildings internal circular staircases—the form which ultimately became so popular in the Middle Ages—were used. The Romans, who borrowed so largely from the Greeks, found the original prototype in the ruined temples of Selinuntum. In the historical column of Trajan,<sup>5</sup> a spiral staircase of one hundred and eighty-five steps, hewn out of immense solid circular blocks of white marble (covered externally with sculptured *bassi-relievi*) twelve feet in diameter by five feet in height, conducts to the summit. The diameter is divided into seven parts, three being given to the newel and four to the steps. In the Catacomb of St. Hermes, near Rome, on the Via Salva, an example is found.<sup>6</sup> In the Baths of Diocletian (A. D. 284), and in his palace at Spalatro we find other examples of their use, but the nearly universal form of staircase construction in all important public erections no doubt consisted of double returning flights of stairs separated by a central wall. The steps were carried by continuous creeping cylindric vaulting where the width necessitated it, or they were simply rested on the centre and side walls where narrow.<sup>7</sup> In the Amphitheatre of Verona, built in the era of Augustus, in the later Flavian Amphitheatre,<sup>8</sup> in the Theatre of Marcellus, and in the immense Thermæ of Antoninus, of Caracalla, of Diocletian and of others, and the smaller Paulus Emilius of Imperial Rome these staircases are to be found. If we cannot admire them for their beauty—they were certainly devoid of architectural ornamentation as commonly understood—we can at least say that they were broad, fire-proof, structurally strong, and with landings,<sup>9</sup> and that they possessed elements which might with advantage be imitated in the public edifices of the present day. Of the staircases in the magnificent private residences, the villas, or in the “one hundred palaces of the greatest splendor,” which, according to Pliny, existed at one time in Rome, we know little or nothing. We can only assume them to have been of very simple construction, and are the more confirmed in this by the complete knowledge possessed of the arrangements of these houses from contemporary authors. All the principal apartments were situated on the ground floor, therefore no necessity existed for handsome staircases; and though architectural grandeur was in its zenith and reached the acme of extravagant splendor, the assumption that the Romans gave little assistance by their examples to the architects of future ages in the development of this valuable adjunct as now understood is not without foundation.<sup>10</sup> The examples of their ordinary domestic staircases as exposed to us in the formerly buried cities of Pompeii<sup>11</sup> and Herculaneum show that, where they existed at all, they were dark, deep (in many cases the risers were as high as twelve inches),<sup>12</sup> and of the rudest and most confined description. In most cases they led, however, only to an unimportant upper floor.

<sup>1</sup> Sir Gardiner Wilkinson's “Account of the Ancient Egyptians.”

<sup>2</sup> For proofs as to the existence of upper chambers see the “Introductory Essay on Greek Architecture,” by Joseph Gwilt, prefacing Sir W. Chambers’ “Treatise on Civil Architecture.”

<sup>3</sup> Palladio attributes to this temple an approach by a magnificent flight of twenty-two steps.

<sup>4</sup> Erected twenty years before the Christian era.

<sup>5</sup> Erected A. D. 114 from the design of Apollodorus.

<sup>6</sup> D’Agincourt.

<sup>7</sup> Viollet-le-Duc’s “Dictionnaire.”

<sup>8</sup> Built by Vespasian, and finished by Titus, A. D. 80.

<sup>9</sup> At suitable intervals.

<sup>10</sup> The position of the staircase was probably as in Greece—leading off the atrium or peristyle.

<sup>11</sup> Pompeii, Stabia and Herculaneum buried A. D. 79. The first excavations were only commenced in the middle of the eighteenth century.

<sup>12</sup> Stuart’s “Dictionary of Architecture.”

They were of two kinds, Vitruvius says,<sup>13</sup> and constructed either of wood or stone; one kind, as in modern times, having one end fixed in the walls, called common *scala*, the other called *scala Græca*, being closed on both sides.<sup>14</sup>

#### FROM THE FOURTH TO THE TENTH CENTURY.

At the commencement of the fourth century Constantine removed the seat of the Roman Empire to Byzantium, and there we leave the style as practised by Eastern artists on debased Roman art, and its ultimate development among the surrounding nations. We will follow this Western division of the Empire that practised what we know as Romanesque from the commencement of the seventh century, when the Roman style and Latin language ceased, onward through the Dark Ages, the era of Charlemagne, to the dawn of that brighter day which, heralded and nurtured by monastic influences, developed ultimately and shone on the harmony, splendor and grace of the Gothic architecture of the Middle Ages. The remarkable staircase towers in the ecclesiastical structures of Central Germany—the Rhenish branch of the generic Romanesque—we will treat of under a subsequent head. Meantime we will follow the English-Norman branch from the Conquest to its culmination and fall antecedent to the reign of Elizabeth.

#### ENGLAND.—FROM THE CONQUEST TO THE REIGN OF HENRY VIII.

During the five centuries embraced between the era of the Norman kings and the reign of Queen Elizabeth, no form save that of the newel or straight staircase was in general use. Straight staircases were used both externally and internally. External examples were frequently unprotected. Sometimes they had a portion of parapet wall at the landing only, as at Aydon Castle, Northumberland, sometimes it extended down one side. They usually ran up alongside the main wall, and had a solid wall under which the ends of the steps rested. They are seldom seen with double parapets running at right angles to the entrance, though examples exist, as at a house in Pembroke, South Wales. The oldest and finest external staircase in this country is the well-known one at Canterbury,<sup>15</sup> erected about 1085 by Archbishop Lanfranc.<sup>16</sup> It led to the Stranger’s Hall, and is a very beautiful specimen of the period. On each side there is an open arcade of semicircular arches richly decorated, and gradually decreasing in size towards the top.<sup>17</sup> Previous to the close of Edward the First’s reign the hall or principal apartment in domestic architecture was invariably on the first floor for the purpose of defence, and access to the entrance door was gained either by a ladder, movable stair, or by an external staircase from the court-yard, such as we have described. These staircases were also constructed of wood, as at the Abbot’s House, Westminster, as well as of stone, had a landing at the top, and were frequently covered to protect them from the weather, the shed roof raking with the steps, and terminating in a wooden porch over the landing. These roofs rested on wood posts, either filled in close between, or left open, having tracery, as at an outbuilding to the Archbishop’s Palace at Maidstone, Kent. With the gradual advance in plan, and the abandonment of the castle in favor of the fortified Manor House, these external staircases fell into more and more disuse. Internally—in early feudal residences—straight staircases, for affording access to superimposed apartments, were constructed of stone in the thickness of the walls, as at Hever Castle, Kent, singly or in successive flights. Or in late examples they formed a steep approach between partitions, as at South Wraxhall, Wilts. Seven and a half and eight inches formed a not uncommon angle of ascent. They were also used, but principally of wood, at the end of the hall to afford access to the Minstrel’s Gallery over the screens. The peculiarity of these staircases—in fact, of all mediæval wood stairs, rectangular or winding—is that the steps are formed of solid blocks, as we find in the hall at Stokesay Castle, Shropshire; or in the Preceptory of the Hospitalers, Chilborn, Northumberland. This custom of having solid wood steps partially survives on the Continent to the present day. Stairs thus constructed have a springiness, are as quiet, and easier to mount than when of stone. It is, however, in the newel staircase that we have the universally prevalent system of communication in mediæval architecture of all kinds. We have already noticed that this form had been in use from a very early period. It had descended thus from precedent to precedent; but it was left to the artists of the Middle Ages—though of another country—to carry it to its fullest development. Probably the earliest known examples of a newel staircase in this country are those at Brixworth and Brigstock churches, Northamptonshire, which have been assigned to a period anterior to the Norman Conquest.<sup>18</sup> The former is circular, both outside and inside, is placed against the west side of the tower, and has a very large newel worked up with bricks and rubble, as are also the soffits of the stairs. The steps have been formed upon rough centering in the usual mode adopted by the Normans. Previous to the advent of the Normans into this country, the Saxons were content with the rudest and most primitive accommodation. It is in the castle of the Nor-

<sup>13</sup> Vitruv: ix. i. s. 7, etc.

<sup>14</sup> Smith’s “Dictionary of Greek and Roman Antiquities.”

<sup>15</sup> See sketch by Maurice B. Adams in the *Building News* for October 18, 1872.

<sup>16</sup> Lanfranc died in 1089. Previous to being appointed to the See of Canterbury (1070-1089) he was first Abbot of the Monastery of St. Stephen at Caen, dedicated in 1077. Willis’s “History of Canterbury Cathedral.”

<sup>17</sup> For an interior view of this celebrated example, see Parker’s “Domestic Architecture of the Middle Ages.”

<sup>18</sup> Illustrated in Britton’s “Chronological Architecture of England,” and in the *Building News*, September 8, 1882.



man baron, therefore, from which all subsequent developments sprang, that we find the earliest application of the turnpike stair in domestic architecture. Let us examine the causation of their preference for this form. It could be constructed in the very thick walls which characterize their architecture, and therefore did not encroach on the limited accommodation. It was, for this reason, specially suitable for the secret staircases of those days. During the earlier periods the steps were formed of several stones rested on raking, spiral, cylindric vaults of the construction already indicated; but later, as the science of stone-cutting advanced, the arches were executed with dressed stones until they were seen to be unnecessary, and the invariable method was thereafter to form the steps in one piece, with a segment of the vertical pillar or centre cylinder wrought on one end, thus attaining lightness with rapidity of construction. It could be made to land at any point on the circumference desired. It could be easily lighted and ventilated. It could be defended with great ease, while, by erecting the stair to each floor independent and separate—as was occasionally done—additional security against an enemy was gained. It gave, when enclosed in a turret, point and picturesqueness to the external architecture. It was convenient; could, without much encroachment on space, be multiplied indefinitely, and thus afford isolation or private access to, or egress from, any suite of apartments. Though we find it in the Norman castles forming the internal communication between the main apartments and those above it did not materially effect the usual means of communication by external stairs, hatches and ladders, in the great mass of cases, until the brilliant Edwardian era had well commenced. For example, we read that Henry III (1216-1272) at one of his manors, complaining that the way from his chamber to the chapel takes him through a trap in the floor, orders the construction of a spiral staircase in the wall. We can well imagine that when even in a king's manor-house such deficiency of easy and convenient communication existed, that amongst the inferior rank and file no improvement was general for some period thereafter. Newel staircases are nearly always circular inside, whatever outline they may assume externally. In some few examples, as Kenilworth and Oxburgh-Gate Towers, and at Penshurst Place, Kent, the interior follows the line of the exterior, the enclosing wall thus being uniform in thickness throughout. In early examples they were extremely narrow and inconvenient. When the outside staircase fell into disuse as the access to the hall on the first floor they became widened to serve this purpose, the old turnpikes being retained for subsidiary purposes. The habit of enclosing them in a separate turret externally emphasized was early developed. We find it at West Deane Rectory, Sussex, and Little Wenham Hall, Suffolk, as early as the end of the thirteenth century; at Belsay, at Northumberland, and Markenfield Hall, Yorkshire, in the fourteenth. In the gate-houses which became so important a feature in domestic architecture the newel stair was always called into use to gain access to the rooms over the gateway, and these were generally inclosed in turrets at one corner, often carried above the watch-tower roof and crowned with miniature embattled tops. We find these either running from the ground or corbelled out, and forming elegant and graceful features, such as we see in the fifteenth century college buildings at Oxford. Internally these turrets are sometimes encircled by a spiral moulding, as in that to the north-east of the choir to St. Alban's Abbey church. Sometimes the hand-rail is wrought in the material of the enclosing wall of stone, or moulded brickwork, as at Eastbury,<sup>2</sup> or they are of massive oak, as at Crowhurst Place. It was during the reign of the Edwards that the newel staircase came into general use. With the advancements in domestic plan which gradually took place subsequent to that up to the age of the Tudors we have little additional to chronicle anent our subject. The form remained unaltered, though the number was materially increased. Throughfares through rooms were common, and convenience was attained by multiplying the number of the stairs rather than by the introduction of passages. Few constructional or artistic peculiarities call for special notice.<sup>3</sup> At Belsay, Alnwick, and Warwick Castles we have a feature introduced, however, which has—both in this and in other countries—always proved attractive and beautiful. At the top of the staircase the newel is carried up as a vaulting shaft from which spring radiating ribs forming a groined ceiling. Some of these are of exceeding elegance. For brick buildings the entire staircase was often constructed in that material, as at Hurstmonceaux Castle; Kirby-Muxloe Castle, Leicester, is another example (c. 1480), where the steps are formed of brick carried on a continuous spiral brick vault. A similar instance occurs at the castellated mansion of Oxburgh Hall, Norfolk. In timber houses the newel staircases were formed of wood, the steps being generally—as in the straight stairs—of solid oak blocks tenoned and pinned into an oak newel at the one end, and resting on the enclosing wall at the other. Examples exist, amongst others, at Boar Place, near Penshurst; at Eltham, Kent, and at Eastbury Hall, Essex.<sup>4</sup>

**THE NEW YORK PRODUCE EXCHANGE.**—The number of square feet in the main room in the New York Produce Exchange is 31,900, and in the first story of the main building 44,754 square feet, and of the second, third and fourth office stories 22,450 square feet each, and in the halls and corridors 13,000 square feet.

<sup>1</sup> Kerr's "English Gentleman's House."

<sup>2</sup> Hunt's "Tudor Architecture."

<sup>3</sup> A peculiar caprice in the construction of a spiral staircase is illustrated in Willis's "History of the Conventual Buildings of Christ Church at Canterbury."

<sup>4</sup> "Notes on Timber Building in the Middle Ages," by C. Bally.

## OUR ILLUSTRATIONS.

STABLE FOR JOHN WALES, ESQ., BROOKLINE, MASS. HOUSE FOR B. P. LOVEJOY, SOMERVILLE, MASS. MR. W. W. LEWIS, ARCHITECT, BOSTON, MASS.

WE trust that the appearance of these prints made from negatives taken by an amateur photographer, will encourage other architects who have dabbled in the fascinating art to lend us the best of their work now and then.

BURGOS CATHEDRAL, WEST END OF NAVE; PORCH, LAS HUELGA, BURGOS, SPAIN. SKETCHED BY MR. R. W. GIBSON, ARCHITECT, ALBANY, N. Y.

FOR description see article on "Spanish Architecture."

U. S. QUARTERMASTER'S DEPOT, ST. PAUL, MINN. MR. GEORGE WIRTH, ARCHITECT, ST. PAUL, MINN.

COUNTRY SEAT ON THE HUDSON. MR. A. F. OAKLEY, ARCHITECT, NEW YORK, N. Y.

THIS house is to be built of limestone, with red pan-tile roof and terra-cotta chimney-tops, and will cost about \$75,000. The contract for mason work, including terra-cotta and plastering, amounts to \$38,200.

## ARCHITECTS, CLIENTS AND CONTRACTORS.<sup>1</sup>



NEW CITY HALL, PHILA. PA.  
CAPITAL OF JURY GEN. BUILDING  
J. H. MURPHY, ARCHT. ALBANY, N. Y.

WHEN drawing up the programme of the proceedings of this Conference, the committee considered that "the duties, obligations, and mutual relations of architect, client and contractor, with reference to both English and foreign practice," would form an excellent subject for discussion at one of the meetings. They accordingly prepared a series of questions which were addressed to correspondents of the Institute, with the result that replies have been received from Professor Fenger, of Copenhagen, Th. Ritter von Hansen, of Vienna, and Herr Ende, of Berlin.

Communications respecting the practice in America have also been received from Mr. Sydney Smirke, who practised for many years in America, and who will, I hope, be present here this evening, and favor the meeting with his observations on those points in which American practice differs from ours.

At the request of the committee I have read these communications and summarized them in such a manner as will, I hope, satisfactorily open the discussion.

For France I am indebted for much information to Mr. W. H. White and Mr. R. Phené Spiers, and have referred to some of the leading text-books on French building legislation, more particularly to "Manuel des Lois du Bâtiment," published by the Société Centrale des Architectes; Frémy Ligneville, "Traité de la Législation des Bâtiments," 2 vols., 8vo., 1881; O. Masselin, "Nouvelle Jurisprudence et Traité pratique sur les Honoraires des Architectes," 8vo., Paris, 1879; O. Masselin, "Nouvelle Jurisprudence et Traité sur la Responsabilité des Architectes," etc., 8vo., 1879.

I must admit that when the questions settled by the committee were first placed in my hands, I was somewhat startled by the wide range they covered, which seemed to me likely to require a whole conference, or even a series of conferences for their complete discussion. As, however, the time at our disposal this evening is but limited, and the object of the meeting is to afford those who attend an opportunity of expressing their views and discussing points of general practice, I will, as shortly as possible, bring before you the replies which have been received.

Happily, the first question, which relates to the tenure of land for building purposes, has been thought to be of sufficient importance to have an entire meeting appropriated to its consideration, and to-morrow (Wednesday) morning Mr. Blashill will read a paper thereon.

**Position of Architects on the Continent.**—The next series of questions relates to the architect, and it will be convenient to consider each separately. Thus:—

When an architect is employed upon the erection of a house, is it usual for him to perform the following services? (a) Preparing all the drawings that are required, and a specification of the works; (b) arranging terms with the contractor or contractors; (c) superintending the work; (d) deciding on the amount of money that is to be paid to the contractor or contractors, according to the terms and dates of payment.

To this the reply from Copenhagen is the simple affirmative, Yes; but in Austria the architect's duties appear to be somewhat more extended, as beyond those set out in the question he prepares an accurate estimate of quantities of the building to be executed, from which the contractors can ascertain the quantities of the several descriptions of work.

A similar practice appears to exist in Germany, and in France the preparation of the *devis estimatif* is one of the duties of the architect, and is included in the services covered by his commission; but

<sup>1</sup> A paper by Mr. Arthur Cates, F. R. I. B. A., read at the late Conference of Architects, London.

on this head more particulars will be given when the tariff of charges under which German architects work and the remuneration of French architects is considered.

To the third question: Does the architect usually perform any other services? the reply is in each case, No.

4. Is his decision as to the quality of the work and material, and as to payments, final and binding? is answered in accordance with ordinary English practice, with the proviso, as regards Austria, that if the contractor desires in such cases to appeal to a legal tribunal, the right of doing so must be expressly stipulated in the contract; while in Germany it is often stipulated in the contract that in cases of dispute one or more arbitrators shall decide the question at issue.

5. Is the architect responsible to the client for any losses that may arise through bad work or materials which he ought to have checked; and if so, for a limited or unlimited time?

It appears that in Denmark this responsibility has not hitherto been exactly defined by law or by custom, but if losses have been suffered through the architect's neglect or liability, the employer may sue him for damages within the first twenty years. The reply from Vienna is vague, and to the effect that the contractor is held responsible for, and to make good, loss through bad work or bad material. The Architectural Association of Germany has the responsibility of the architect to the client at present under consideration, but no decision has been arrived at. There the tradesman is responsible to the architect, as well as to the client, for the goodness of the work. In doubtful cases the architect leaves the selection of the tradesmen to the client, thus giving the latter an influence by which he cleverly diminishes his own responsibility. No instance is known to Herr Ende in which an architect has had to bear the responsibility for the shortcomings of a tradesman. Every architect is legally answerable for his designs so long as these are followed. Where a tradesman deviates from the instructions of the architect, the latter assumes the responsibility if he sanctions deviations in a general way. If the architect is demonstrably lax in his supervision, of course the law holds him responsible.

In France and those countries subject to the Code Napoléon the responsibility of architects and contractors is defined by six articles of the Code Civil, four of which are of general application, while Article 1,792—"Si l'édifice construit à prix fait, péricule en tout ou en partie par le vice de la construction, même par le vice du sol, l'architecte et l'entrepreneur en sont responsables pendant dix ans"—appears to make the architect and contractor liable for ten years; and Article 2,270—"Après dix ans, l'architecte et les entrepreneurs sont déchargés de la garantie des gros ouvrages qu'ils ont faits ou dirigés"—relieves the architect and contractor from liability after ten years.

*Responsibility of Foreign Architects.*—There has been considerable controversy as to the exact meaning of Article 1,792, it being contended that it is only applicable where the architect is the contractor; but, nevertheless, the responsibility attaches to the architect under the general principles of Article 1,382: "Tout fait quelconque de l'homme, qui cause à autrui un dommage, oblige celui par la faute duquel il est arrivé à réparer"; Article 1,383: "Chacun est responsable du dommage qu'il a causé, non seulement par son fait, mais encore par sa négligence ou par son imprudence"; and Article 1,992: "Le mandataire répond non seulement du dol, mais encore des fautes qu'il commet dans sa gestion," which make him, in common with all other citizens, liable for the results of faults he may commit, and those he may by negligence or otherwise permit others to commit over whom he may have authority. For errors of design and want of skill resulting in failure of the building wholly or in part, neglect of legislative enactments and municipal and police regulations, neglect of servitudes and easements to which the site is subject and which the architect could have ascertained, providing a building which does not satisfy the defined requirements, the client has his remedy against the architect alone. For improper execution of work, defective or improper material or workmanship, the client's remedy is against both contractor and architect—against the one for having committed the wrong, and against the other for having by inefficient superintendence permitted it; but the architect himself has his remedy against the contractor. These responsibilities have many qualifications arising from the varying relations of the parties, but it would not be possible to enter into such details on this occasion.

The limit of ten years does not apply to cases of fraud; in these the term of prescription is extended to thirty years. In England, the Statute of Limitations being seven years, it would appear that the architect is in ordinary circumstances protected after the lapse of that period.

*Scale of Foreign Fees and Measure of Professional Work.*—6. On what basis is the architect's remuneration calculated, and is this settled by any law or custom?

The Danish architects have not yet agreed upon a schedule of remuneration, but often use the German and Swedish schedules, which will be found in the report of the Congrès International des Architectes, Paris, 1878. In Austria the terms of professional remuneration are not fixed by law, but the Architectural Association has drawn up a certain scale of charges. It is, however, optional with the architect and client whether they accept this or not. As a rule professional remuneration is calculated at from three to five per cent according to the nature of the work. In Germany a very elaborate tariff is adopted, which was drawn up by the Architectural Section at the Fifteenth Congress of German Architects and Engineers, held at Hamburg in 1868. The ordinary work of the architect is there

divided in five classes, commencing with ordinary agricultural buildings and the plainest description of town and country dwellings, and ending with exterior and interior decorations and ornamental work. The scale of remuneration is set out under six subdivisions of the architect's work and nine progressive stages of cost, the first limit being £300, and the highest £30,000 and upwards.

The services to be performed by the architect are defined as: (a) *Sketches.*—Preparing sketches (plans and elevations) drawn to scale, and (if desired) an approximate summary estimate of cost. (b) *Design.*—Preparing complete design, with plans, elevations, and sections, together with a summary estimate of cost as for (a). (c) *Working Drawings and Details.*—Preparing the requisite working-drawings and the detail-drawings of construction and decoration. (d) *Estimate of Cost.*—Preparing a special estimate of cost of construction. (e) *Execution.*—Drawing up contracts for, and letting and general superintendence of the execution of the whole of the works, exclusive of special superintendence. (f) *Accounts, etc.*—Checking and certifying the accounts, exclusive of measuring up.

For works of smallest cost the rate per cent for the entire services varies from five per cent on the smallest expenditure, for the lowest class of building, to nine and one-half per cent for a like expenditure on the highest class of building; while for works of greatest cost the rate of remuneration varies from two per cent on the largest expenditure for simple buildings to five per cent on those of the highest class. Fees on rebuilding or additions to existing buildings where a special design is necessary are calculated at one-fourth more, and where a design is not necessary, at one-fourth less than for the same class of new work. Advances on account during the work, in proportion to the progress of the work and in accordance with the rules, shall always be paid to the architect on demand. If the estimate be exceeded, such excess shall not increase the fee, but the cost of duly sanctioned extensions or more sumptuous treatment of the work shall increase it. All drawings remain the property of the architect. The client may demand copies of the design, but shall use them only for the work to which they relate. This German tariff has been adopted by the architects of Belgium, Switzerland and Italy, and has, I think, been printed at length in the London professional journals. The remuneration of architects in Sweden is regulated by a system similar to that adopted in Germany; but, while the services to be rendered are similar to those there given, the rates of percentage are somewhat less.

The services to be rendered by an architect in Sweden are: *Esquisse.*—Dessin net, avec un devis approximatif. *Dessins et plans principaux.*—Dessins complets. *Devis et descriptions.*—Calcul des frais, avec indication des quantités et des prix, ainsi que désignation des matériaux, et du mode du travail. *Epures.*—Tous les dessins de construction et d'ornementation. *Surveillance.*—Stipulation de contrats d'entreprise et surveillance de l'exécution.

In France it has been decided by the Cour de Cassation as recently as 1875 that no law or regulation exists which fixes the fees due to an architect for private work; that the Courts should, in the absence of any agreement, regulate them with reference to the work carried out and the services rendered. Public departments, such as the Ministère de l'Intérieur, des Travaux Publics, des Cultes, La Ville de Paris, etc., make special contracts, by which the architect, besides an annual salary ("traitement fixe annuel") is entitled to a commission ("traitement proportionnel") on the cost of the work; and after their completion, he might be granted a further payment ("gratification," not so much as a pecuniary advantage, but as an expression of satisfaction for work executed with economy and skill. Although the fees of architects have never been fixed by law, because the art is a liberal one, they are, when not otherwise agreed, generally determined by the custom of the place, or the scale fixed by the Conseil des Bâtimens Civils in 1800, and confirmed in 1841, by which the remuneration of architects employed by the Department was fixed at five per cent, the services to be rendered being defined thus: "Confection des plans et des projets, la conduite des ouvrages, la vérification et le règlement des mémoires."

*The Five Per Cent Rate in France.*—The whole question of "honoraires" was very fully discussed at the Congrès International des Architectes, held in Paris in 1878, and under the auspices of the Société Centrale des Architectes, and I would refer those who are desirous of more detailed information than can be here given, to the report of the proceedings of that Congress, published in 1881 by the Ministère de l'Agriculture et du Commerce.

The subject has occupied the attention of the Société Centrale des Architectes not less than that of this Institute. In 1849 a committee of that body reported that five per cent must be taken as a mean applicable to most cases—had been generally recognized by courts of justice, but by arrangement, by reason of the importance or otherwise of the services rendered, might be deviated from.

The following extracts from some of the communications made to it sufficiently explain the spirit with which the question was considered at this Congress:—

"Whatever the merit of the architect who conceives and executes, whatever the nature of the work, whatever the skill, care and time devoted to the studies and to the superintendence—always five per cent.

"The painter, the sculptor, obtain for their works their value; the physician, the counsel, charge their fees in accordance with their position and merits, and the care which they bestow.

"The counsel may have mistaken the case and advised his client badly, but the latter pays the fees, and no more is said.



"The physician may have erred, his patient dies, and with him the doctor's mistake is buried; but nevertheless his fees are paid.

"The architect, however, receives always five per cent; but if he makes a mistake, or is deceived, or if he has given way to concessions which may compromise his work, the critic is ready to seize with avidity on his faults, while justice is invoked against him with such rigor that even his future prospects may be affected, and that fortune and position, to attain which the architect is ever struggling, may be compromised.

"Pretended architects accept work on such terms that they cannot without loss perform the serious duties of the profession; but certainly if they thus lose, they profit in other and less legitimate ways.

"The client who thinks he has made a good bargain is not aware that the architect obtains from the contractors more than the difference he has saved, and to obtain it sacrifices his liberty of action, and hands himself over to them."

M. Davioud strongly urged the impossibility of framing an equitable tariff, the inapplicability of such a tariff system to an open and liberal profession, and the necessity of leaving each practitioner to assess his own value and to make his own bargain in accordance therewith and the nature of the work to be undertaken. In the result, after very long discussion, the Congress arrived at resolutions to the following effect: The Congress, acknowledging the principle of freedom of labor and its unfettered remuneration, which is established on the principle of supply and demand, is of opinion that every architect should appraise his work at such value as he may think fit, which should be a fair remuneration for the skill displayed and the special difficulties overcome. Nevertheless, in the absence of any special agreement, it considers that the *Avis du Conseil des Bâtimens Civils* should be applied as a minimum until such scale has been modified in an equitable manner.

*Five Per Cent not a fixed Standard in England.*—Thus, the result of the Congress was that the inevitable five per cent was considered to be a reasonable basis of remuneration. Here, in this room, the architects of the United Kingdom have, at great length, and for the last time twelve years ago, discussed the same subject and arrived at a similar conclusion; but having printed a document setting forth the opinions of this Institute and that Conference with reference to professional charges, it has been most unjustly imputed to the Institute that it partakes of the character of a trade union, an impression being somewhat general that adherence to the terms set forth in that document is an essential condition for membership of the Institute.

My own view of the position is this: that the document expresses the ordinary custom of the profession, by which, in the absence of any agreement to the contrary, the relations between architect and client should be governed; but the architect is left perfectly free to himself assess the value of his work. If the circumstances of the case and the nature of the work permit him honorably to accept a lower rate of remuneration, he is perfectly at liberty to do so; while, on the other hand, if he considers that his position in the profession or the value or importance of the services rendered entitle him to make his charge at a higher rate, or as has been done by a late well-known and highly-respected member of this Institute, without regard to percentage at all, he is perfectly at liberty to do so, and to secure the highest remuneration he can obtain.

*Foreign Practice as to Ownership of Drawings.*—The seventh question, "Are there any other important matters affecting the architect in his relations to his client or the contractor?" has not elicited any replies which need occupy your attention, but the ownership of the drawings is one which certainly merits the most careful consideration of the Conference, and may be considered under this head.

In France, Frémy Ligneville (Vol. I, page 229) declares the law to be that in the absence of any agreement to the contrary, the fees paid to the architect are considered to be due, not only for the construction of the building, but also for the preparation of the plans in accordance with which it has been erected. Thus the client can demand the delivery to him of these drawings, and the architect cannot claim any special fee for them; but the architect has the right to retain the plans and specifications he has prepared until his fees have been completely paid. The sixteenth article of the Institute document expresses the general custom that the drawings and specification remain in the property of the architect, but recommends a distinct understanding with the client on this point. The German architects, in the remarks appended to the tariff before referred to, dispose of the question thus: "All drawings remain the property of the architect. The client may demand copies of the design, but shall use them only for the work to which they relate."

The third general head under which the questions were framed was that of "The Contractor," and in considering the replies and statements which I shall have to put before you, it must be borne in mind that the circumstances under which buildings are executed are so variable, and dependent upon so many conditions, that the information given must be accepted as only of general application, and not as representing invariable practice.

*Sub-contractors on the Continent.*—The eighth question runs thus: "Is it the custom to employ a general contractor to execute all the works required to be done in a building, or is the contractor employed for each trade, viz., a contractor for masonry, another for carpentry, another for iron-work," etc.

In Denmark, both arrangements are usual. In Austria, in better-class buildings, as a rule, separate tradesmen and contractors are usual for the several descriptions of work, as the master-mason or

master-bricklayer, the stone-cutter, the master-carpenter, constructor of iron-work, plumber, etc. In Germany both modes of letting work are practised. Where the client engages an architect, he, as a rule, requires that the work of each trade be let separately. A great many architects, however, undertake the erection of buildings for a lump sum, especially in cases where the client wishes to be insured against extras, desires not to have to deal with so many parties, and prefers the sole and exclusive responsibility of the architect to that of a multitude of individuals. In England it occasionally occurs that the builder provides the design and drawings for the work he carries out; in fact, it is rumored that builders who so proceed have said, "Oh, we keep an architect, and you need not go to the expense of employing one;" but the architect who contracts to carry out his own design is in these days, I think, quite unknown. If the practice does exist it would be most desirable that, if possible, full information should be given to the meeting respecting it. In France the general practice is to employ separate tradesmen, an independent bargain being made with each; but the general contractor is not entirely unknown. The ordinary practice appears to be that what was, I think, formerly universal in England, and is still retained in the North. Mr. R. P. Spiers has communicated to me a letter from M. Pascal, a distinguished Parisian architect, in which he says on this subject:—

"Notwithstanding the advantage which may be derived from having one general contractor, we prefer special tradesmen, who do their work better. The sole difficulty for the architect is to make them work in harmony with each other without reciprocally causing delays or prejudice to other works.

"The general contractor naturally takes a profit from each sub-contractor, hence augmentation of cost. He cannot be competent in all the specialties which he represents. Hence inferiority in the quality of the work: two causes which lead to the system of division of the trades being preferred even to the extent that a general contractor is only occasionally admitted for the works of the State."

There is a growing tendency in England towards employing special tradesmen for important sections of the work, but the great saving of trouble and annoyance arising from the employment of the general contractor renders it hardly likely that the good old system of master-tradesmen contracting for each trade will be revived, and handierft thus suffers.

*Foreign Tenders.*—9. "Is it usual for a tradesman or tradesmen to contract to do the building as shown by the drawings and specification for a fixed sum to be paid to him or them by the employer?"

The reply to this question received from Berlin is so important that I should have been glad to have had the opportunity of making further inquiry respecting it, but time has not permitted this, and I will therefore quote the words of Herr Ende:—

"Cases in which the erection of a building according to the designs and estimates of an architect is let to a contractor who is not an architect are comparatively rare, particularly as regards elaborate and ornamental buildings, though it is done in the case of simple and ordinary ones, the reason being that, according to the idea prevailing here, an artistic building can never be completely finished from the first design and the first estimate, but the chief and best portion of the work must be designed and worked out during its construction. There is, however, an end to this when a contractor undertakes the building. Alterations can then be made only under stringent and costly conditions, which give occasion to all kinds of disputes."

The ordinary French system appears to be *Marché au Rabais* or *Par série de Prix*. Till recently *La Série de Prix de la Ville de Paris* was generally accepted as the basis, and each separate tradesman made his offer at a price to be calculated at a percentage above or below such schedule of prices. Recently the *Société Centrale des Architectes* has issued a *Série de Prix*, and the authorities of the departments and the great cities have also engaged themselves on the preparation of similar schedules suitable to each locality. The *Marché à Prix fait*, or *à Forfait*, is a contract for a lump sum, very similar to our ordinary contracts.

There is also another form of contract which removes the inconvenience attending that *par série de prix* of the client not knowing beforehand what the ultimate cost will be. This is known as the *Marché de Maximum*, and combines both the preceding systems, the bargain being that the work is to be paid for in accordance with the *série de prix*, but with the reservation that the total cost shall not exceed a fixed sum.

*Selection of Contractors Abroad.*—10. The Committee then ask: "Is it usual to select a contractor by means of tender received from several tradesmen stating the price at which they will do the work?"

In Austria the best method of selecting a contractor is thought to be by competition, either a limited one among trustworthy firms, in which case the contract must be given to the lowest tenderer, or an open one, in which case the contract is not necessarily given to the lowest tenderer, but to the most reliable one at the lowest possible prices.

*Foreign System of Measuring.*—11, 12 and 13. "Does a contractor make up his tender by means of measurements or quantities taken from the drawings and specification? Are these measurements prepared by the contractor or contractors for his or their own use, or by some other person for his use? Who pays that person?"

I feel much hesitation in dealing with these questions, as they can only be satisfactorily answered as the result of closer inquiry than it has been possible to make. In Denmark the contractor makes his

measurements for his own use. They have no surveyors to take out quantities, and nothing is paid for them. In Austria the amount due to the contractor is ascertained by measurement from the drawings of the work actually performed, and it is only as an exception that the measurements are taken from the work itself. The measurement and taking out of quantities are performed by the architect from the plans, but the contractor has to make out a measurement for the account. In Germany estimates of quantities are prepared by the architect, or at least under his instructions by his permanently-employed assistants. There are some few persons who occupy themselves exclusively in the preparation of estimates; but the architect has in all cases to check their work and be responsible for it. The system of *vérificateurs* which obtains in Paris is quite unknown. In France the architect should provide, besides the *devis descriptif* or specification, the *devis estimatif*, or particulars of quantities, which documents, together with the general conditions, constitute the *cahier des charges*. When a contractor tenders he employs a *mètreur* to take out quantities. This *mètreur* is often a clerk in the contractor's office, and is paid by him. The *mémoires* and bills are checked by the architect or the *vérificateur* paid by him. In Germany the architect is responsible for the estimate of quantities, but he endeavors to diminish his responsibility by submitting the calculations to the contractor for the purpose of being checked and conforming to his criticisms; that is, adopting the same reckoning. The responsibility of the contractor to the employer for losses caused by bad work and materials is in France and in Germany limited, unless otherwise stipulated, to a period of ten years, and I commend to the student of this subject the treatise of M. Masselin, to which I have before referred.

Generally each of the correspondents appears satisfied that the system in use in his own country works fairly well, Professor Fenger making the necessary reservations: (1) that only competent persons are employed as architects and contractors; (2) that the necessary time is granted for preparing plans, specifications and tenders, and for erecting the building. Generally reviewing the information which has been collected, it appears that the profession in England occupies a position in many respects more advantageous than in other countries, and although the discussion will, I hope, advance towards a solution of some of the doubtful questions still capable of being mooted, there is, I think, but little which could with advantage be adopted from foreign practice into our own.

#### WILL OFFER BRIBES IN SPITE OF PROTEST.



SOME weeks ago our advertising-agent made a contract with a firm of iron-workers in Michigan. When the "copy" for the advertisement was sent in we were surprised to discover in the midst of it this flagrant offer of a standing bribe: "Every architect and builder should have our catalogues; if you have not got them, send for them. We will allow you a commission on all work you secure for us," and in the "copy" for the advertisement which was to alternate with this, appeared: "Every architect and builder should have our catalogue. We pay liberal commissions on all work secured for us, and make it profitable for those who serve us." The italics are ours.

There was no possibility of questioning the purpose and practice of the advertisers, so we at once wrote them that we could not publish the objectionable offer, as we had always vigorously opposed the attempted bribing of architects. In order that it might be understood how impossible it was for us to allow the offer to appear in our columns we sent to the advertisers a score of the past issues of the *American Architect*, which contained editorial discussions of the subject, letters of complaint from insulted architects, and letters of apology from dealers who, on having the matter properly presented to them, had seen the error of their ways, and had abandoned the practice. To this we received the following singular reply, which shows that the writer is most unaccountably unable to perceive that his asseverations are in direct opposition to his practice, or that he intends to wilfully persist in his dishonorable practice after his error has been pointed out—a conclusion that the disingenuousness of his reply, which entirely "begs the question," somewhat favors.

MICHIGAN, May 26, 1884.

#### TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Gentlemen,—Your favor at hand, and in reply we beg to say if you cannot insert our advertisement exactly as worded, and exactly as per conditions of contract you may return our *Electros* and the contract, and we will call the trade off, and be as good friends as ever. We hope you do not compare us with some of the irresponsible parties around the country who make a practice of "bribing architects," or at least trying to do so, as we are proud to say our best friends among the architects are men who cannot be bribed, and we do not believe in such disreputable practices.

If a first-class architect chooses to give us information when plans are ready in his office to be figured on, and we figure on such plans, and the contract is awarded to us for reason of we being the lowest bidders, or being able to conclusively show that our work is, beyond a question, of

such superiority as to warrant the architect in the interests of his client to award us the work.

We cannot see any harm in his doing us the favor of informing us when such plans are ready.

We claim any architect doing the above is in every way working for the interests of his client.

No, gentlemen, our record is clear, and our transactions have always been "open and above board."

Yours very truly,  
— Secretary.

It is enough to add that the contract has been cancelled, and our publishers will lose the contract price, while the would-be advertiser will lose probably a much larger sum by not securing work which will now go to his competitors, the regular advertisers in this journal.

#### A PRECIOUS RELIC.

WE are glad to give greater currency to the following suggestion for the preservation of the old Fairbanks cottage at Dedham, Mass., of which, it may be remembered, we published a most picturesque heliotype in our issue for November 26, 1881.

To the Editor of the Transcript:—Your readers are aware of the existence, in Dedham, of a fine specimen of early colonial architecture in the old Fairbanks house, built near 1636! It has never gone out of the hands of the family since its erection, and consequently is rich in historic value.

I wonder if they are also aware that, for the first time in its history, the sign "For Sale" has reared its head under its fine old elm?

Is there no historical society which can come to its rescue, and thus preserve to our children's children a veritable relic of an age which has left few, if any, buildings as unique and quaintly beautiful as this rambling old homestead?

It seems as if a word of information would be all that is necessary to call the attention of antiquarians to such an opportunity to save such a building from demolition.

OLD COLONY.

#### THE INDIANA CHAPTER, A. I. A.

INDIANAPOLIS, IND., June 3, 1884.

#### TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The first meeting of the Indiana Chapter A. I. A. was recently held, and officers elected, and constitution and by-laws adopted. The Chapter numbers nine members: E. J. Hodgson, C. A. Wallingford, A. H. and J. H. Stem, of Indianapolis; J. W. Reid, Evansville, and Charles Eppinghausen, Terre Haute, all Fellows, and B. H. Enos, Charles Mueller and F. W. Vogles, of Indianapolis, Associates. Mr. Wallingford was elected President.

Respectfully, C. A. WALLINGFORD.

#### EFFLORESCENCE ON BRICKWORK.

BOSTON, June 3, 1884.

#### TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Your readers have noted the suggestion of a writer in your last number that coal-dust, combined with soda is the cause, and to refrain from using it the remedy for efflorescence on brickwork. I believe the only real fact he names is, that the efflorescence is one of the forms of soda. After a full examination of the question I arrive at the following conclusions, and state them for the benefit of your readers.

The white substance is soda. It is present in some clays and absent in others. Bricks made of the former are sure to at times exhibit the whiteness. In peculiar conditions of the atmosphere the soda is drawn by capillary attraction to the surface, and dries out to the whiteness. There may be intervals of months, or even years when no manifestation is made, and then again periods when patches large or small will be present. In a building opposite the one in which I write, erected in 1805, nearly eighty years ago, and long before coal was used, there are white patches, and for months or even years at a time none are seen. There is no good reason why any building should remain thus disfigured.

What is the remedy? Neutralize, or practically destroy the soda, and the evil ends. This can be done as follows, and if reasonable attention is afterwards given the clean condition may be retained.

1. Wash the brickwork thoroughly with a preparation of one part of muriatic acid, and four parts water, applied vigorously with a small (corn hard) clothes-broom. This will neutralize the soda as far in as the acid penetrates. 2. Wash off the work with clean water, with the broom as before named. 3. Apply a good coat of boiled linseed oil to exclude the dampness, which tends to draw the remaining soda to the surface. A wall treated thus will exhibit none of the whiteness till the life of the oil is destroyed, and then a repetition of the process will restore the bricks to their original clearness, and continue them thus in most situations for a period of from eight to ten years.

HENRY S. MCKAY.

NEW YORK, June 2, 1884.

#### TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—For the efflorescence on outside brickwork, or "whitewashing," as it is commonly called, we have found that crude petroleum is the very best preventive. Put it on with a brush, and



soak in as much as the brick will absorb. Oil over red terra-cotta as well. If necessary thin the oil to make it work easily. It was used on two buildings we have designed, one of which was built nearly three years ago.

We would like to hear of a thorough test made in different portions of the country to ascertain if it is of any value. Possibly it has been tried, but we have seen no mention made of its use for this particular purpose.

Respectfully yours,

KIMBALL & WISEDELL.

#### A GIRDER'S DUTY.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In calculating the weight imposed on a girder extending through the centre of a tier of floor-beams, should it be assumed that the entire weight of the floor and the proposed load, from wall to wall, are borne by the girder? I have seen calculations based on this assumption, but it seems evident to my mind that the two bearing-walls jointly sustain as much as the girder. Would it be safe to take the load carried by half the floor area as the weight sustained by the girder? A reply will greatly oblige

A STUDENT.

[ONLY half the entire load on the floor is carried by the girder.—EDS. AMERICAN ARCHITECT.]

#### NOTES AND CLIPPINGS.

LA CHAPELLE DE LA VALLIERE.—Still another relic of old Paris is doomed to disappear. There exists in the Rue Nicole—a small street running parallel to the Rue St. Jacques, and ending on the Boulevard de Port-Royal—a pretty little chapel of the time of Louis XIII, known as the Chapelle de la Vallière. It was in this miniature place of worship that the unfortunate mistress of Louis XIV performed her devotion when she became a Carmelite nun, after the transfer of the fickle monarch's affections to Madame de Montespan. The convent close by in which she resided has long disappeared, and the chapel itself is now threatened with demolition. A suggestion, which it is to be hoped may be adopted, has been made that it should be removed to one of the public gardens, such as the Luxembourg, which is not far off.

THE COST OF STATUES AT WASHINGTON.—Chief Justice Marshall's bronze statue, which was dedicated the 10th ult., cost \$40,000. Greenough's naked Washington at the front of the Capitol cost \$43,000, and the two statues facing it on the portico represent in hard cash \$24,000 each. The ridiculously placed Naval Monument at the foot of Pennsylvania Avenue, cost \$25,000, the bronze statue of Freedom on the dome, \$23,000, and the group of the Emancipation, in Lincoln Park, \$17,000. For the pedestal of General McPherson's statue, which stands opposite the Arlington Hotel, the Government paid \$15,000, and for Vinnie Ream's bronze Farragut, \$20,000. The equestrian statue of General Scott, in front of Don Cameron's residence, cost \$73,000, that of General Thomas \$85,000, that of Andrew Jackson, rearing up in front of the White House, \$50,000, and the equestrian statue of Washington on the edge of Georgetown, a like sum. There is a statue of General Rollins beyond the White House that cost \$10,000, a statue at the Soldier's Home of General Scott that cost \$18,000, and a statue of General Greene in East Washington which represents a money outlay of \$50,000. For the Bartholdi fountain in the Botanical Gardens the Government paid \$6,000, and the Capitol itself had cost three years ago about \$13,000,000. The Washington Monument will cost \$1,000,000. The State, War and Navy building has already cost \$7,000,000.—*Cleveland Leader*.

EFFICIENCY OF PLAIN AND RIBBED STEAM-PIPES.—Recent experiments made at the works of a French firm at Sainte Marie-aux-Mines are of some interest as bearing upon the question of relative efficiencies of plain and ribbed steam-pipes for heating purposes. In the case in question two drying-rooms were heated by steam circulating in ten cast iron ribbed pipes, 6.56 feet long joined with four plain bends. The pipes were 4½ inches in diameter internally, and .43 inch thick, thus making an external diameter of 5.6 inches. The ribs were circular, 11 inches in diameter, extending, consequently, 2.7 inches from the surfaces of the pipes, and were arranged with a pitch of 1.38 inches. The total surface of one of these pipes was 58.5 square feet, of which 50.75 square feet were presented by the ribs. For ten pipes, including the four bends, there was, therefore, a radiating surface of 603 square feet, while with plain pipes only 114 square feet would have been available. Comparing the results of six-hour tests with those deduced by Mr. Peclet from the action of plain pipes, it appears that the condensing performance of the ribbed pipes is four and a quarter times as much as that of plain pipes of equal diameter and length would have been. Lower first cost of the ribbed pipe, and also lower cost for maintenance as compared with that for wrought-iron pipe, are, moreover, points which deserve attention, and make it appear somewhat peculiar that its various advantages have not been more widely appreciated.—*Metal Worker*.

THE UNDERGROUND WORKS AT GIRARD COLLEGE, PHILADELPHIA.—Underlying the forty-one acres within the enclosure of Girard College walls, Philadelphia, there are 3,500 feet of tunnel, intersecting almost every part of the grounds. The main tunnel is 2,000 feet in length, while the branches run out to the length of 900 feet. The boiler and engine house on the north side of the grounds, opposite Twenty-second Street, are the central point from which the tunnel ramifies. The underground ducts vary in dimensions. A portion of the main tunnel is 8 feet high by 10 feet wide, while in other places it ranges down to seven by seven. The branches are somewhat smaller, being 5 feet high

by 8 feet wide. They are built of stone, with brick arches, at a depth of 14 feet from the surface, and are provided with concrete flooring. At distances of 100 feet apart there are gas-jets, which are lighted by electricity. The tunnels are used for the pipes which carry the steam and hot water to the eleven buildings on the grounds. In the various structures there are tanks with a total storage capacity of 34,329 gallons, from which the supply of cold water is obtained. The miles of pipe running through the tunnels contain over 3,000 valves.—*N. Y. Evening Post*.

THE TUILERIES.—“Even ruins have their destinies,” a Latin poet has said. Though the Tuileries have been demolished, some portions of the edifice are to be reconstructed in the Tuileries garden. An arcade of Philbert Delorme's which formed part of the right wing of the Pavillon de l'Horloge, and a similar piece of architecture by Jean Bullant from the left wing of the same building, will be re-erected as mementoes of the historic palace which was the home of so many French sovereigns. The fate of the iron-work of the balconies on which some of these sovereigns have stood to receive the acclamations of their subjects, is a striking illustration of the instability of human things—in France more especially. It was sold, like everything else for which a purchaser could be found, by the contractors; and the buyer, it turns out, was the representative of a Communist committee, which intends to use it for railing, in the tombs of certain of the Communards shot in 1871.—*Philadelphia Press*.

ANTWERP'S NEW GROWTH.—Englishmen, who have always shown great interest in the welfare of their neighbor Belgium, may be pleased to hear that the little country now possesses, in Antwerp, the chief port on the Continent. Whereas the tonnage entering and leaving such important ports as Liverpool and Havre only quadrupled between the years 1833 and 1873; at Antwerp, in the same space of time, it became sixteen times more considerable. Since 1873 the progress has continued, and made very rapid advances. In 1883 the tonnage of the port reached 3,734,428 registered tons. This marvellous development is partly due to the position of Antwerp as the embarking point from the Continent of Europe to America, and partly also to the recent additions and changes which have been carried out there, and which, now nearly entirely completed, have made this cosmopolitan port one of the best organized in the world. This is so well known that vessels bound for Switzerland with a cargo of corn from Russia pass Marseilles and go two thousand miles out of their way for the purpose of unloading at Antwerp. No other port, in fact, offers the same facilities. There is not another place in the world where fifty vessels of 3,000 tons can come alongside as easily as the penny boats on the Thames run into the landing. Since the opening of the St. Gothard Tunnel nearly all the alimentary provisions that Italy sends to the British Isles pass through Antwerp. In 1882, 82,000,000 eggs and 30,000 pounds of fruit were shipped there for England. The greater part of these came from Italy. Antwerp has become also an important port for emigrants; 35,125 embarked in 1882, out of which number 3,055 were bound for New York. The city was always destined, from its topographical position, to be at the head of a very considerable traffic; political reasons alone for many years prevented this being the case. These have happily now disappeared, and, since 1863, when the “Scheldt was liberated,” the progress of commerce has been more rapid than ever the most ardent Antwerp patriot dared hope. At that date the toll of 1s, 11d, on all vessels going up the river, and of 7½d, on vessels going down, was abolished, and reforms were introduced among the taxes on the general navigation; the tax on tonnage in the port itself was abolished, and the pilot tax was lowered. The results of these measures became immediately apparent. Traffic increased with such rapidity that in 1876 the crowding on the quays was such that the relation of the tonnage to the length of the quay was about 270 tons per yard, which is about four times as great as at Liverpool. A few words now, briefly, as to the nature of the important works nearly completed at Antwerp. They were commenced in 1877, and have opened for the port an era of prosperity such as was never experienced even during the sixteenth century, the zenith of her splendor. These works have cost £4,000,000, and have necessitated the employment of 12,000 tons of wrought-iron, of 490,000 cubic yards of brickwork and concrete, of 32,000 cubic yards of masonry, and of more than 3,300,000 cubic yards of earthwork in filling and dredging, etc. The quay walls run the whole length of the town, a distance of rather more than two miles. It rests on a foundation laid without timber footings, and giving a depth of twenty-six feet at low water, sufficient drawing for the largest ships afloat. Beyond this wall are the real quays, which consist of—first a line of rails reserved for hydraulic cranes serving to unload vessels and deposit their cargo in railway trucks; secondly, a second line of rails parallel with the first, on which these trucks are stationed; thirdly, sheds extending toward the town for a width of one hundred and fifty feet, and covered with galvanized-iron sheetings. A third line of rails parallel with the two others, runs from end to end of these sheds, and a number of lines placed transversely with this one connect it by means of spring-bridges with, fourthly, four more lines also parallel with the quays, whence the goods start for the different stations, and thence to their destinations. The total width of these immense constructions is about three hundred and twenty feet. Such is their magnitude that about six hundred houses had to be pulled down to make place for them. A railing running along their entire length cuts them off from the town. During the course of last year 4,379 vessels entered the port of Antwerp, gauging a total of 3,734,428 tons, which places Antwerp, as I have already stated, at the head of European ports. In 1882 the tonnage of Havre was only 2,200,000, that of Genoa 2,250,000 and of Bilbao 315,000, owing to its iron ore exports. Among the English ports a few only exceed Antwerp. London is still the first port in the world, with a tonnage of 10,421,000 tons, and Liverpool the second, with 7,351,000 tons; Newcastle follows with 6,000,000 tons, also in excess of Antwerp, but both Hull and Glasgow are below, with respectively 1,875,000 and 2,110,000 tons.—*Pall Mall Gazette*.

## BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

## BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

299,504. PORTABLE DERRICK. — Harrie Austin and Ives Seville, Oakland, Cal.  
299,511. FIRE-ESCAPE. — Louis Blessing, Jackson, Mich.  
299,519. WINDOW-GUARD. — George W. Clark, Brooklyn, N. Y.  
299,525. WINDOW-SASH HOLDER. — John E. Dohen, Charleston, S. C.  
299,543. AUTOMATIC SAFETY-BRAKE FOR ELEVATORS. — Chas. A. Hoffnagle, Vergennes, Vt.  
299,544. SAFE-GUARD FOR ELEVATORS. — Chas. A. Hoffnagle, Vergennes, Vt.  
299,546. ELECTRIC FIRE-ALARM. — Geo. E. Hovenden and Edwin R. Hovenden, Grand Rapids, Mich.  
299,547-548. PASSENGER OR OTHER ELEVATOR. — Merrill N. Hutchinson, New York, N. Y.  
299,571. MANUFACTURE OF ENAMELLED BRICK. — Chas. Newton, Council Bluffs, Iowa.  
299,591. BRICK AND TILE MACHINE. — John Georges Stadler, Rothenbach, Bavaria, Germany.  
299,595. FIRE-ESCAPE. — James Taylor, New York, N. Y.  
299,598. MODE OF CONSTRUCTING FRAME HOUSES. — Edsell Totman, Hinsdale, Ill.  
299,605. WATER-CLOSET CONNECTION. — Henry C. Weeden, Boston, Mass.  
299,606. FLUSHING-APPARATUS FOR WATER-CLOSETS, ETC. — Henry C. Weeden, Boston, Mass.  
299,628. CHIMNEY-CAP. — Henry S. Dickinson, Jersey City, N. J.  
299,633. DOOR-KNOB ATTACHMENT. — Wm. Henry Flinn, Nashua, N. H.  
299,635. CARPENTER'S GAUGE. — George S. Forrest, Concord, N. H.  
299,636. PNEUMATIC BELL-RINGING APPARATUS. — Robert P. Garsed, Norristown, Pa.  
299,645-646. ELEVATOR. — Merrill N. Hutchinson, New York, N. Y.  
299,659. AUTOMATIC BALL SAFETY-FAUCET. — Harry C. Montgomery, Cleveland, O.  
299,671. LOCK-BOLT. — Henry C. Neer, Park Ridge, N. J.  
299,712. FASTENER FOR MEETING-RAILS OF SASHES. — Robert Adams, Southwark, County of Surrey, Eng.  
299,719. SASH-FASTENER. — George S. Barnes, Boston, Mass.  
299,722. CALIPERS. — Stephen H. Bellows, Athol, Mass.  
299,742. DOOR-SECURER, ETC. — Edward P. Conner, Santa Rosa, Cal.  
299,764. FIRE-ESCAPE. — James Howard Ellis, Myers Wilson, and Francis Tanner, Walkerville, Ontario, Can.  
299,776. CLAMP. — Jean Giraud, Caudebec-les-Elbeuf, France.  
299,792. WATER-CLOSET AND PRESERVING THE SEALS OF THE TRAPS THEREOF. — James P. Hyde, New York, N. Y.  
299,805. LOCK. — John J. Knapp, Richland, W. Va.  
299,810. MANUFACTURE OF ARTIFICIAL STONE. — Bernard Lande, New York, N. Y.  
299,811. TRACK FOR BARN-DOOR HANGERS. — John H. Lawrence, Sterling, Ill.  
299,820. FIRE-PROOF CEILING. — Henry Maurer, New York, N. Y.  
299,826. SCHOOL DESK AND SEAT. — Charles A. Merrill, Grand Rapids, Mich.  
299,835. FIRE-ESCAPE. — Jordan L. Mott, Jr., New York, N. Y.  
299,842. ROOFING-SLATE FASTENING. — Bernard M. O'Neill, St. Louis, Mo.  
299,843. GAUGE. — Chas. B. Osborn, Canadaigua, N. Y.  
299,850. FIRE-ESCAPE. — Henry Rensch, Quincy, Ill.  
299,872. CUTTING-PLIERS. — Elisha Stevens, Middletown, Conn.  
299,884. FURNACE. — John A. Topliff, Edward S. Cross, Wm. S. Cox, and John A. McCollum, Elyria, Ohio.  
299,888. WATER-CLOSET VALVE. — Peter White, St. Louis, Mo.  
299,889. VISE. — William M. Whiting, Elizabeth, N. J.  
299,903. CONDUCTOR FOR ASHES, GARBAGE, ETC. — James Betty, Buffalo, N. Y.  
299,924. SKATING-RINK FLOOR. — George Cole Harkins, Salt Lake City, Utah.  
299,925. AUXILIARY OVERFLOW FOR LAVATORIES. — Patrick Harvey, Chicago, Ill.  
299,927. PLANE. — Samuel E. Hilles, Cincinnati, O.  
299,930. HYDRAULIC ELEVATOR. — George Q. McGown, Golden City, Mo.  
10,453. SASH-FASTENER (Reissue). — Ewell B. Attwell, Leesburg, Va.

## SUMMARY OF THE WEEK.

## Baltimore.

BUILDING PERMITS. — Since our last report twenty-seven permits have been granted, the more important of which are the following: —  
G. Jerron Trapp, 2 three-sty brick buildings, n s Cross St., w of Riverside Ave.

Collett & Stamp, 16 two-sty brick buildings, n s Pitcher St., com. n w cor, Argyle Ave.  
Theo. Bantz, three-sty brick building, in rear n w cor, Lexington and Chateworth Sts.  
Greenmount Ave. M. E. Church, stone church, 40' x 62', n w cor. Chase and McKim Sts.  
W. F. Roanig, three-sty brick building, e s Hancock St., n of Port Ave.  
John Masson, 33 two-sty brick buildings, n s Eager St., bet. Washington and Chester Sts.  
Geo. H. Striewig, 7 two-sty brick buildings, s s 20' alley, n of Mulberry St., and bet. Mount St. and Vincent Alley.  
Conrad Schmidt, three-sty brick building, w s Fremont St., bet. Ridgely St. and Burgunder Alley.  
Geo. W. Moke, Jr., 4 two-sty brick buildings, e s Vincent Alley, s of Cole St.  
M. Z. Hammen, 27 two-sty brick buildings, w s Washington Ave., com. cor. Wooster St.; and 5 two-sty brick buildings, e s Wooster St., 80' from Washington Ave.  
Edward Freeburger, 2 three-sty brick buildings, w s Riverside Ave., bet. Clifton St. and Port Ave.  
J. B. Irvine, 10 three-sty brick buildings, w s Druid Hill Ave., n of Laurens St.  
ADDITIONS AND ALTERATIONS. — E. F. Baldwin, architect, has prepared drawings for a three-sty and basement brick wing, 30' x 60', to St. Vincent's Infant Asylum, cor. Townsend and Division Sts., to cost, \$12,500; J. F. Adams, builder. He has also prepared drawings for Messrs. Keyser Bros., for the improvement of their property, cor. German and Calvert Sts., to cost \$20,000.

## Boston.

MONTHLY REPORT. — During the past month 121 permits for wooden structures and 47 for brick have been issued at the office of Inspector of Buildings.  
BUILDING PERMITS. — Brick. — Charter St., No. 21, Ward 6, for J. C. & E. A. Loud, tenement, 36' and 43' x 48' and 65', four-sty flat.  
East Broadway, Nos. 934-942, Ward 14, for James Collins, 5 dwells, 24' x 36', three-sty flat.  
Camen St., near Huntington Ave., Ward 22, for Trustees Children's Hospital, mechanical building, 12' x 157', one-sty; G. W. & F. Smith, builders.  
Old Harbor St., No. 70, and Thomas Park, No. 37, Ward 14, for Henry B. Stratton, dwell., 39' x 27' and 40', four-sty flat; H. B. Stratton, builder.  
Newbury St., No. 286, cor. Gloucester St., Ward 11, for Silas C. Merrill, dwell., 22' 6" x 42' 6", three-sty mansard; Silas C. Merrill, builder.  
Chestnut St., No. 265, Ward 7, for Nathan Robbins, storehouse, 20' x 85', five-sty flat; John Kelley, builder.  
Eustis St., No. 184, cor. Adams St., Ward 20, for John P. Nichols, family hotel, 44' 6" x 51' 6" and 71', four-sty flat; A. D. Gould, builder.  
Bismarck St., near Germania St., Ward 23, for Haffner & Co., dwell. and office, 36' x 40', two-sty hip; Michael Meehan, builder.  
Forest Hills Ave., No. 23, for Forest Hills Cemetery Corporation, chapel and office, 34' 4" and 38' 4" 61' 2", one-sty pitch; James Fagan, builder.  
Yarmouth St., Ward 11, for C. A. Fitzgerald, family-hotel, 22' x 94', four-sty flat; Hewitt & Webster, builders.  
Wood. — Adams St., near Everett St., Ward 25, for F. F. and Abby A. Monte, 2 dwells, 11' 6" x 15', and 19' 6" x 30', two-sty pitch.  
Gilbert St., near Keyes St., Ward 23, for Joseph Handwerk, 2 dwells, 24' x 34', three-sty flat; Joseph Hammerle, builder.  
Spring Park Ave., opposite Enfield St., Ward 23, for Daniel Breivogel, 2 dwells, 15' and 16' x 53', three-sty pitch; John D. Wester, builder.  
Rand St., No. 12, Ward 20, for Matthew Scullion, dwell., 33' x 50', three-sty flat; H. J. Bartlett, builder.  
Bronxville St., No. 13, Ward 22, for Ferdinand Kisselo, dwell., 24' x 33', three-sty pitch.  
Magnolia St., No. 46, Ward 20, for A. W. Wright, dwell., 22' and 28' x 48', three-sty pitch; Chas. E. Currier, builder.  
Preble St., No. 34, Ward 15, for Mrs. Mary A. F. Kendall, dwell., 20' x 30', three-sty flat; J. E. Snow, builder.  
East Third St., No. 791, Ward 14, J. E. Kalcher, dwell., 10' 6" x 6' and 21' x 30', two-sty flat; Geo. McElroy, builder.  
Savin St., No. 5, Ward 21, for Robert M. Goode, dwell., 25' and 28' x 44', two-sty pitch; Wm. Morris, builder.  
Centre St., cor. Parker St., Ward 22, for Sampson Holland, 2 dwells, and stores, 25' x 61' and 69', three-sty flat.  
Central Ave., near Washington St., Ward 23, for Cornelius Houghton, dwell., 12' x 15' and 60' x 100', two-sty pitch; Garritt Bennink, builder.  
Heath Ave., near Heath Pl., Ward 22, for Rudolph Dehm, dwell., 23' x 33', three-sty flat; Thos. Clune, builder.  
Norfolk St., cor. Elizabeth St., Ward 24, for Horace S. Powell, dwell., 19' 6" and 23' 4" x 36' 4", two-sty pitch; E. F. Moulton, builder.  
Telegraph St., No. 64, Ward 15, for J. A. Allen, dwell., 16' x 18' and 22' x 28', three-sty mansard; J. A. Allen, builder.  
East Fourth St., Nos. 649 and 651, Ward 14, for Howard Clapp, 2 dwells, 30' x 43', three-sty flat; Howard Clapp, builder.  
Forest Hill Ave., near Norfolk St., Ward 24, for John H. Paine, dwell., 26' 3" x 34' 3", two-sty pitch; W. F. Frazer, builder.  
Humphrey St., near Dudley St., Ward 20, for H. S. Frank, dwell., 28' x 48', three-sty flat; R. L. Garlick, builder.  
Wanamack St., near Wenonah St., Ward 21, for Nathan S. Wilbur, dwell., 19' 2" and 24' x 58' 9", two-sty pitch; N. S. Wilbur, builder.  
Everett St., Nos. 98-102, Ward 2, for Geo. W. Hargrave, 3 dwells, 20' x 31', three-sty flat; Geo. W. Hargrave, builder.  
Centre St., Nos. 71 and 73, Ward 21, for Albert Geiger, 2 dwells, 28' 4" x 48' 11", three-sty flat; A. D. Gould, builder.  
Tuber St., near Harrison Ave., Ward 20, for Philip O'Donnell, 2 dwells, 22' x 36', three-sty flat.

Wesley St., near Preble St., Ward 15, for Sylvester L. Hill, carpenter-shop, 16' x 28', one-sty flat; Sylvester L. Hill, builder.  
Humphrey Sq., near Dudley St., for H. D. Pratt, dwell., 28' x 48', three-sty flat; R. L. Garlick, builder.  
Bennington St., No. 64, Ward 1, for Margaret Saunders, dwell., 12' x 20' and 21' x 39', two-sty mansard; J. & A. McLaren, builders.  
Moulton St., Nos. 51 and 53, Ward 3, 2 dwells, 10' 9" x 23' and 20' 6" x 31', three-sty flat; Donovan & Brock, builders.  
Fountain St., No. 19, Ward 21, for J. G. Haynes, 3 dwells, 18' 9" x 32', 21' x 40', and 24' and 27' x 43', three-sty flat; Geo. W. Pope, builder.  
Bowen St., Nos. 128-136, Ward 13, for James D. Devine, 5 dwells, 18' 9" x 32', three-sty flat; Jas. V. Devine, builder.  
East Third St., Nos. 599-605, Ward 14, for Otis D. Dana, dwell., 22' x 45', two-sty flat; Horace Manson, builder.  
Macerick St., No. 43, Ward 2, for Geo. L. Thorndike, dwell., 22' x 40', three-sty flat; Chas. J. Lord, builder.  
Englewood Ave., rear, near Beacon St., Ward 25, for Austin B. French, stable, 12' x 14' and 37' x 40', one-sty pitch; S. H. L. Pierce, builder.  
Prospect Ave., Spring Hill Station, Ward 23, for R. O. Dunn, dwell., 12' x 18' and 21' x 25', two-sty pitch; R. O. Dunn, builder.  
C St., No. 124, Ward 13, for Michael Murray, dwell., 22' x 40', three-sty flat; Wm. Glynn, builder.  
Bower St., Nos. 109 and 111, Ward 13, for Stephen J. Maskell, 2 dwells, 20' x 32', three-sty flat; H. J. Hutchinson, builder.  
Blue Hill Ave., No. 155, Ward 21, for B. G. Gavitt, dwell., 13' x 17' and 34' x 36', two-sty pitch; Gelditt & White, builders.  
Houghton St., near Pope's Hill St., Ward 24, for Ezra Taylor, dwell., 16' x 16' and 21' 6" x 28", two-sty pitch; H. P. Oakman, builder.  
Nomanum St., Nos. 62-66, Ward 3, for Wm. Sullivan, 3 dwells, 12' x 25' and 20' 4" x 32', three-sty flat.  
Walnut St., near Water St., Ward 24, for Dennis Murphy, 2 dwells, 11' x 13' and 18' x 24', two-sty pitch; Samuel Davenport, builder.

## Brooklyn.

BUILDING PERMITS. — Twenty-sixth St., s s, 200' w Third Ave., two-sty frame planing-mill, gravel roof; cost, \$3,500; owners, C. E. Rogers & Co., 32 Henry St.; architect and builder, H. E. Fickel.  
Prospect Ave., s s, 275' from Eighth Ave., three-sty brick dwell., tin roof; cost, \$3,000; owner, Ann L. Britt, 288 Degraw St.; architect and builder, S. Britt.  
Hopkins St., No. 196, s s, 80' w Throop Ave., three-sty frame tenement, tin roof; cost, \$3,500; owner, Christ. Schmidt, Throop Ave., near Hopkins St.  
Deleucose St., No. 82, s s, 220' e Humboldt St., three-sty frame tenement, tin roof; cost, \$3,500; owner and builder, Jos. Wagner, on premises; architect, Th. Engelhardt.  
Central Ave., e s, 100' s Palmetto St., three-sty frame store and tenement, tin roof; cost, \$5,000; owner, E. A. Corby, Eighth Ave., between One Hundred and Forty-second and One Hundred and Forty-third Sts., New York; architect, H. Vollweiler.  
Lorimer St., No. 308, three-sty frame store and tenement, tin roof; cost, \$4,800; owner, Mrs. E. R. Bolas, on premises; architect, H. Vollweiler.  
Van Otli Ave., n s, 25' w Oakland St., three-sty frame store and tenement, tin roof; cost, \$4,000; owner, Aaron Heymann, 32 Van Cott Ave.; architect, H. Vollweiler.  
Greene St., n w cor. West St., 2 buildings, one six-sty and one one-sty, for manufactory and engine-room, tin roof; cost, \$80,000; owner, New York Dye-wood Extracts and Chemical Co., 161 Front St., New York; architect, J. Ireland; builders, Barton & Nickel and Hamilton & Henry.  
Flushing Ave., n s, 70' w Morgan Ave., three-sty frame tenement, tin roof; cost, \$4,200; owner, Wm. Lebahner, 1027 Flushing Ave.; architect, F. Holmberg.  
Judge St., w s, 100' n Powers St., three-sty frame store and tenement, tin roof; cost, \$4,300; owner, L. Filtz, Bushwick Ave.; architect, F. Holmberg; builder, W. Hellemann.  
Franklin Ave., No. 62, w s, 225' s Flushing Ave., three-sty frame tenement, tin roof; cost, \$3,000; owner, F. Seeger, 437 West Thirty-seventh St., New York; architect, T. J. Beir.  
Canton St., e s, 200' s Tilary St., 2 four-sty brick tenements, tin roofs, wooden cornices; cost, each, \$6,500; owner, Patrick J. Moran, 53 Canton St.; architect, I. D. Reynolds; builders, Assip & Buckley and P. & J. Garrahan.  
St. Marks Ave., n w cor. Brooklyn Ave., 4 three-sty brown-stone dwells, tin roofs; cost, each, \$12,500; owner, Eliza J. Smith, cor. St. Marks and Brooklyn Aves.; architect, Geo. P. Chappell; mason, Cornelius King; carpenter, Morris & Selover.  
Halsey St., Nos. 146, 148 and 150, 3 three-sty brick and brown-stone dwells, tin roofs; cost, each, \$7,400; owner, etc., John S. Frost, 608 Franklin Ave.  
Jefferson St., n s, 290' w Marey Ave., 3 three-sty brown-stone dwells, tin roofs; cost, each, \$8,000; owner, etc., Geo. Phillips, 177 Hancock St.

## Chicago.

FLATS. — J. M. Van Osdel, architect, planned the flats on Ludlow St., near Jackson St., for Victor Walter, 2 s 68' Indiana pressed brick, brown-stone finish; cost, \$7,500.  
HOUSES. — Plans are completed by J. M. Van Osdel, architect, for Geo. V. Drake's dwell., on West Jackson St., 25' x 50', three-sty; cost, \$8,000.  
Drawings are completed by J. M. Van Osdel, architect, for dwell. on Jackson St., 28' x 75', two-sty Anderson brick and brown-stone finish; owner, John Seilitz; cost, \$14,000.  
Plans are completed by J. M. Van Osdel for dwell. on Wabash Ave., 19' x 68', three-sty and