THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XII. Copyright, 1882, JAMES R. OSGOOD & Co. No. 343.

JULY 22, 1882.

Entered at the Post-Office at Boston as second-class matter.

CONTENTS.

SUMMARY: —
Death of Mr. Arthur Gilman. — Preliminary Inauguration of the Hôtel de Ville, Paris. — Result of the Berlin Parliament-House Competition. — Pollution of the Schuylkill River Water. — M. Trélat on Architectural Education. — Extent of the Actual Progress of the Panama Canal. — The Holland Gas-burning Engine. — Recent Proceedings of the R. I. B. A. — An Aërostatic Exhibition. 33
THE ENGLISH CATHEDRALS. — III. 35
NOTES ON HOUSE-DRAINAGE. — II. 37
BOULLE, THE CABINET-MAKER. 37
THE ILLUSTRATIONS: —
Sketches from Old York. — Designs for a Country-Hotel Stable. 39
THE SAN FRANCISCO CHAPTER A. I. A. 39
THE MARBLE PLAN OF ROME. 40
COMMUNICATIONS: —
Preparing Drawings for a Sub-Contractor. 42
NOTES AND CLIPPINGS. 42

THE telegraph brings us the sad news of the death, after a long and painful illness, of Mr. Arthur Gilman, one of the best known architects of New York. Although the most active portion of Mr. Gilman's career was past, he had occupied a conspicuous position in the profession, both in New York and Boston, where he practised until within some fifteen or sixteen years. According to his own account, he was intended for the ministry, and was carefully educated at the Dummer Academy, and at Trinity College, Hartford, but his active and enterprising temper soon inclined him to more worldly pursuits, and he adopted the profession of architecture, which at that time, and in this country, was much less popular among highly trained young men than it has since become. In 1844 he published in the *North American Review* an article on American Architecture, attacking the Greek classicism which was then in vogue here, and predicting its downfall before the Gothic movement which was just beginning to show its strong vitality in England. The article attracted much attention, both in this country and in Europe, where it was translated into several different languages, and Mr. Gilman was invited to deliver a course of lectures in Boston on his favorite theme. At their conclusion he went abroad for study, receiving marked attention from the best English architects of that time, as well as from literary men and artists. Some years later, he was called in consultation on the subject of the improvements to be made in the "Back Bay" district of Boston, then an unwholesome marsh: his taste for grandiose disposition found here an excellent field, and to his persistency in urging his views upon the commissioners who controlled the work is due the adoption of a scheme which has made of a very unpromising territory the finest quarter of Boston, and one of the most beautiful urban regions of the world.

WHILE these improvements were in progress Mr. Gilman, with his partner Mr. Bryant, carried out several fine buildings in and about the city. Although he never pretended to skill as a draughtsman, he was very familiar with the best examples of his favorite Renaissance, in detail as well as in general disposition, and handled these elements through his subordinates with a success which was probably due as much to his remarkable memory as to his highly cultivated taste. His most important work was the Boston City-Hall, which, although rich and quiet, is in our judgment a work of much less artistic value than the First Church, on Arlington Street, the Brewer-Beebe houses on Beacon Street, or some other buildings of less pretension. In 1865 he removed to New York, where he was much employed in private work, and in connection with Mr. Edward Kendall devised the magnificent, if hardly legitimate, façade of the Equitable Life Assurance Company's building on Broadway. About the same time he executed an important church on Staten Island, — St. John's Church, Clifton, if we remember rightly,—and began a very large one in Buffalo, which we think is not yet entirely finished. As he advanced in life, the enthusiasm which made him one of the first and most active members of the American Institute of Architects seemed to abate, partly, no doubt, on account of his rather delicate health, and partly by reason of the incessant demands made upon his time by general society, in which he was always extremely popular; but he will long be remembered in the profession, as well as among the innumerable friends who delighted in his brilliant conversation and amiable manners.

THE great Republican holiday in France, the anniversary of the capture of the Bastille, was made particularly memorable this year by being associated with the inauguration of the new Hôtel de Ville in Paris, which was arranged to take place the day before the national celebration. For everybody except the self-styled communists the idea of republican government is inseparably connected with that of limited but real local independence, and the reopening of the great municipal palace of Paris was felt to be a serious political event. In point of fact, the inauguration was premature, the building being very far from complete; but the general desire for a patriotic demonstration, with, it is whispered, the anxiety of certain city magnates, whose terms of office had nearly expired, to make sure of having their names immortalized in the commemorative inscriptions which will be placed in the building, made it seem prudent to anticipate the proper time. Even the marble stairs were not in position, and the guests of the city were obliged to climb to the upper stories over temporary stairways covered with carpets for the occasion, while the offices of the municipal government will not be ready for occupancy for a year or two longer. The grand reception-rooms, however, are completed and decorated, so that civic entertainments can be given with something of the brilliancy which has always distinguished the festivities of the Hôtel de Ville. That the new régime will witness no diminution in their splendor is indicated by the costliness of the inaugural banquet, at which, for instance, all the guests were presented with souvenirs, consisting of little books which cost sixteen dollars apiece.

THE great competition for the German Parliament House has been decided by the award of two equal first prizes to Messrs. Paul Wallot, of Frankfort-on-the-Main, and Friedrich Thiersch of Munich; of three second prizes, to Messrs. Kayser and von Grossheim, Cremer and Wolffenstein, and Heinrich Seeling, all of Berlin; and five third prizes, to Messrs. Giese and Weidner of Dresden, Hubert Stier of Hanover, L. Schupmann of Berlin, Busse and Schwechten of Berlin, and Ende and Böckmann of Berlin. The winners of the first premiums, Messrs. Wallot and Thiersch, have been hitherto little known outside of their own districts, although the former is an architect of thorough education and extensive practice in Frankfort, while the latter was a pupil of the famous Semper, and has for several years acted as professor in the Munich School of Art Industry. It is rather remarkable that of the winners in the competition of 1872 not one is mentioned among the successful contestants of this year, although Professor Bohnstedt, the victor in the struggle of ten years ago, is said to have submitted a design.

THE people of Philadelphia have, according to some of the daily papers, been laboring under "much excitement" on account of the mysterious poisoning of the fish in the Schuylkill River. The water of the river is said to have assumed "a dark greenish color," and dead fish are lying in heaps on the shore, while, as is very natural, the residents of towns along the banks are beginning to suffer from the exhalations of so much decaying matter. The explanation of the phenomenon reminds us a good deal of the theory brought forward to account for the wholesomeness of the Passaic water. It seems that the upper course of certain tributaries of the Schuylkill lies in a limestone region, so that the water coming from them is naturally charged with salts of lime, while the Schuylkill itself flows among mines, which are continually being pumped out, and discharge a liquid containing "sulphurous acid," which under ordinary circumstances neutralizes the lime, and, we suppose, gives to the mixture that delicious character which visitors to Philadelphia know so well. Just at present, however, "by reason of heavy rains in the upper Schuylkill regions, with correspondingly less rain in the limestone regions," the equilibrium of ingredients is destroyed, "the sulphurous acid overbalances the limestone water," and the fish, unable to endure this variation in the composition of the liquid, immediately

die. We are a little surprised at this, having supposed that if any animal life could exist in the Schuylkill, its possessors must be proof against the action of ordinary chemical reagents, but as such mortality must be not only annoying to the fish, but disagreeable to those among whom their bodies are cast, we would suggest that it might be possible to improve the character of the solution by artificial means, and that until renewed rains in the limestone regions bring down a proper dose of calcium salts, the addition of ample quantities of potash, lye or ammonia just above the point where Philadelphians take in their drinking water would undoubtedly serve to restore the chemical balance, and with it all the wonted healthfulness of the stream.

A congress of architects met last month in Paris, and although no very exciting questions were discussed, the proceedings seem to have been interesting. Among the discourses delivered was one by M. Trélat, on the higher architectural education, forming a sort of supplement to that in which he considered the general subject at the Congress of 1878. The substance of M. Trélat's views seems to be that architecture would be best taught in two successive and almost distinct stages. The first of these would be the technical training,—the acquisition, as he says, of the instruments of the art; and this portion of architectural instruction being a matter of regular progress toward an end, could with advantage be given in special schools scattered throughout the country. The second stage having for its subject architectural design simply, should, on the contrary, be confined to a single school, carrying out its course by the well-tried and successful method of competition, but increasing its usefulness by greater care than is now possible at the Ecole des Beaux-Arts in considering the comparative merit of the designs submitted for judgment. The jury, instead of being expected to act without compensation, should be paid for a service which is when properly rendered both long and difficult. The wholesome traditions of the school should moreover, M. Trélat thinks, be maintained and defended against the danger which threatens solid artistic attainment from the cloud of attractive novelties which distract the mind of the student, and waste his time in the vain pursuit of an endless succession of *amours de circonstance;* and this can best be done by placing the direction of the higher education in the hands of men of firm conviction, but freed by breadth of experience and knowledge from the prejudices of passing fashion, who should form a permanent jury to criticise or reward the work of competing students. In this way, although there might perhaps be some trouble in finding a perfectly satisfactory jury, French architecture would at least gain the advantage of being guided in a certain fixed direction, instead of wandering erratically toward all points of the compass in succession, and its ultimate progress would be so much the more rapid in consequence.

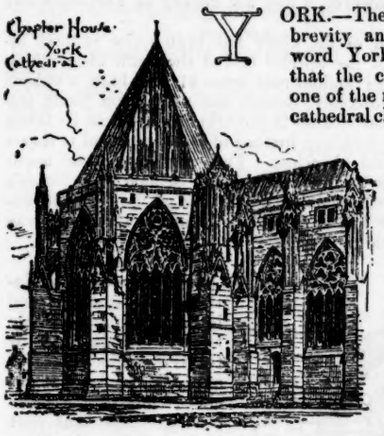
Le Génie Civil publishes a description of the present condition of the Panama Canal, as communicated to the Society of Civil Engineers by M. Hersent, one of the contractors for the work, who has just returned to Paris from a prolonged visit to the scene of operations. The high rate of mortality on the Isthmus seems to give M. Hersent much anxiety. About seven per cent of the Europeans engaged upon the canal have already perished, but there is reason to hope that the clearing away of the forests along the route will do something to lessen the fatal effect of malaria. More than half the length of the line has already been cleared of timber, and about thirty thousand cubic metres of earth have been moved, the greater part of this, however, being incidental to the preliminary works, such as railways for transportation of material, and so on. Besides the clearing of the country, in itself a herculean task, hospitals, work-shops and barracks have been constructed, and effective preparations have been made for commencing the excavations with vigor. A contract has been signed with a San Francisco firm for removing six million cubic metres, equivalent to the contents of an ordinary canal thirty feet deep and about ten miles long, and another large contract is under consideration with a New York company. Meanwhile, the machinery sent out by Messrs. Couvreux and Hersent is in operation at several points, and a serious beginning will soon be made on the vast trench, which, according to M. Hersent's observations, will *average* one hundred and thirty feet deep.

About two weeks ago, a Holland gas-burning locomotive, similar to the one which has been for several months in use for drawing freight on the Erie Railroad, was put on the regular passenger service between Paterson and New York. As our readers will remember, the main portion of the fuel consumed in this locomotive is hydrogen, derived partly from the decomposition of water, forced in the form of steam through naphtha or coal-oil, and partly from the naphtha itself. The advantages in point of portability and ready control which are offered by such a fuel are obvious, and experience shows that its use is decidedly economical as compared with coal. There seems to have been some doubt whether the combustion of the gas could be relied upon to evaporate the water in the boiler with sufficient promptness to make the engine efficient for passenger service, but the trial trip of the train to which it was attached was easily performed in somewhat less than the schedule time, and the success of the system appears to have been fully demonstrated.

Since the death of Mr. Street, the proceedings of the Royal Institute of British Architects have not been of great interest. As was to have been expected, his rival in the contest for the Presidency of that body, Mr. Horace Jones, succeeded him in the office without opposition, and Mr. Norman Shaw is to take his place as Professor of Architecture in the Royal Academy. The compulsory examination for admission to the Institute is now fully established, and no more members can avoid passing it. The consciousness of this has excited a considerable movement in the profession during the past year. We all know that "blessings brighten as they take their flight," and the prospect of the closing of the doors of the Institute has brought great numbers to seek admission. The most important discussion which we find reported at recent meetings seems to have been one on the conduct of architectural competitions, of which Professor Kerr, in introducing the subject, expressed the opinion that "when conducted at the expense of the competitors," they "constitute an unseemly and ruinous struggle for employment which this Institute cannot encourage." The "proper commercial footing" of competitions, the speaker thought, was that each competitor should be paid the regular price for his sketch; and in that case he thought the client was entitled to make his own selection of a design on such grounds as he saw fit. If any less compensation than the usual commission to each person were offered, he considered that the competitors might claim that the proceedings of award should be conducted in their interest rather than in that of the client, and that by exhibition of the designs and openness in making a selection, they should have the privilege of acquiring public reputation if they merited it. The question will probably be argued more at length hereafter, the Leeds Architectural Society having presented a serious protest against the Suggestions for the Conduct of Architectural Competitions already issued by the Council of the Institute, and many members being apparently disposed to sustain them in their objections.

An extraordinary exhibition is to be held in London next year by the British Society of Aërostation, which is to include all appliances for the navigation of the air. Many prizes are to be awarded for improvements in the form of balloons and cars, for modes of reducing weight in relation to ascensional force, and so on; and competitive trials will be made of machinery for propelling and steering balloons. No exhibition of the kind has been held since 1868, although a great advance has been made within a few years in the construction of such apparatus, and the occasion promises to be a very interesting one. Besides the persistent and systematic efforts which are now in progress among amateurs in England and France for the improvement of balloon navigation, it is said that the military authority of Russia is quietly experimenting in the same direction, and with encouraging results. Many of the most useful inventions of modern times have originated in some military necessity, and the advantage to a belligerent power of possessing a manageable air-ship, by which, with the help of a few barrels of dynamite, all the fortresses and cities of the enemy could be destroyed successively in a few hours, would be so enormous that if the Russians should be suspected of having succeeded in their attempts, we should soon see all the army engineers in Europe intent upon the same problem, aided by all the money which, when there is any question of slaughtering one's fellow beings, is so liberally poured out.

THE ENGLISH CATHEDRALS. — III.



YORK.—There is something in the brevity and masculinity of the word York that makes one feel that the cathedral here must be one of the most robust of Norman cathedral churches, so that it is with some surprise that one finds the present building was constructed during the Early English, Decorated and Perpendicular periods of Gothic architecture.

The first intimation of a church is a statement that the Saxon king Eadwin was baptized in 627, in a small wooden church hastily built for the ceremony on the site of the present building. This building was included as an oratory in the stone basilica which the king began to build immediately after his conversion, but the work must have been poorly done, for in 669 the building was already in decay, and was finally destroyed by fire in 741. The records are imperfect, but there is reason to believe that the building which replaced this in 767 was built upon the same site. For some three hundred years this was the metropolitan church of Yorkshire, until in 1069 it was in turn destroyed by fire during the Conqueror's harrying of Yorkshire. A portion of the choir crypt is the only relic of the Saxon building which now remains in the Cathedral.

Between 1070 and 1100 an entire Norman church was built which continued until 1154, when began the series of alterations and enlargements which has resulted in the existing building.

The following dates have been assigned:—

Uncertain date. *Saxon.*—Inner wall of crypt.
1070–1100. *Norman.*—Remains at west end of crypt.
1154–1181. *Late Norman.*—Eastern portion of crypt.
1215–1256. *Early English.*—North and south transepts.
1285–1345. *Decorated.*—Nave and chapter-house.
1361–1373. *Early Perpendicular.*—Lady-chapel and presbytery.
1373–1400. *Perpendicular.*—Choir.
1405–1470. *Late Perpendicular.*—Central and western towers.

Although no good general view of the building can be obtained, enough can be seen to prove that it deserves its reputation as one of the grandest and most impressive cathedrals in England. This is largely due to the great height of the roofs (99′ 6″ in the nave, 102′ in the choir) which are more lofty than in any other English cathedral.

Within our own times the Cathedral has suffered from the great arch enemy of architecture: On the night of February 2, 1829, the choir was set on fire by a lunatic named Martin, who had concealed himself in the building for the purpose. All the wood-work was destroyed, including the roof which because of the great span, 99′ 6″, had been covered by a wooden roof like the nave, which also a few years after, in 1840, suffered a similar disaster, the fire in this case being caused by the carelessness of workmen engaged in repairing the clock in the southwest tower. To restore the building in the first case some £65,000 were expended by Sir Robert Smirke, while in the second case the restorations under Sidney Smirke cost £23,000.

The view across the transepts closed by the famous window of the "Five Sisters" in the gable end of the north transept is considered one of the finest interior views in England. The fame of the "Five Sisters" is, however, eclipsed by that of the great east window of the choir which is the largest window—it measures 78 feet high x 33 feet wide—in England which retains its original glazing. The east window of Gloucester Cathedral is somewhat larger, measuring 38′ x 72′, but it is only partially glazed. As these enormous walls of glass are a peculiarity of English church architecture, these windows are the largest in the world. The contract for glazing this window is dated December 10, 1405, the time for completion is limited to three years, and the pay of the artist, one John Thornton of Coventry, was four shillings a week, with a gratuity of five pounds per year and ten pounds on the completion of the work, the Chapter, of course, furnishing the material and workmen.

Before the fire of 1829 only a very small portion of the crypt was known, but the repairs made at that time showed that the greater part of it had been filled up immediately after it was built, and within the central part of the extreme western end was discovered a massive wall whose coarse herring-bone work proved it to be probably a part of the original Saxon church.

The central tower of the first Norman cathedral was allowed to exist, and its piers now form the cores of the present tower-piers cased with Decorated and Perpendicular masonry, according as they abut on the nave or choir. The permanent roof was put in place in 1472. The western towers are two hundred and one feet high. The southwest tower was much injured by the fire of 1840, which began in it, and the bells were destroyed. A new peal of twelve bells was hung in it in 1843, one of them for a long time remaining the largest bell in England, measuring as it does 7 feet 2 inches in height and 8 feet 4 inches in diameter, and weighing 10 tons 15 hundredweight.

One of the peculiarities of the building is the record of the benefactions it has received, which are evidenced by the multitude of armorial shields and bearings which are introduced as decorations in the spandrels of the nave arches, in those of the main arches of the choir and presbytery, in the transepts, and in the spandrels of the arches of the central tower.

It is generally admitted that the merit of the Early English chapter-house is no more than fairly expressed by the ancient verse painted on the left side of the entrance: —

Ut Rosa flos florum sic est domus ista domorum

CHICHESTER Cathedral stands partly on the site of a Saxon monastery, and the first cathedral-building was finished in 1108, only to be partly destroyed by fire six years later. Restorations were at once begun, but were not completed until 1148. Again it was burned in 1187, and rebuilt and enlarged between 1187–1204.

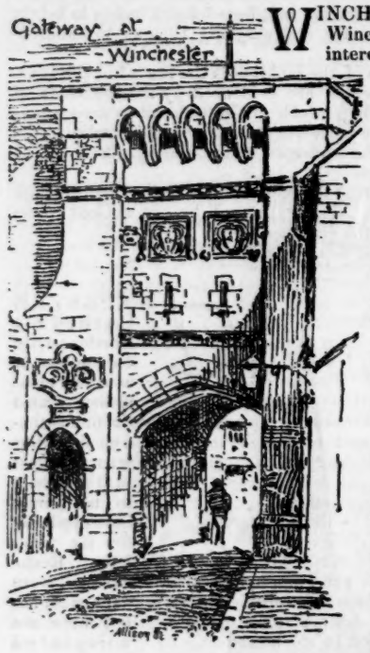
The following dates have been assigned to different parts of the existing building:—

1114–1204. *Norman.*—The greater part of the existing cathedral.
1223–1244. —The nave aisles.
1288–1305. —The Lady-chapel.
1305–1336. *Decorated.*—Central tower.
1336–1337. Central spire.
1305–1336.—The detached campanile, the only English example, is built.

Chichester Cathedral was occupied by the Parliamentary troops in 1643, who did the usual amount of damage. Important restorations were made between 1843 and 1856, and again in 1860, and later still upon the central tower, which, in spite of the ingenious pendulum hung in the spire by Sir Christopher Wren when he rebuilt it, followed the example of other cathedral towers and dissolved in ruins a few years ago.

Elmes gives the following account of this pendulum, which was intended to counteract the force of the southerly gales which had already affected the perpendicularity of the spire: — "To the finial is fastened a strong metal ring, and to that is suspended a large piece of yellow fir timber, 10′ long and 13″ square; the masonry at the apex being from 9″ to 6″ thick, diminishing as it rises. The pendulum is loaded with iron, adding all its weight to the finial, and has two stout oak floors, the lower one smaller by about 3″, and the upper one by about 2¼″ than the octagonal masonry that surrounds it. The effect in a storm is surprising and satisfactory. While the wind blows high against the vane and spire, the pendulum touches on the lee side and its aperture is double on the windward; at the cessation it oscillates slightly and terminates in a perpendicular. The rest of the spire is quite clear of scaffolding. This contrivance is doubtless one of the most ingenious and appropriate of its great inventor's applications."

Small though it is, the nave has the striking peculiarity of double aisles, — the only other English cathedral which has them being Manchester, — which brings it about that after York Cathedral this building has the widest nave (91′) in England.



WINCHESTER. — In many ways Winchester is one of the most interesting cathedrals in England, and the following dates may be assigned to its history: —

1079–1093. *Norman.* — The original building is erected by Bishop Walkelin.

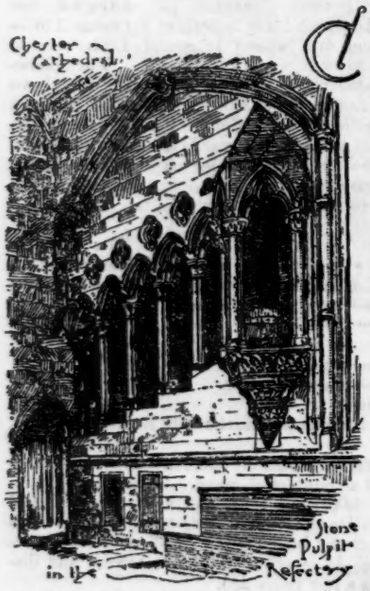
1189–1204. *Early English.* — Considerable additions to the eastern part of the cathedral; the eastern aisles and chapels behind the presbytery.

1320–1345. *Decorated.* — The piers and arches of the presbytery.

1345–1486. *Perpendicular.* — The present nave.

1345–1366. The west front.

Modern investigation shows, we believe, that the nave of Winchester is the longest internally, although the naves of Ely and Canterbury exceed it in external length. The nave is peculiarly interesting in that the present structure includes within its bosom the original Norman stone-work, the adaptation from Norman to Perpendicular having been made with consummate structural skill. The tower which fell was rebuilt about 1107.



CHESTER: — It would be difficult to find a building more out of harmony with its surroundings than is the cathedral at Chester. Any one who has had the fortune to see the old church of St. John, whose tower fell last year, before he sees the Cathedral cannot help feeling that an injustice has been done in not allowing the former to remain the chief church of the diocese.

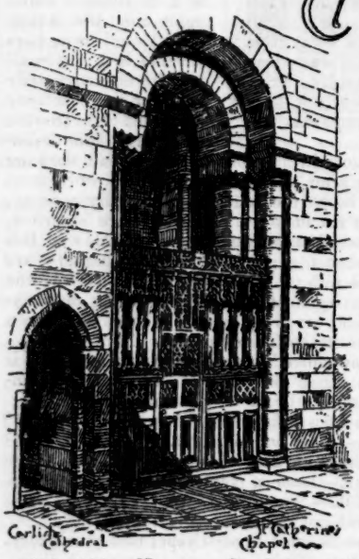
Until 1541 the Cathedral was only the monastic church of St. Werburgh — for Chester formed a part of the diocese of Lichfield — her relics being brought to Chester in 875, and in their honor the "mother church" of Chester was enlarged and rebuilt in the first part of the tenth century. About 1075 the church was again rebuilt, and was thenceforward known as the Abbey of St. Werburgh. Any one who is familiar with the ruinous condition of the exterior stone-work a few years ago will understand what need there was of again rebuilding about 1194. As the Lady-chapel, chapter-house, and refectory are Early English in style, they must have been built about this time.

In the period 1485–1492 the nave, tower, and south transept are said to have been rebuilt. In short, the whole eastern portion is Early English; the rest is Decorated with Perpendicular alterations and additions.

In 1844 the restoration of the choir was begun by Mr. R. C. Hussey; in 1855 the Lady-chapel was partially restored, and in 1868 the general restoration of the Cathedral was intrusted to Mr. G. G. Scott. Before these restorations were begun the outward appearance of the building can best be conceived by imagining that instead of stone blocks of ice had been used, and after the building was completed the whole had been submitted to a long thaw, which of course had acted most rapidly on the joints and arrises.

One of the singular features of the Cathedral, as singular ecclesiologically as architecturally, was the occupation of the south transept as the Church of St. Oswald by, we believe, a dissenting society, who were only lately induced to leave the building by the building of a new church in the Parkgate road. Architecturally, this transept with its aisles and great projection is almost as important as the nave, while the north transept is but a single bay and has no aisles; it has, however, a fine flat ceiling of Perpendicular wood-work.

The latest restoration of the choir has been quite radical, including the rebuilding of the apsidal end of the south aisle, which is crowned with a stone pyramidal roof some 41 feet high, a unique feature in English architecture, though not uncommon along the Rhine. The Perpendicular cloister is remarkable only from its being on the north side of the building instead of the south, and is therefore unusually gloomy and cheerless. The refectory on the north side of the cloister is now the King's Grammar School. The lector's pulpit in the refectory still remains, and is one of the finest in existence. Local tradition has it that the site of the Cathedral was once occupied by a temple to Apollo.



CARLISLE. — Carlisle Cathedral is distinguished by having a nave of only two bays and dark narrow transepts which project only one bay beyond the choir, which thus becomes the most important part of the building, the more so because the nave is walled off from it and is used as the parish church of St. Mary. William Rufus in 1092 began to restore the town — the British Caer Luel, the Roman Lugubalia — which for more than two centuries had been deserted, and shortly after a church was begun which, after the usual vicissitudes, remains to us as the present Cathedral. The record of the changes and disasters it underwent is very imperfect, but the following dates have been assigned: —

1092–1130. *Norman.* — South transept, piers of central tower, and portion of nave, now St. Mary's Church.

1219–1260. *Early English.* — Walls and windows of choir aisles, St. Catherine's Chapel and portions of main arcade.

1292. *Early Decorated (Geometrical).* — Portions of main arcade of choir.

1353–1395. *Late Decorated (Flamboyant).* — Upper part of east end and roof of choir.

1400–1419. *Perpendicular.* — Upper part of tower.

1853–1857. — Extensive repairs and restorations under Mr. Ewan Christian.

The original Norman nave consisted of eight bays and it is almost certain that the whole exterior was stuccoed, the mouldings and joints being picked out with color.

RIPON. — One of the most noticeable features of the present plan of Ripon Cathedral is the shifting of the axis of the choir to the south which causes the piers of the central tower to be placed at the angles of a trapezoid, an arrangement necessitated by the crypt beneath.

The following dates have been assigned: —

——— *Saxon.* — Crypt.

1070–1100. *Norman.* — Portions of chapter-house and crypt below it.

1154–1181. *Transition Norman.* — Transepts, three bays of north side of choir and portions of nave piers.

1215–1255. *Early English.* — West front and west towers: vaulting and circular windows of the chapter-house.

1288–1300. *Early Decorated. (Geometrical).* — Two easternmost bays of the choir.

1460–1520. *Perpendicular.* — South and east sides of the central tower; east side of south transept wall; two bays of south side of choir and the nave.

1862. Restorations under the charge of Mr. G. G. Scott.

The Basilica of St. Wilfred founded in 664 was not on the site of the present building, but it is thought that he founded a second church which was. The present building as an entirety dates from 1154.

The Scots set fire to the building in 1319, and restorations were made after this. About 1454 the central tower had fallen into ruins,

and was then rebuilt, and in 1593 the wooden spire on this tower was struck by lightning, and finally in 1660 was blown down, demolishing in its fall the choir roof. At the time of rebuilding this spire the two western spires were removed so that similar mishaps might be avoided.

The cathedral is so closely surrounded by buildings that it is impossible to get a good general view of it.

NOTES ON HOUSE-DRAINAGE. – II.[1]

AMERICAN convictions concerning house-drainage, formulated as described at the opening of these papers, are crude and incomplete. I refer of course only to "popular notions" on the subject.

Nothing is more common than the remark that a house or a town must be well drained because it stands on high ground with a rapid slope away from it. So far as the removal of its waste matters is concerned, such a site certainly offers excellent advantages for drainage, but it by no means follows that these advantages have been availed of. There is as much bad work and as much foul deposit in connection with such houses as with others,—and bad work and foul deposits are almost universal.

If a question is raised as to the condition of the drainage of a house of the better class, the owner usually considers it settled by the very simple answer that he has recently had the whole establishment thoroughly examined and overhauled by his plumbers, and therefore knows that it is all right. The fallacy underlying this reply is of almost universal application. It by no means suffices to have a house examined and its drainage-work remodelled by a plumber. I refer, now of course, to the average, respectable plumber. There are a few—a very few—men who are so well informed as to actual sanitary requirements that their judgment as to the condition of soil-pipes and appliances is of great value. But, with these rare exceptions, plumbers of the best class are men who have learned their art in the shop, whose learning dates back many years, and who are filled with the not unnatural belief that what they have learned in their practical work is the sum of valuable human knowledge on the subject. Little by little, and year by year, they have been slowly converted to the advantage of one improvement after another. Almost universally they are at least several years behind the times in their full appreciation of the need for improvements. Ordinarily, they have themselves constructed the work they are called on to examine, and they erroneously think that a condemnation of what they did and were well paid for doing five years ago would be a confession of error, and a condemnation of their own judgment. Their great mistake lies in a failure to appreciate the fact that five years ago no one knew nearly so much as is now known of the essential requirements of house-drainage. Then again, they are business men, making their way against sharp competition, and they know that if they cannot satisfy an uninformed house-holder for a price he is willing to pay, they will be suspected of imposition, and that a real impostor will get the job. They therefore pass over many things of the construction of which they would not now be guilty, — and from their own ignorance they neglect recent improvements which have been demonstrated to be most important. Consequently, before a house-owner can be entirely satisfied that his drainage-works are safe and right, he should first inform himself thoroughly as to the leading principles, then with the help of a plumber he can trust to be thorough, he should *examine for himself* the deviations of his own work from a sufficient conformity to these principles.

That there should be a ventilation-pipe at the top of the soil-pipe is now almost universally understood; that it should be as large as the soil-pipe is a fact that is quite generally accepted; that it should be considerably larger than the rest of the soil-pipe is a new ray of light which has thus far penetrated but little way; that the office of this open pipe above the roof is only very partially and imperfectly performed unless there is a free admission of fresh air at the foot of the soil-pipe has only recently been understood by professional sanitary engineers. If anything in connection with house-drainage is well demonstrated, it is that there should be a free circulation of air through the whole length of the pipe from bottom to top. It is one of the curiosities of the work of house-inspection to find, as we often do, that the builder has in so far made a concession to popular prejudice, or to the requirements of Boards of Health, as to fasten a length of open-topped pipe on the outside of the roof, giving it no connection whatever with the soil-pipe. The small pipes, from one to two inches in diameter, carried through the roof from the highest trap in the house, closed at the top and perforated with a few holes, or left open and turned downward with a "return bend," were, at the time they were first introduced, a great advance, but their total inadequacy has been fully demonstrated and they can only be regarded as better than no venting. They are at best only vents,—never ventilators. The covering of the upper ends of soil-pipes with caps and ventilating cowls of various forms has been shown by the instructive experiments carried on at Kew Gardens under the direction of Rogers Field, Douglas Galton and William Eassic, to be probably in all cases, a mistake. It is now known that such appliances are at times an obstruction to ventilation; that an open, straight pipe is better,—because better in calm weather,—than a pipe furnished with any kind of cowl, and that the best way to increase the discharge of air is to increase the diameter of the pipe considerably at its upper end.

All who have had to do with sanitary inspection must have been struck with the frequency of the conclusive assertion on the part of the house-owner that he has paid "frightful plumbing bills," and has spared no expense to have everything as perfect as it could be made, being determined that, whatever else might be defective about his house, its drainage should be complete in every particular. As a rule, and a rule almost without exception, if he had given more time and thought and personal attention to the subject, he would have spent much less money and would have secured much better work. Indeed, it is hardly incorrect to say, taking one "first-class" house with another, that the safety and sanitary perfection of the plumbing work is almost in inverse proportion to its cost. As a rule architects leave the details of plumbing work almost entirely to plumbers. The proprietor is desirous of securing all of the conveniences that the plumber has to offer, and the plumber finds it to his interest to increase the number of these appliances as much as possible. The result is, among other things, a complication of the work that leads to danger. The most important advance that has been made in recent years in connection with this subject has been in reaching the conviction that the first requirement in the drainage of a house should be the greatest simplicity of arrangement consistent with comfort and convenience.

We are beginning to recover a little, but only a little from the general tendency to ascribe our worst evils to the public sewer. In England even more than here it is considered the first and most important duty of the house-drainer to "disconnect" the house-drain from the sewer or cesspool, by the establishment of a trap in the course of the house-drain beyond the fresh-air inlet which is to serve for the ventilation of the interior pipes. Those who know by long observation the condition of an ordinary sewer and the condition of an ordinary house-drain understand very well that almost invariably the latter is infinitely the worst of the two. However foul the most defective sewer may be, it is rarely if ever so foul as the average horizontal soil-pipe or drain which leads to it from the house. It is generally better flushed, and, even where unventilated, the volume of its air is generally such as to afford better dilution. The amount of decomposition and the amount of "sewer-gas" produced thereby is generally greater in the house-drain than in the sewer. It is not to be understood from this that the condition of the ordinary sewer is to be disregarded, for it is generally extremely bad, only that, however bad it may be, and however much it may need our attention, the *first* interest of the house-owner lies in and applies to the condition of his own interior-work; disconnection from the sewer where needed is a simple affair.

The most important present duty,—a duty which it will be attempted to perform in the writing of these notes,—relates to the reformation and direction of public sentiment on the subject. If the requirements of the best work can be so stated as to appeal to the intelligence of the average householder and to the professional builder, it is to be hoped that a clearer understanding of the subject will lead to the universal adoption of such reforms as will allay the apprehension with which all classes now regard the artificial appliances for the removal of the foul wastes that our artificial life causes to be produced under such difficult conditions.

[1] By George E. Waring, Jr., Newport, R. I.

BOULLE, THE CABINET-MAKER.

MUCH interest has been excited by the very large sums that have been recently realized at the sale of the Hamilton Palace Collection by several specimens of the cabinet-maker's art, and among them a number of pieces of the work commonly known as "Buhl." At a time when our most respected authorities have been striving their utmost to call the attention and admiration of the public to the work of artists of earlier days and their purer and more refined creations, such an event as the sale for thousands of pounds of pieces of furniture belonging to the seventeenth and eighteenth centuries is somewhat calculated to disturb the minds of the less thoughtful public. Of the less thoughtful we say, because there exist reasons why such sums should be paid for the choice cabinets, the *secrétaires*, the *commodes*, and the tables, which have recently realized at the Hamilton sale such incredible prices. Putting aside all rigorous standards,—above all the artist should, in his admiration be as eclectic as he is the very opposite in his creations,—putting aside, we repeat, all æsthetic standards, how is it possible to deny that these works were produced in the true spirit, however degraded, as we shall be told, the designs and traditions may have been on which artists such as

Boulle and Riesener worked? To what monstrosities of so-called industrial art has not the name of the former of these two artists been given? "Buhl" work as it is erroneously termed by us, has long since, in England at least, received at the hands of our leaders in taste an amount of quiet abuse which, with all but those who do not merely allow themselves to be led by the opinions of others, has banished forever from the homes of those who respect themselves any creations of the reign of the fourteenth Louis. In France, however, such prejudices are not allowed to influence people of taste, and the memory of Boulle as an artist, a good workman, one of the glories of the *grand siècle*, and as a collector of the works of art, is not entirely forgotten, though there, almost as much as with ourselves, his memory has been so associated with the work which is known familiarly by his name, that its connection with its creator has been overlooked, and *meubles de boule* are spoken of by our neighbors in much the same manner as we on our side speak of "Buhl work."

The sources of information respecting Boulle are few: the lives of the great artisans of the world are scarcely of the eventful nature that fills biographical dictionaries and the pages of history, and where they have not, like Palissy, left behind them their memoirs, or, like our own Chippendale, published elaborate works on their art, or, like Bréguet the watch-maker, entered the French Academy, we are like to know little of their obscure origin, their early struggles, and their uneventful life-long industry. In the "Biographie Universelle" not a word is to be found concerning the great cabinet-maker of Louis XIV, whose creations crowd the galleries of Versailles. Indeed, were it not for the recent researches of the compilers of the "Archives de l'Art Français," and the by no means common pamphlet by M. Asselineau on Boulle, we should have but few published sources of information on the worthy artist.[1]

Boulle, it would appear, was born in Paris in 1642, a Protestant, though we have evidence that he died a Roman Catholic. From the contemporary evidence of the Padre Orlandi,—in his "Abecedario,"—it would seem that young Boulle early showed his artistic taste, desiring even to become a painter, and only departed from his course at the express wish of his father, who looked to him to continue his profession as cabinet-maker. It is easy to see how greatly this early influence affected the young man's after-life and revealed itself in the less-thought-of productions of his genius. We have probably little cause to regret his forced step. As a painter we know very well what he would have been under the over-towering contemporary influence of Lebrun. Respecting the early years of Boulle's life we know nothing; in all probability they were passed in the long and industrious apprenticeship which was considered necessary in the past to make the good workman. But that the young man must early have shown his power is evident from the fact that at thirty he was already famous. His *brévêt de logement*, which gave him at the king's hand a permanent lodging in the royal palace of the Louvre, is dated 1672, and is, we see by the document, accorded him for his "experience" as an *ébéniste, faiseur de marqueterie, doureur et ciseleur.*"

There is a story, one which would go far to show the instructive value of museums and works of art with the student, that on the Sundays, when the great galleries were open (we recommend this incident to all interested in the views of the Sunday Society) young Boulle used to visit the palaces of the Louvre, Saint Germain and Marly, and return with his mind full of what were termed the wildest fancies. One day, the story goes, his master took him to Versailles to execute repairs, which occupied some little time; the effect of the visit and the sight of the marvels which "the grand monarch" had called into being on the great sandy plain of Versailles, appears to have operated a positive effect on the impressionable mind of young Boulle, and on his return his imagination was actively employed in the design of pieces of furniture suitable to adorn rooms such as he had seen in the king's palace. A royal competition—for competitions date from before our time—gave the young man the opportunity of manifesting his skill, and, through the influence of the king's favorite, Mdlle. de Fontanges,—nor does favoritism belong exclusively to our days,—Boulle found his designs accepted; *carte blanche* was given him to carry out his conceptions, and the enchanted monarch who found in the young artist a worthy decorator of the magnificences which Lebrun and Mansard had created, accorded him for his life-time his protection and patronage. The apprentice had at length realized his dreams: he had stepped from the narrow sphere in which he had so long regretfully vegetated, and the glory he had so long sighed for had come.

The numerous commissions which from this time crowded in upon Boulle he appears to have found himself incapable of carrying out. Letters in existence show the sad complaints of the Dauphin — the son of Louis XIV— respecting the delay in sending home a certain cabinet, a marvel of design in mirrors and marquetry; while Crozat, the wealthy banker, we find, even brought an action against the artist for his neglect in complying with his instructions. The liberality of the king was great, and it is at first sight difficult to understand how it was that throughout his life Boulle appears to have been constantly troubled with pecuniary difficulties. The truth is, there still remained in him the soul of the painter he in his youth had aspired to become, and Boulle, we find, was what is understood as a collector, a collector who never missed a single sale of rare prints and drawings, raising money in every direction to satisfy his passion, and finally being almost broken-hearted by the destruction by fire of the greater part of his treasured gatherings, which, from all accounts, would appear to have been one of the most interesting and complete then in existence. His losses, indeed, he estimated at over 15,000*l.*, a very large sum for two hundred years ago. The sale of the remains of the collection, which took place at his death, occupied many days.

Boulle died at the age of eighty-two (February 29, 1732) at his home in the Louvre, and was buried in the neighboring church of St. Germain l'Auxerrois, leaving two sons to continue, only in name it is true, the traditions which he had in a measure positively created. One of the sons, employed at the Sèvres manufactory, was, it would appear, the first to introduce, in the decoration of furniture, the use of porcelain.

The secrets of Boulle's skill may be said to have died with their inventor, for though the traditions were continued, the sobriety and the grandiose style of the master will be found to be sadly wanting in all the work of his imitators. So much was this recognized that, throughout the last century, in all the sale catalogues the works by Boulle himself are conspicuously marked, and more than one collector made it his specialty to gather specimens of the great cabinet-maker's work. The finest of his creations, were, of course, made for his royal patrons, and more than one piece in the terrible years of the Revolution was to pass into this country; thus several of the specimens of Boulle work in the Hamilton Palace collection have originally come from the palaces and châteaux of the French kings. That the sums which already several of these pieces have realized are not the result of mere caprice may be judged when it is remembered that in the last century specimens of Boulle work invariably fetched almost equally large sums.[2]

It is only when one has had the opportunity of seeing and studying a fine specimen of genuine Boulle work, that the superiority of the original to the imitations which bear his name can be thoroughly appreciated. There is a sobriety of tone and treatment, of line and proportion, a grandeur of style, a balance of light and shade, of dark and light, of bright and dull, of brass and white metal (pewter), of tortoise-shell and lacquer,[3] which will be found to be absent from the work of his successors and imitators, and utterly wanting in the coarse crude abortions which have been at all times forced on the public attention under the deceptive title of "Buhl work." Even in the most conscientious of his successors, such cabinet-makers as Crescent and Caffieri, — who lived in the times of the Regent, contemporary with our Queen Anne, — the prevailing Rococo taste it is easy to see overcoming what little classical severity was left in the seventeenth-century work of Boulle, who largely drew his inspirations from the architectural models that he made his constant study. When we add to his merit as a designer and a delicate appreciator of the work of others, his merit as a good workman whose productions, without need of repair, are as stout in the present day, after two hundred years of use, as they were the day they were made, it may be fairly conceded, even by the sternest rigorist, that André Boulle worked in what is understood as the true spirit. Not only in its construction, but in every feature, in the choice of the materials, in the chasing and gilding and the marquetry, his work will be found to be of the honestest, very different to the modern rubbish that passes under his name, where false tortoise-shell, made of horn or gelatine; false mother-of-pearl, box or horn instead of ivory; brass or even zinc lacquered ornament tacked on to ill-made joinery usurp the place of true work, whose only fault was that it was produced in a period when the traditions of art were on the decline. When Boulle used wood it was ebony, which the cabinet-makers, his successors, on the plea of its difficulty in working, in taking the glue or the varnish, — Boulle never used varnish, — and other reasons, replaced with stained pear-wood. In the choice of his woods Boulle showed the extremest care, and one of his severest blows was his loss by the fire that destroyed his collection of prints, of a quantity of rare woods which he had, we learn from the inventory he made at the time, long stored by to season. The bronze he used was honestly chiseled and chased and gilt, not lacquered, and each ornament was a design not stamped out.

It is somewhat sad and calculated to rouse reflection, the difference between the spirit in which Boulle produced his work and that in which his successors now produce theirs, — the relative position of the so-called industrial arts in the present day compared with those even of his time two hundred years ago. The workman in the past was an artist. Boulle, not to mention many others of an earlier period, was an artist: he conceived his own designs, he drew them out (his patent is given him in his name not only as a cabinet-maker, but as an architect and sculptor), he executed everything with his own hand, — he was a chaser, engraver, and gilder; he was, as we see, a man of cultivated tastes into the bargain.

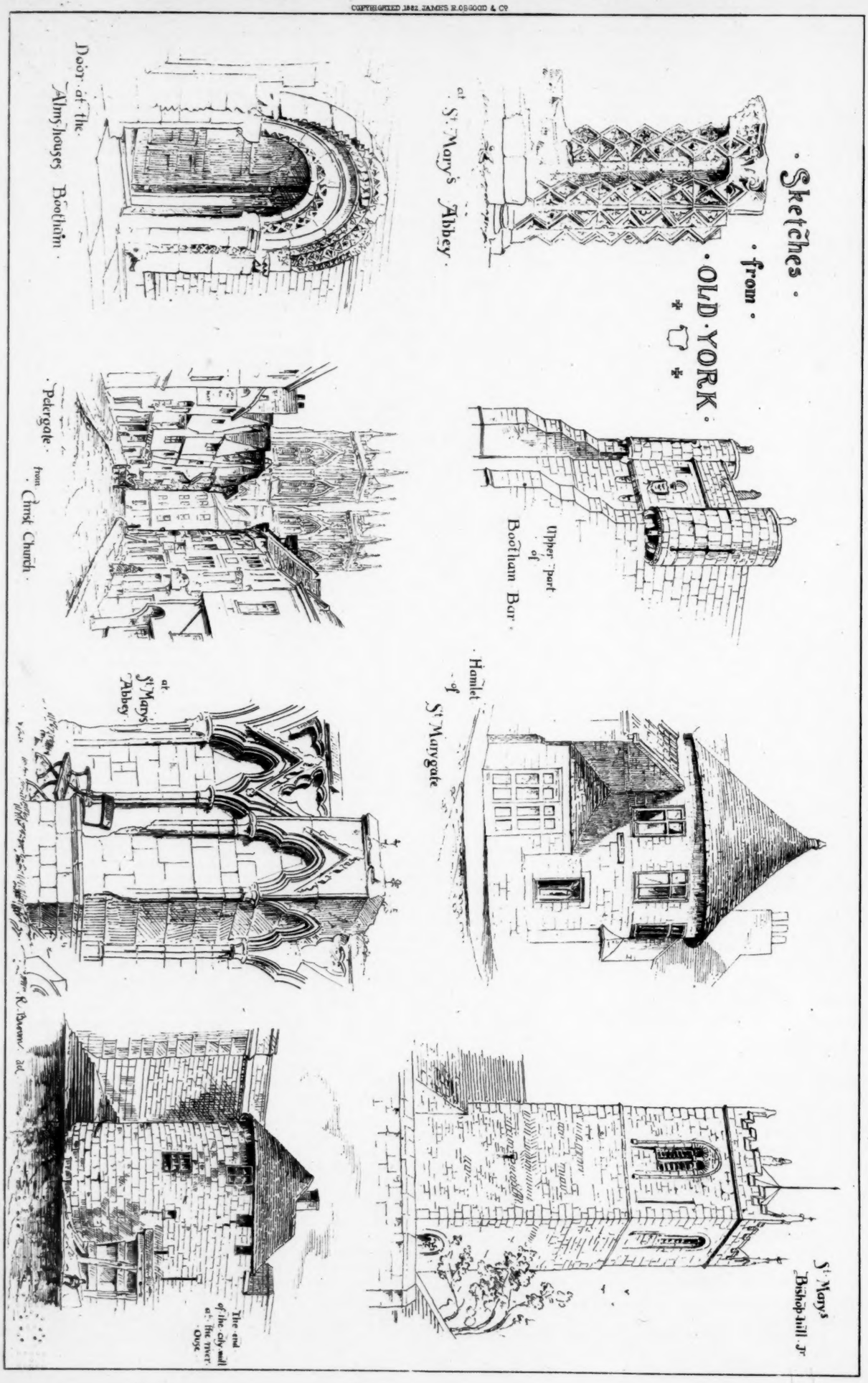
The division of labor, with its inevitable result of work without intelligence, without good faith, has made the modern workman what he is generally called,— a mere machine; he is in reality only a cog-wheel of a machine. Talent cannot be said to be wanting, nor

[1] "André Boulle, Ebéniste de Louis XIV." By C. Asselineau. Paris, 1872; 44 pp. Seventy-six copies only were printed. One will be found in the library of the South Kensington Museum.

[2] Boulle is known to have made for the banker Bernard a writing-table at the cost of 50,000 francs (£2,000), but in the Revolution this *chef d'œuvre* is believed to have either been destroyed or gone astray.

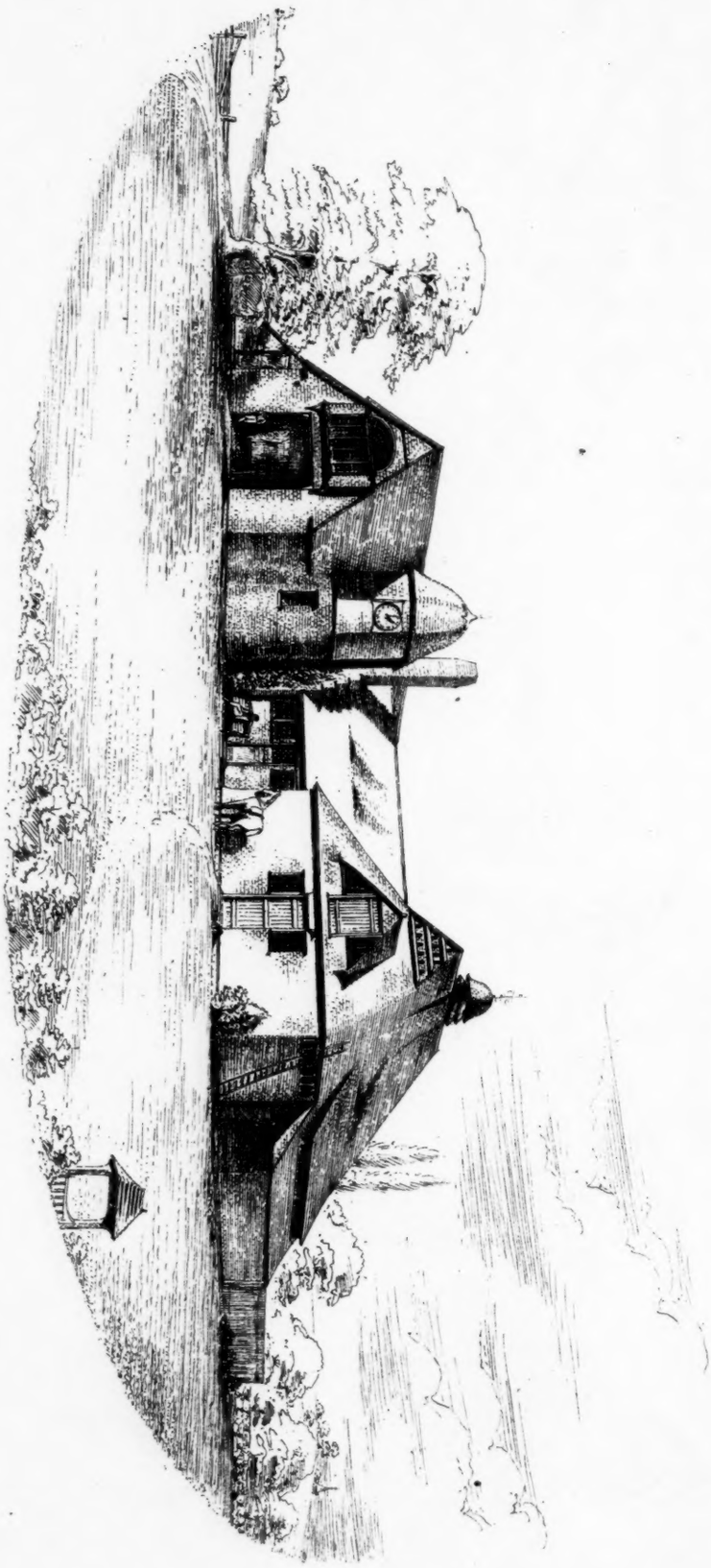
[3] It may be remarked that the presence of lacquer panels in Boulle work must be looked on with some suspicion: it has long been usual to replace by such panels the injured work of an original. When Boulle used Oriental lacquer, which he occasionally did, its quality was invariably of the very finest.

COPYRIGHTED 1882, JAMES R. OSGOOD & CO.



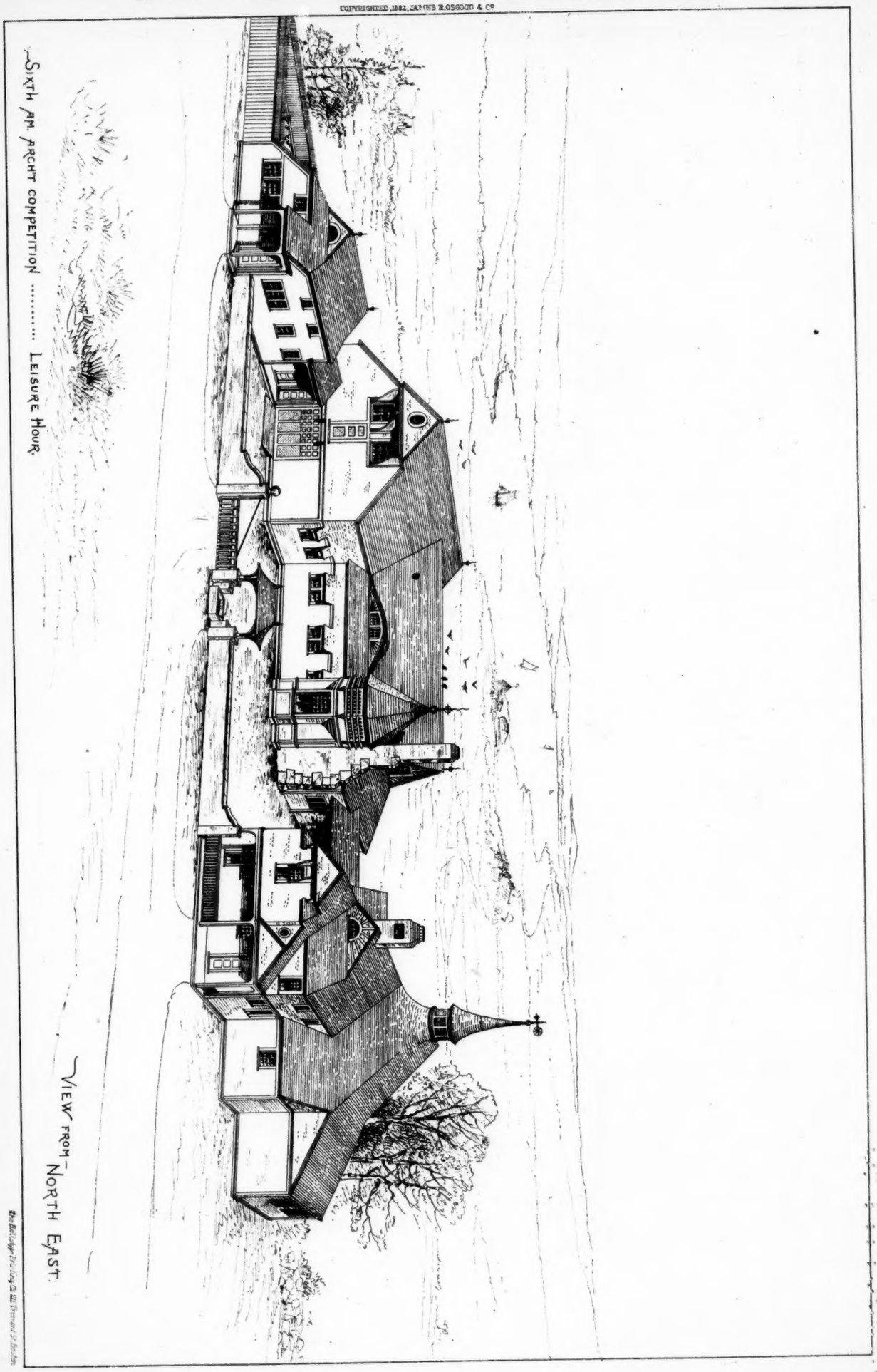
XUM

COPYRIGHTED 1882, JAMES R. OSGOOD & CO



—PITTSFIELD MAIN—

COPYRIGHTED 1882, JAMES R. OSGOOD & CO

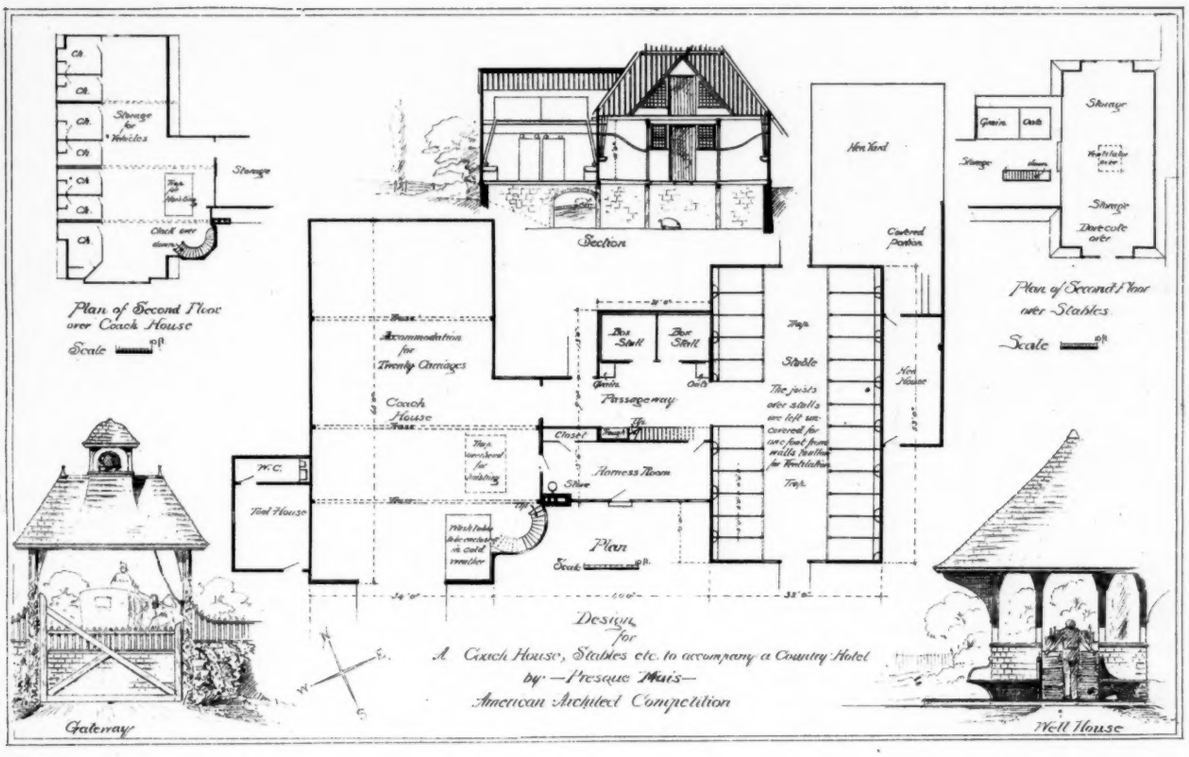


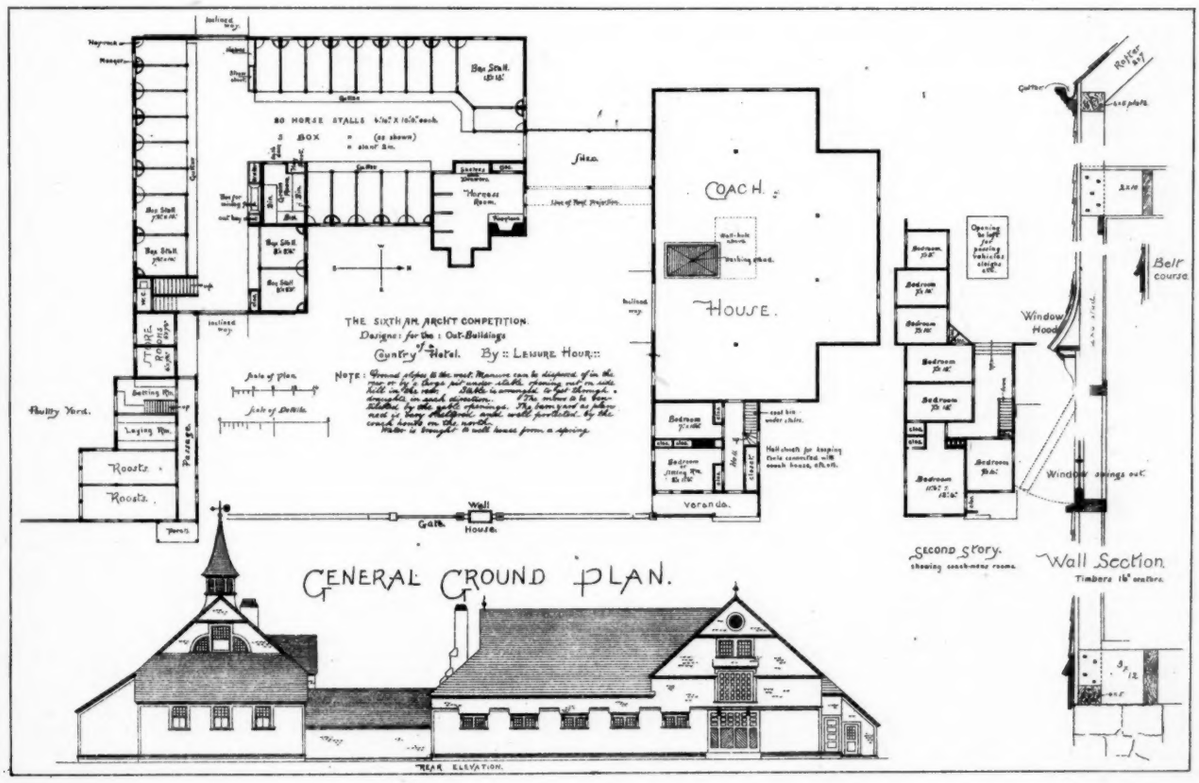
SIXTH AM. ARCHT COMPETITION ..... LEISURE HOUR.

VIEW FROM NORTH EAST.

Rec. Billings Printing & Lith. Co. Boston

COPYRIGHTED, 1882, JAMES R. OSGOOD & Co.





The Riverside Printing Co. 211 Tremont St. Boston.

the inducement which capital and reward are supposed to afford. If Boulle himself were to return we strongly suspect he would have no opportunity to show his power. In the first place he would find it impossible to devote the time to his work that he required two centuries ago to elaborate his creations. Hasty production, with a view to the hasty acquiring of fortunes,—to rival, apparently, other competitors who in their branches have acquired equally hastily gotten gains,—would thwart the best endeavors of the artist who would try to work in the traditions which regulated the industrial productions of the past. Are we calmly to state that what may be called the secondary arts are doomed? Let us hope not; but they are in danger.—*The Builder.*

THE ILLUSTRATIONS.

SKETCHES FROM OLD YORK, BY MR. ROBERT BROWN, BOSTON, MASS.

THESE sketches are reproductions in ink of pencil sketches made in York some years ago. Few cities in England contain in stone so complete a history of Gothic architecture. Each period from early Norman to the last phase of Perpendicular is fully represented. St. Mary's Abbey, the choir of which was begun in A. D. 1271, and the whole building completed within twenty-four years from that date, is a fine example of rich Early English. The tower of St. Mary's Church, Bishophill, Jr., is interesting as being one of the oldest in the kingdom, dating back to the Anglo-Saxon period. Rickman thus describes it: "The upper part has been rebuilt of the old materials. The original masonry is, in parts, of herring-bone work, and has bricks or tiles of the Roman shape built in. The belfry windows are of the usual rude character, with something approaching to long-and-short work in the jambs, a clumsy shaft carrying a long impost, and a plain square dripstone carried on pilaster strips." Some of the old narrow streets of the city are very picturesque, and have been little changed since they were built. The bars or gates in the city wall in addition to their historical interest have in many cases noteworthy features. In color the stonework is grayish, and such roofs as represented in the last sketch are of red tiles considerably toned down by age. The doorway in Bootham appears to belong to the early part of the twelfth century: how it came to form part of the alms-houses, which are of brick, and probably built during the reign of Elizabeth, I never heard explained.

COMPETITIVE DESIGN FOR A COUNTRY-HOTEL STABLE, BY "*Leisure Hour.*"

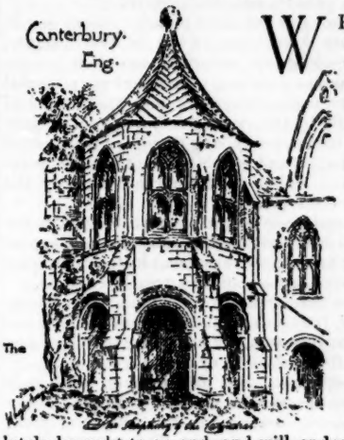
"*Leisure Hour*" also errs in his desire to be picturesque from all points of view and at all costs. The result is a confusion in plan and elevation. This confusion in plan has been largely ameliorated by the wide circulation afforded—at the expense of economy. The stable is airy and well lighted, and the coach-house is vast; its shape, however, is neither the most economical nor most convenient for handling vehicles. It is questionable whether the gate and well-house are judiciously placed so far from communication with the buildings, and there is no doubt whatever that to have to pass the range of poultry-yard dependencies to reach the stable on foot would be objectionable. The perspective is neatly and carefully presented, and certainly offers us an interesting group of buildings in spite of a certain extravagance in varying the motives.

COMPETITIVE DESIGN FOR A COUNTRY-HOTEL STABLE, BY "*Presque mais.*"

"*Presque mais*" knows how to make a most attractive composition, and he has thoroughly caught the spirit of a country barn. The buildings are effectively massed—but at the expense of the plan, which is too compact for all the light and air natural to a country building. "*Presque mais*" does not pretend to give us anything in the way of a court-yard, nor of sheds; but he has somewhat palliated the defects of a great coach-house previously noted, by making his chief entrance directly into it. If time and help are given to provide for previous arrivals and clearing the way, this driving directly under cover is not without merits. From this coach-house the horses can be led—passing the harness-room—into the stable: this communication is easy and direct, and the whole scheme is so simple and economical, and so entirely in the habits of a rural district, that were it not for the lack of sheds to hitch teams which are not unharnessed, we should have given this design a much higher place. The perspective is drawn with delicacy, and is attractively presented. There is an unfortunate error in the perspective of the little gate stile in the foreground.

THE COST OF URBAN LIGHTING.—Leonard Henkle, of Rochester, who conceived the scheme of supplying electric-light from Niagara Falls, has published a tabular statement of the rank, population, number, and cost of public lights, and yearly cost of domestic lights, for the sixty-five principal cities of the country. New Orleans, with a census population of 216,090, has 3,622 gas-lamps, which cost $63,943.20, and 1,574 kerosene lamps, costing $15,779 80; total, $79,723 per year. Cleveland, population 160,146, has 3,729 gas-lamps, costing $71,084 06, and 1,265 kerosene lamps, costing $14,231 25; total, $85,315 31. Pittsburgh, population 156,389, has 1,345 gas-lamps, costing $22,865, and 2,200 kerosene lamps, costing $37,158; total, $60,033. Washington, D. C., population 147,293, has 4,250 gas lamps, costing $106,250. Buffalo, census population 155,134, has 5,253 gas-lamps, costing $148,559.90. Electric-lights have reduced the cost a very little.

THE SAN FRANCISCO CHAPTER, A. I. A.[1]



WHILE I feel sensible of the honor you have done me in electing me President of the first Chapter of the American Institute of Architects established on this coast, and for which I return my sincere thanks, I also feel that the office is no sinecure, and that to properly fulfill the duties of the position might well tax abilities far beyond those to which I can lay claim.

But not to waste words in mere preliminary formalities, I will at once address myself to the task of reviewing the work already accomplished during the past year by the Association lately brought to an end, and will endeavor to sketch out, as briefly as I can, and submit for your consideration, something like a system by which it seems to me our Chapter may be made most useful for the future: first, to the public; second, to the rising generation who are so soon to take our places, and lastly, to ourselves as responsible members of the profession, for I hold that no efforts put forth in the interest of the general good ever fail to redound in most abundant measures to those by whom the effort has been made.

First, then, I submit that during the past twelve months we have made substantial progress in accomplishing the objects for which our Association was formed. As the forerunner of a Chapter, it was necessarily preliminary. The work it had to accomplish was that of preparation and formulation, and, as the event proved, was probably better accomplished in that way than by the formation of a Chapter at that time.

True, our numbers are yet limited: there are more of the profession outside our borders than within; many of those whom we would gladly hail amongst us, and who could most worthily assist us in the objects for which we are associated, still hold aloof from us, and many of those who would themselves be greatly benefited by taking part with us fail to see their way to joining our ranks. Be it our part to conciliate the one class, and encourage and invite the other, to the end that with the association of numbers our influence may increase and extend, and by the harmonious and united action of a powerful body, the truest and highest principles of professional practice may be promoted amongst ourselves, as well as the efficient and faithful observance of those same principles in our respective dealings with the public, and which, after all, can alone justify our corporate existence.

During the year six of our number have been elected Fellows of the American Institute of Architects, and together with our late President constitute a fellowship of seven. We have lately formed a Chapter in connection with the above body, the first on the coast, to be followed, let us hope, by many others, as State after State develops and progresses in science and art under the fostering influences of prosperity, civilization, and refinement.

During the year, also, an experiment has been made which demands more than passing notice, and which I mean to make the text for the remarks which follow.

I allude to the successful inauguration of a system of competitions amongst the architectural students of the city and vicinity. True, this was of a very limited character and participated in by but few; but the designs received evinced a degree of merit hardly to be hoped for in a first trial, and certainly worthy not only of commendation, but systematic development and encouragement.

The theory and practice of art, united in the person of the master builder of old, produced works which succeeding ages may hope perhaps to emulate, but never to excel, unless, indeed, by a return, not to the conditions of the past—for that is impossible—but to the practice of similar principles and methods, though worked out in a different way. In modern times the office of designer and builder have been divorced, with consequences exceedingly detrimental to each. The former is no longer, as in ancient times, charged with execution of his own designs. His knowledge and experience is therefore likely to lessen as regards the adaptation of materials to special or general purposes, and to become more or less superficial; while the builder, no longer responsible for the artistic quality of the design which he executes, has less and less scope as well as encouragement for the development of knowledge, taste, and skill in the execution of his work. How utterly wrong is all this, and how impossible for either the one or the other to succeed in producing a satisfactory result! Again, while the arts of printing and photography have been instrumental in rendering all who desire it familiar with almost every architectural structure of any note in the civilized world, there has been developed an excessive tendency nowadays to adopt the forms of art, without regard to the materials in which they are to be embodied, together with an indiscriminate selection

[1] Address delivered before the San Francisco Chapter of the American Institute of Architects, by the President, John Wright, Esq.

of details of every age and style, without regard to the simple principles involved in their origin, growth, and development.

Speaking professionally, the greatest need of the present day is, first, true taste and accurate knowledge of art in the designer, united with a thorough knowledge of materials and their proper adaptation to truthful construction; second, a public whose educated tastes will detect and condemn every subterfuge, and whose sense of the *ideal* will be satisfied only by the *real;* third, a system of professional instruction for our students or young designers which shall educate teachers as well as taught, and which in effect shall be practical, sufficient, and sure, and which shall embrace not only the highest but the lowest level of the art.

Assuming these three propositions to be granted: with regard to the first, I would suggest that at every regular meeting of the Chapter papers should be read on the exceedingly varied and instructive topics with which the general theme of architecture so greatly abounds.

We live in an age of vast development of the material sciences, and the importance of their judicious application and economical adaptation to the endlessly varying wants of constructive design furnishes a never-failing source from which to draw for a subject.

The best methods of construction, past and present, with such suggestions of still greater improvements as may from time to time occur. The question of interest surrounding the subject of *plan*, with its developments, historical and national. The great question of a universal style, parallel to that still greater problem, that of a universal language to which it bears a large analogy. The development of a truthful treatment of material in construction, before alluded to, and an equally important matter, the adoption of the most substantial of materials, though attended, it may be, with a sacrifice of mere meretricious ornament which possesses in itself neither use, beauty, nor meaning. Then the question of ornament itself, and its proper treatment in harmony with the material in which it is to be executed. All these, together with many others too numerous here to particularize, might be taken up as specialties by different members of the Chapter, and pursued systematically; and, if followed by discussions and criticisms, would doubtlessly prove eminently beneficial to all concerned.

For the general public, who are apt to imagine that on matters architectural their knowledge is complete, periodical lectures would probably be of great use in arousing interest in the many subjects in which the public have so much at stake, as well as establishing in their minds true principles of taste, and a just and critical judgment as to what constitutes true beauty in architectural design.

Thirdly, and most important of all, the students.

It is evident that unless our young men are gradually prepared by intelligent training to take our places in the professional ranks, that either those ranks will be replenished by raw recruits unfitted for the work they have to do, or that foreign talent, of which there is so great an abundance ever pressing at our doors, will step in and supply the public need in designing our dwellings and public buildings, thereby fixing upon us the national peculiarities of style to which its representatives are respectively most attached — generally at variance with the prevailing characteristics of our national taste, and ill-adapted to our climatic requirements. At the best, we shall possess but a feeble and soulless jumble, ever varying with the latest importation of professional taste.

How much better that our young men should be thoroughly furnished through careful study and assiduous training, by the best and most practical methods within our and their reach; so that they may themselves supply the public demand, and by harmony of effort and unity of thought strive to found and establish on this Pacific Coast a school of our own, which shall be free from the inherent defects which a variety of foreign styles and methods of building are sure in some degree to possess. To this end, I beg to make the following propositions, to be followed by such action in the premises as in your good judgment may be deemed best.

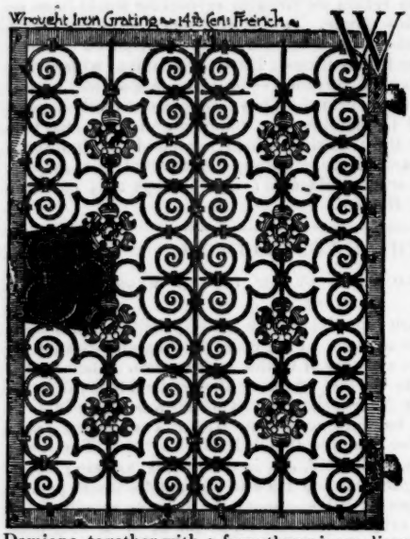
First. To establish a free class for architectural students belonging to the Chapter, the class to be instructed by members of the Institute who shall take up such special branches of study as they may consider themselves best fitted to impart, and who shall give their services free of charge.

Second. That the system of study and reading, which may be arranged in harmony with the above, be supplemented by periodical competitions among articled students.

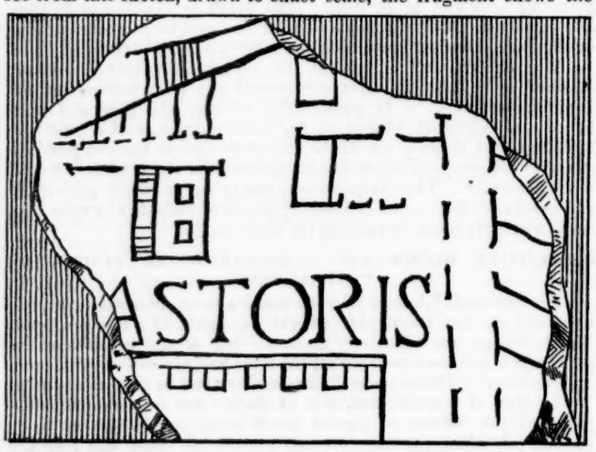
Third. That at the end of three years, a six months' travelling studentship, providing for a tour in the Eastern States and Europe, be established; the privilege of which shall be given to the student obtaining the prize in a competition to be held at that time; the expenses of said student not to exceed say six hundred dollars, and to be paid out of a fund created by the fees of life members. Such fees to be invested as a nucleus of a fund to be kept sacred for the above purpose. In case the interest of said fund be found insufficient for the purpose, the balance to be paid by the Chapter.

The result of some such course would be a systematic study of styles and modes of construction, historical and national, from the best models and under the best available tuition, thus rendering the student familiar with the development of the art from the earliest times. Also the comparative study of real buildings as a final preparation for the chosen work of his life, the success of which would be almost assured by such a conclusion of his arduous study. And lastly, the placing of a sufficient inducement before the student to lead him to devote himself with earnestness to the work before him.

THE MARBLE PLAN OF ROME.



WORKMEN busy in excavating a little to the east of the remains of the Temple of Vesta, on April 12 last, writes the correspondent of the London *Times*, discovered one of the many missing fragments of the celebrated marble plan of Rome, which is believed to have been drawn in the time of Septimius Severus and Caracalla, whose names it bears, and which is known as the Pianta Capitolina, from the circumstance that the portions of it found in the time of Paul III, behind the Basilica of Saints Cosma and Damiano, together with a few other pieces discovered in the same locality in 1867, are framed in panels on the staircase walls of the Capitoline Museum. Strangely enough, the fragment recently discovered refers to the locality where it was found, but unfortunately it was necessary to suspend the excavations on the Forum side at the very edge of that small area delineated upon it which extends under the modern roadway thirty-five feet above, and where the little church of Santa Maria Liberatrice stands. The excavations have, indeed, been recommenced on the Palatine side of the roadway, and will finally be connected with those on the Forum; but, as even a few weeks' work may effect many interesting revelations, it will not be until the very last, when the roadway and the church are removed, that archæologists can hope to see the verification of what is drawn on this precious bit of marble. In the meantime, while conveying some perfectly clear information, it affords material for conjecture as apart from that mere controversy into which scientific archæologists are now but little inclined to enter. As you will see from this sketch, drawn to exact scale, the fragment shows the



southeast posterior corner and six of the ten columns of that side of the Temple of Castor with the name inscribed along it,— the C and half of the A being wanting,— and it nearly completes the piece on the Capitoline staircase, which gives the front and west side of the temple, with a portion of the Basilica Julia next to it, and the Vicus Tuscus passing between them. This newly-found fragment shows no indications of a road on the east of the temple. It stands, both as regards that side and its end, on the open area of that extremity of the Forum, on which are other constructions and indications not designated by name. At a short distance behind the temple — and I may remind you here that this ancient plan is drawn on an average scale of one to about two hundred and fifty — there runs a street with tabernæ opening upon it and facing towards the back of the temple and the area it stands upon. This street, Signor Marucchi says, in a communication made by him on the subject to the Pontifical Academy of Archæology, "corresponds very well with the position of the Via Nova, which commenced at the Valabrum, touched the Forum behind the Temple of Vesta, and went up the Palatine," and this opinion is also entertained by Signor Lanciani, the director of the excavations. The lines on the left indicate an ascent formed by steps and long landing-places, with constructions which may have been small tabernæ, or scribes' offices, built against its east side leading up in the direction of the northwest corner of the Palatine where the summit of such an ascent, with alternate flights of steps

and levels, constructed of thick masses of travertine, was discovered by Signor Rosa when excavating some twenty years ago at that spot. That the lines on the plan indicate the foot of that ascent is accepted by all. It would intersect the Via Nova, which at the point of crossing would form one of the levels. To this ascent Signor Lanciani, on a phototype of this fragment placed together with that on the Capitoline staircase, which is to be appended to his official report, and of which I have seen a proof impression, puts the name "gradus in Novâ Viâ." Of such ascents, called in Italian *cordonate*, intersecting public streets, there are several examples in modern Rome. Between this and the side of the Temple of Castor there is a rectangular construction, with two lateral flights of steps, which Signor Marucchi, from its vicinity to the Temple of Vesta, of which we should have seen at least part of the plan had this fragment been a little larger, thinks may possibly be the Atreum Vestæ. What the other construction between this and the Via Nova may have been cannot as yet be surmised. It is exactly above these that the church of Santa Maria Liberatrice stands. In front of it passes the modern road and the bank of accumulation, which, extending downwards and outwards from it, buttress fashion, reaches and just covers the spot where the square construction with the two lateral flights of steps is indicated. The third, fourth and fifth columns of the Temple of Castor, counting from the end, are the three still *in situ*.

The ancient marble plan of Rome, of which this fragment formed part, was, it is now sufficiently well known, originally situated on the exterior of a large brick wall forming the posterior portion of the group of — what have hitherto been regarded as three — edifices, one circular and two rectangular, converted by Pope Felix IV, A. D. 526, into a Basilica devoted to Saints Cosma and Damiano; and it is an interesting coincidence that almost simultaneously with the discovery of this fragment of the plan, Signor Lanciani has succeeded in completely solving the mystery that has shrouded until now the two posterior edifices and, until recently, all three of these "temples," as they have been called, standing in a block together; and at the same time he has demonstrated why this marble plan was graven and placed on the wall at the foot of which its remains were found. The circular building facing on the Sacra Via, and called as lately as 1867 the Temple of Remus, was in that year, on the conclusive evidence of drawings by Pirro Ligorio, with annotations by Pauvinius, found in the Vatican library by that learned student of Christian archæology the Commendatore G. B. de Rossi, proved to be the temple dedicated to Romulus, the son of Maxentius; but he could obtain no information regarding the two in its rear beyond the fact that Pauvinius mentions the furthermost as *Templum Urbis Romæ*, without giving any explanation as to what this *Templum Urbis* might be or when or by whom it was dedicated. There were many other plans, drawings, and sketches in Codex 3,439, besides those of which De Rossi made such good use, but there was nothing to show what edifices they referred to, and, moreover, it has since been ascertained that they were so misplaced when they were bound together in the time of Clement X as to render them incomprehensible to even the most acute students who were not possessed also of a sound practical knowledge of architecture. In the course, however, of a very close study which Signor Lanciani — with the view to obtaining all the light possible to assist him in the excavations he is directing — has made, not only of the drawings in the Vatican Codices, whether by Pirro Ligorio or others, but also of those in the Barberini and the Florence libraries, and especially of the collection of Ligorio's drawings in the Bodleian Library at Oxford, he has discovered, among much other valuable and available information, a plan among the Bodleian drawings. This, on comparison with another plan and a sectional elevation in Codex 3,439, proved beyond a doubt — the one throwing light on the others — that all three referred to the ancient edifices Felix IV converted into the body of the Basilica of Saints Cosma and Damiano, for which he utilized the Temple of Romulus as the vestibule. From the information afforded by these drawings, by the excavations recently made down to the ancient level on the east side of the basilica, by historical records, and by inscriptions existing, all taken together, Signor Lanciani has now established with certainty that the supposed two temples built square against each other like a pair of semi-detached houses are in fact but one edifice, much disguised by restorations and alterations, originally the library mentioned by Aulus Gellius and by Trebellius Pollione as having been built by Vespasian on his Forum Pacis. But, it is asked, what could have been the reasons which induced Septimius Severus and Caracalla to affix their marble plan to the wall of a library, and that not one of the most celebrated in the city. All writers are agreed that that plan was placed there not by chance, but because it had an intimate connection with the use, purpose, and name of the edifice upon which it was displayed. That edifice could therefore be no other than what one may call the Imperial surveyor's record office for the preservation of the plans and details of plans, specifications, descriptions, and records connected with those extensive works carried out by Vespasian, which involved an entire revision of the plan of the city and almost the rebuilding of it. "When he took the reins of empire after the Neronian and Vitellian catastrophes Rome was still '*deformis veteribus incendis atque ruinis*'" (Suetonius, Vesp. 8). The city was in a state of both material and administrative disorganization. It was found necessary to survey and define the limits of those areas which were public property, for private persons had usurped possession in many places; to finish, catalogue, and measure the new streets laid out by Nero, and to force owners to rebuild or yield the space to others willing to do so. To all these public works of rebuilding, restoration, and reorganization must be added those initiated by Vespasian, his Temple and Forum of Peace, the Colosseum, and others; and in the same way in which the *forma Urbis* of Agrippa and Augustus, defined in the year 746 of the city and solemnly sanctioned in the Calends *Augustis* of the year following, was in all probability publicly exhibited in the portico of Vipsania Polla, nothing is more likely than that Vespasian displayed the plan of the new Nero-Vespasian city in his Forum of Peace and on the wall of that Public Works office built on it, where, as in a library, the important documents, records, and plans connected with the new city were placed. This, which was in substance conjectured and sustained on valid arguments by Jordan and by De Rossi some time ago, must now be considered as definitely established through the researches and discoveries Lanciani has made in the libraries *pari passu* with the work of the pick and the shovel. In A. D. 191 there befell the great fire in the reign of Commodus. It burst out so suddenly and with such destructive violence that it was not even possible to save the more precious among the masterpieces of art in the Temple and Forum of Peace. In such circumstances the Public Works archives in the library must have perished also, and hence the necessity for the immediate replacing of the documents required by a department which was indispensable to the city government of the capital of the world; for the engraving of a new plan, of which comparatively only a few valuable fragments now remain to us; and for those restorations in the much injured walls of the building which have led to the supposition that it was two separate edifices. Moreover, the period between the accession of Septimius Severus, A. D. 193, and the year 211, when this, as we must suppose, second marble plan was finished, was one of the most brilliant in the architectural history of the city.

The number of edifices built and restored by Severus and Caracalla was so great that it is difficult to understand how it was possible for those two emperors to have accomplished so much. Spartianus says, "Romæ omnes ædes publicas quæ vitio temporum labebantur instauravit, nusquam prope suo nomine adscripto, servatis tamen ubique, titulis conditorum;" and it is easy to understand that Severus and Caracalla must have felt a personal satisfaction in hastening the completion of the plan, which was to record also the grand works of restoration they had accomplished, and the splendid edifices with which they had additionally embellished the city, which now for the first time was called *Urbs sacra Augustorum Nostrorum*. What the official denomination of this building may have been Signor Lanciani does not undertake to determine; but, while it could not have been a temple in the architectonic sense of the word, he agrees with Jordan and De Rossi in conjecturing that, as a place *augurio consecratum*, it was called the *Templum sacræ Urbis*, from, that is, the time of Severus. As originally constructed by Vespasian, it was built of squared blocks of stone, *opus quadratum*, faced with marble; and Ligorio's plans show that its façade, which fronted the north-east, was adorned with a colonnade; that the plan was placed on the north side wall; and that there was also a doorway at the back — *i. e.*, that which has recently been cleared from the accumulation lying before it.

The injury caused by the fire of 191 was so great that it was necessary to rebuild the wall on which the plan was situated, and half of that which, of the Basilica of Saints Cosma and Damiano, is the side wall facing the east, but was the back wall of the edifice itself. This was done by Severus in brickwork: hence — taken together with the internal division thrown across at about that point by Felix IV in forming the apse of his Basilica — the reason why this edifice was supposed to be two built flat up against each other. The Ligorian drawings show, however, that there were considerable remains of the original construction of *opus quadratum* visible in his day in the lower part of that portion of the back wall rebuilt by Severus in brick. An interesting front view, drawn by Du Perac, of the Basilica of Saints Cosma and Damiano, standing in a deep hollow caused by the ruins buried in accumulation piled up around it, before Urban VIII, in 1632, took down the ancient doorway, and raising the floor of the building some twenty feet placed it on a higher level, shows distinctly the *opus quadratum* stone-work then still existing of the corners of that end of what was supposed to be the brick building where it is in immediate contact with the round mole of the Temple of Romulus. There is documentary evidence to show that this stone-work was removed by Urban VIII when he altered the level of the floor of the Basilica, and was utilized in the building of the Church of St. Ignatius, and that concessions for removing the stone-work from the Basilica were granted in 1461, 1462, and 1583; but for these and for the great weight of evidence Signor Lanciani adduces in proof of his discovery I must refer archæologists to his exhaustive paper on the subject in the January-March number of the *Bullettino* of the Municipal Commission of Archæology, contenting myself with this brief sketch, culled from it, of the important result he has obtained.

I may mention that in order to make the annexed copy of the fragment of the marble plan as large as possible, I have placed the extreme point on the left and the ragged edge on the right beyond the margins.

PREPARING DRAWINGS FOR A SUB-CONTRACTOR.

July 13, 1882.

To the Editors of the American Architect: —

Dear Sirs, — Will you kindly answer the following question through the columns of your paper? Is it proper for an architect to charge a sub-contractor a proper sum for a duplicate set of plans, made at the sub-contractor's request, the architect having already furnished a complete set for the *general contractor* who has contracted for the whole work? By giving your opinion on the above you will oblige very much. Subscriber.

[It is not generally wise for the architect to take pay from a contractor or sub-contractor for drawings or anything else. We know that it is not unusual for sub-contractors to ask for a set of plans for their own convenience, and as the architect is certainly not bound to furnish them for nothing, an arrangement by which he allows his office-boys to trace them, and charges the bare cost, is frequently and innocently made, out of pure willingness on the architect's part to accommodate the contractors, and thus indirectly his client. Nevertheless, we have known offers of disproportionate remuneration to be made by designing contractors for such service, and although we are glad to say that we have never known them to be accepted, any such relations between architects and contractors are objectionable. The party who should really pay for extra drawings is the client. If the architect thinks that the furnishing of a second set of tracings would forward his employer's business, he ought to be at liberty to make them at his discretion, and charge them to the person so benefitted; and we think that this is a recognized custom in France, and to some extent in England. — Eds. American Architect.]

NOTES AND CLIPPINGS.

The Number of Visitors to South Kensington Museum. — On the 22d of June, 1882, was completed twenty-five years since the Museum was opened. The number of visitors during the time has been 21,077,654 — morning, 14,676,155; evening, after 6 P. M., 6,401,499; total, 21,077,654.

Asphalt used in the Preservation of Wood. — The increasing cost of wood in this country has led to a great number of experiments in preserving from decay all kinds of wooden structures exposed to the weather. Among the more recent plans suggested is one for impregnating wood with asphalt, combined with some antiseptic material. The finished wood, ready to be put together, is first submitted to heat to drive out the moisture, and is then placed in a hot bath composed chiefly of asphalt and carbolic acid. On cooling, the solvent of the asphalt evaporates, leaving a skin or coating of the asphalt on the surface of the wood that resists water and keeps the antiseptic material securely locked within the pores of the wood. The exterior of the wood presents a smooth, black surface that does not need to be painted. — *Iron Age.*

One Method of Cistern-Building. — The following directions for the construction of a cistern appears in one of our exchanges, and is likely to be of interest to our readers. The directions are given in answer to a question from a correspondent, who is advised to dig his cisterns through the solid ground, leaving the walls smooth. They are then to be plastered with good mortar, composed of cement and sand. If brick be used, the roots of trees penetrate the interstices and crack the plaster on the inside of the cistern, and of course cause it to leak. Test the mortar before using by moulding a brick of it, let it dry, and if it is as hard as a stone it is of the proper consistency. If dried in the shade, or sprinkled occasionally to prevent drying too rapidly, it will not crack. If there is no plastering to be done in the process of digging, I would suggest, if the cistern is in the yard, that the shelter be first constructed, to prevent interruption from rain. The only brick that ought to be used are what are required to form the arch, which must be commenced by an abutment cut around the circumference of the cistern. The arch should be as flat as is consistent with strength. An orifice about three feet in diameter should be left in the centre, and the neck should be built up about two and a half feet and neatly covered, and a chain pump erected thereon. I say chain pump because it keeps the water agitated and prevents stagnation. Let the water run through a reservoir filled with charcoal and sand. Cistern water for drinking purposes is best caught in winter. Cisterns are almost universal in the cotton States. One may be constructed at the barn to water the work horses, in the garden to refresh the plants in time of drought, and in or near the kitchen; but have no hole for the entrance of rats or snakes, or any kind of insects, and the water will be pure and good.

"Mysterious" Boiler Explosions. — The *Locomotive* recently received a communication from a well-known dealer in machinery, giving a striking illustration of the usual causes of many of our so-called "mysterious" boiler explosions. The gentleman says: A gentleman applied to us for a "cheap boiler," one that "would be good for two pounds or so." The only one we had had just been tested at 150 pounds to the square inch, but that was "too good." He said he once bought one for $30, and ordered a young man in his employ to get up steam in it. He went away and was gone longer than he expected, and on his return he found a raging fire in the furnace, a pot filled with bricks on the safety-valve lever, and a very much frightened young man hanging on to the same lever with all his weight and both hands. The boy said, in explanation, that he didn't know anything about a boiler, but he supposed that if he "let any steam get out of that thing on top it would blow him and the shop to smithereens." "Ah!" said he, "I'm glad ye came, for I couldn't howld it much longer." It evidently came very near being another "mysterious" explosion.

Systems of Fortification. — Many systems of fortification have been invented by different engineers. The principal ones are Vauban's first, second and third systems; the French modern system, Cormontaigne's, Carnot, Coehoorn, Montalembert's, and the German system. Theoretically, the works of defence are assumed to be built upon a level plain, but in practice it is the duty of the Royal Engineers to arrange their fortresses so as to adapt them to the defence of the position they are intended to protect. Vauban uses bastions about four hundred yards apart, encircled by ditches and a path called a "covered way," where the sentries are posted, the whole being screened by a sloping bank of earth called a glacis. He invented ricochet fire — that is, the destructive art of firing shot or shell into the forts so as to strike inside, and then bound along, destroying all in their path. The French modern system is merely an improvement on Vauban's, effected by having large ravelins or projecting works pushing themselves forward upon the position it is intended to protect; and Cormontaigne made some modifications on both systems. The main principles of Carnot, a distinguished French engineer officer, were to fire perpetually from mortars at his enemy, and encircle his town with thick masonry walls, pierced with loopholes and protected, by being in the ditch, from distant fire. Coehoorn, a Dutch engineer, flourished in the seventeenth century and invented a small mortar, long used in the British service for throwing small shot and shell; but the great credit attached to his name is due to his discovery that situations having aquatic sites must be defended on different principles from those on dry ones. He defends his town by placing a dry ditch within a wet one, and the fortresses of Breda, Namur, and Bergen-op-Zoom are good examples of his system. Montalembert advocated a system of masonry for protecting his cannon, and he armed his fortresses with such a number of guns that their heavy concentrated fire would effectually keep a besieger at a distance. Some of his ideas have been utilized in the fortification of Coblenz. The German system has been much used on the continent. Forts Alexander, Kaiser Franz near Coblenz, Rastadt, Antwerp, Wesel, and Erfurt are fair examples, and its principles have been adopted in many of the new works in the United kingdom. Its conspicuous features are the enclosing of a given space by the shortest possible line of works; the placing of isolated defensible works in prominent situations, defending the ditch by powerful detached towers called *caponnières;* placing casemented barracks, heavily armed, in the vital points of the position, and making free use of mining some portions of the ground round the fortress, so that if an enemy attempted to establish himself too near he could readily be blown up. The system has the advantage that a small force can defend it, and the works, being concentrated, are well under the supervision of the commander. — *Chambers's Journal.*

Expansion and Contraction of Iron. — Sir Edmund Beckett, in a letter to the *English Mechanic and World of Science*, mentions a very curious fact — if it be a fact — in connection with the late Mr. Scott Russell's great iron cone or "dome" of the Vienna Exhibition, which is 360′ wide, and therefore covers six and a half times as much ground as the domes of the Pantheon, St. Peter's, or Florence Cathedral, and three times as much as the Albert Hall (185′ x 220′). The gentleman who was Mr. Scott Russell's resident assistant in building it told Sir Edmund Beckett that they were at first uneasy about the expansion and contraction being likely to keep the pillars on which it stands continually leaning outwards and inwards to a serious extent; for according to the tabular expansion of iron, it would vary half an inch in a radius of 180′ between many days and nights, and an inch between summer and winter, but that Scott Russell came to the conclusion that it would not, and that they did find no motion at all in the pillars, and further that it had been found by experience that the rollers which were carefully provided for all the earlier tubular bridges to expand and contract upon never act at all, and that other such bridges do as well without any. Sir Edward Beckett confesses all this sounded to him surprising, and still is so, and probably it will be to most people; but it is never of any use to disbelieve experience for theories, if it is certain. The result is so important to all who have to do with iron beams and rods in holding buildings together, that it is very desirable that we should know how the fact really is, and then (but not before) to investigate some satisfactory theory about it. Railway engineers must know by this time whether it is necessary to allow any play in the fish-joints of rails, or between the ends of the rails if laid down in cold weather, though, to be sure, the length of a rail is quite insignificant compared with the width of the Vienna dome or the Menai bridge.

Church-Building Societies in England. — The "Incorporated Church Building Society" of the Church of England is one of many societies all engaged in the same work. Its income last year was about $60,000, but the report shows that its achievements have been out of all proportion to the slenderness of its means. It has built, as *The Churchman* points out, or encouraged the building of, thirty-one new churches, and has assisted the rebuilding of nine. "It has also made grants for enlarging or increasing the accommodations in sixty-seven others. This in one year. But the £12,000 that passed through its treasury was only the nucleus of this crystallization. Since 1818 the society has received and disbursed something less than £900,000; but it has stimulated the public to an expenditure of something more than £11,000,000. It takes credit, therefore, for the erection of 1,893 new churches and chapels, for the improvement of 5,224 old edifices, and for the provision of 1,027,870 additional sittings. The society includes within the sphere of its operations all England and Wales. Wherever it discovers a remote corner in which a mission-chapel is needed, it builds that chapel or helps to build it. There are several English church-building societies which have a common ancestry in "The Bishop of London's Fund." When, some years ago, East London was cut off from the diocese of London and given to Rochester, "The Bishop of Rochester's Fund" took up the good work and carried it on. Then came the new Diocese of St. Albans, and a "Bishop of St. Alban's Fund" — and now in North London there is a "Bishop of Bedford" and a "Bishop of Bedford's Fund." These funds, in their several districts, are engaged in a common work. They promote the building of churches; they provide incomes for the maintenance of more clergy; they found or keep up church schools The Church of England is awake and alive again, as if from the dead. Church extension is in active progress in every direction.

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.*]

260,359. RATCHET-DRILL. — Charles E. Billings, Hartford, Conn.
260,361. LOCK-HINGE. — John L. Bixby, Arlington, Mass.
260,362. BORING-MACHINE. — Christopher D. Blevens, Richmond, Ky.
260,371. STATIONARY WASH-STAND. — Patrick Connolly, Brooklyn, N. Y.
260,395. CUTTING-PLIERS. — Timothy D. Hotchkiss, Higganum, Conn.
260,396. VISE. — Edgar O. Hunt, Melrose, Mass.
260,401. TUBE-WELL. — Ambrose N. Lane, Rochester, N. Y.
260,404. HAND VISE AND WRENCH. — Peter S. Meabon, Frankfort, Mich.
260,413. COMBINED BLOWER AND DAMPER FOR GRATES. — George W. Ranson, Richwood, Ky.
260,422. FIRE-ESCAPE. — Andreas Röhmer, Foster's Crossing, O.
260,424. MACHINE FOR ORNAMENTING STONE. — David Shortsleeve, Rutland, Vt.
260,437. HINGE. — Henry A. Wilbur, Cambridge, Mass.
260,479. WRENCH. — Edward P. Hand, Newark, N. J.
260,497. AUGER. — William L. Parmelee, Ansonia, Conn.
260,511. MANUFACTURE OF ARTIFICIAL STONE AND MARBLE. — John W. Watts, Baltimore, Md.
260,533. APPARATUS FOR FORMING UNDERGROUND DRAINS, ETC., IN CEMENT. — William M. Campbell, Mount Clemens, Mich.
260,546. MANUFACTURE OF HYDRAULIC LIME AND HYDRAULIC CEMENT. — Edward J. De Smedt, Washington, D. C.
260,559. ARTIFICIAL STAINED GLASS. — Jonathan O. Fowler, Jr., New York, N. Y.
260,563. SEWER-TRAP. — Henry B. Greenleaf, Boston, Mass.
260,564. CHIMNEY-VENTILATOR. — Hermann Hahn, Schönberg, Mecklenburg-Strelitz, Germany.
260,602. WATER-CLOSET PAN. — Sidney R. Onstead, Brooklyn, N. Y.
260,609. MONKEY-WRENCH. — Charles Richards, Cleveland, O.
260,622. BLIND-SLAT ADJUSTER. — Geo. W. Springsted, New York, N. Y.
260,627. FIRE-ESCAPE. — Joseph H. Townsend and Edward A. Dubey, Brooklyn, N. Y.
260,639-641. FIRE-EXTINGUISHER. — John W. Bishop, New Haven, Conn.
260,649. SHUTTER-FASTENER AND ALARM. — Isaac Brooke, Royer's Ford, Pa.
260,666. PLUMBER'S TRAP. — Patrick Connolly, Brooklyn, N. Y.
260,675. AUTOMATIC HATCHWAY-DOOR. — Edward M. Hackett, New York, N. Y.
260,693. LATCH. — Frederick J. Lee, Oswego, Kan.
260,722. FIRE-ESCAPE. — Charles P. Willson, Summit Point, W. Va.

SUMMARY OF THE WEEK.

Baltimore.

IMPROVEMENT.—Addition and new front to house, No. 535 W. Baltimore St.; cost, $2,500; Mr. Wm. F. Weber, Architect.

BUILDING PERMITS. — Since our last report twenty-seven permits have been granted, of which the more important are as follows: —

S. A. Marchand, 4 three-st'y brick buildings, Fairmount Ave., between Castle and Washington Sts.

Mrs. A. Schimp, two-st'y brick building, Mount St., n of Patterson Ave.

National Exchange Bank, five-st'y brick building, with basement and sub-cellar, on Sharp, Liberty and German Sts.

Richard Courtney, one-st'y brick building and two-st'y brick stable, in rear of s e cor. Charles St. and North Ave.

Philip Sadtler, 2 three-st'y brick buildings, s e cor. Little Clay and Eutaw Sts.

Wm. Martin, 2 three-st'y brick buildings, Saratoga St., e of Stricker St.

Mrs. James McCurley, three-st'y brick building, s e cor. Liberty and Lexington Sts.

Archibald Teal, 3 two-st'y brick buildings, Madeira Alley, between Pratt and Gough Sts.

Archibald Teal, 3 three-st'y brick buildings, Patterson Park Ave., n of Gough St.

Adam Sultan, two st'y brick building, Washington St., between Fayette and Orleans Sts.

E. T. Codd, one-st'y brick building, in rear of s w cor. Caroline and Aliceanna Sts.

Wm. E. Whitson, 2 three-st'y brick buildings, Paca St., between Columbia Ave. and the Bend.

E. W. Haviland, 2 two-st'y brick buildings, Liberty Road, between Stricker and Gilmor Sts.

Chas. H. Mickelman, 3 two-st'y brick buildings, Burke St., n of Aliceanna St.

Henry Westfall, 2 two-st'y brick buildings, on alley in rear of Byrd St., bet. Barney and Heath Sts.

Elizabeth Harwood, three-st'y brick store and dwell., Franklin St., bet. Paca and Jasper Sts.

Ann G. Hellwing, three-st'y brick building, Eastern Ave., bet. Ann and Regester Sts.

Ludwig Humirichausen, 6 two-st'y brick buildings, Clement St., e of Johnson St.

George Humirichausen, two-st'y brick building, Clement St., e of Johnson St.

Jacob Seeger, 3 three-st'y brick buildings, Frederick Ave., bet. Calverton Road and Brown's Lane.

Barney Kirwin, three-st'y and mansard roof brick building, Mosher St., in rear of s w cor. Linden Ave. and Mosher St.

Emory M. E. Church, three-st'y brick building, Pa. Ave., bet. Dolphin and Hoffman Sts.

John R. Mitchell, one-st'y brick building, 15' x 60', Washington St., s of Aliceanna St.

Henry McCaffray, three-st'y brick warehouse, Lexington St., bet. Park and Liberty Sts.

Boston.

BUILDING PERMITS. — *Wood.* — *Centre St.*, rear No. 6, Ward 21, for Moses H. Libby, 2 two-st'y dwells., 17' x 34'; W. A. Low & Son, builders.

East Second St., Nos. 649-651, Ward 14, for Annie Sullivan, three-st'y dwell. and store, 21' x 30'; John Nevens, builder.

Ashley Ave., near Breed St., for Margaret A. McLean, dwell., 18' x 25'; A. & J. McLaren, builders.

Orient Heights, for Margaret A. McLean, dwell., 18' x 25'; A. & J. McLaren, builders.

M St., near East Seventh St., Ward 14, Wm. T. Eaton, three-st'y mansard dwell., 20' x 30'; Wm. T. Eaton, builder.

Leonard St., near Crayton St., Ward 14, 3 two-st'y dwells., 24' x 34', for J. W. Hoxie; Wm. T. Eaton, builder.

Orange St., near Central Ave., Ward 23, for Cornelius J. Van Hondt, dwell., 18' x 25'; Mr. Crosby, builder.

Chestnut St., No. 10, Ward 5, for Francis Raynes, three-st'y dwell., 26' x 23' and 29'.

Brick. — *East First St.*, opposite N St., Ward 14, for City of Boston, two-st'y dwell., 33' 10" and 39' 6" x 45' 6"; Dady & Flint, builders.

House of Correction Grounds, for City of Boston, two-st'y dwell., 33' 10" and 39' 6" x 45' 6"; Dady & Flint, builders.

Summer St., Nos. 64-68, Ward 2, for Samuel Goldenberg, three-st'y tenement, 40' x 60'; Fessenden & Libby, builders.

Marginal St., rear of, next B. R. R. & L. R. R., for Conrad Decher, storehouse, 25' x 40' and 16' x 40'; Frame & Patten, builders.

O St., rear of No. 121, Ward 14, for Wm. G. Doe, 2 three-st'y dwells., 20' x 30'; J. H. Wigglesworth, builder.

Savin St., near Blue Hill Ave., Ward 21, for Gustavus Johnson, two-st'y dwell., 35' x 30'; H. J. Bartlett, builder.

Locust St., rear of No. 5, Ward 15, for Alpheus A. Fleming, stable, 16' x 16'; G. Merz, builder.

Howard St., rear of, near School St., Ward 24, for Walter L. Dennis, stable, 22' x 38'.

Amory St., opposite Codman Ave., Ward 23, for Charles B. Wilston, two-st'y dwell., 20' and 24' x 32'; Wm. Morse, builder.

Mosely Ave., rear No. 23, Ward 24, for Catherine Sullivan, carriage-house, 19' x 24'; A. J. Sullivan, builder.

Newton Pl., near Eaton Court, Ward 21, for Owen Reynolds, two-st'y dwell., 22' x 32'; R. D. Ward, builder.

East Third St., near N St., Ward 14, for Michael W. O'Brien, two-st'y and mansard dwell., 24' x 34' 10"; ell, 15' x 20'; Jas. Welch, builder.

Boylston Ave., near Green St., Ward 23, for Fred Kohllipp, 2 three-st'y dwells., 20' x 30'; Jacob Luippold, builder.

Sagamore St., near Savin Hill Ave., Ward 24, for P. S. Sheane, dwell., 25' x 28'; Wm. J. Jobling, builder.

Brooklyn.

BUILDING PERMITS. — *Greene St.*, n s, 150' e West St., three-st'y frame tenement; cost, $3,800; owner, John Mill, 190 Ninth Ave., New York City; architect and carpenter, Albert Lange; mason, J. Reed.

Quincy St., n s, 100' w Sumner Ave., 4 two-st'y brownstone dwells.; cost, each, $6,000; owner, A. K. Buckly, 180 Kosciusko St.; builder, A. Walker.

Adelphi St., w s, about 100' s Fulton St., five-st'y brick factory; cost, $10,000; owners, R. Graves & Co., on premises; architect, E. F. Gaylor; mason, T. Gibbons.

Franklin Ave., s e cor. Atlantic Ave., 2 one-st'y brick stores; total cost, $2,500; owner, architect and builder, Philip Sullivan, 252 Patchen Ave.

Central Ave., n w cor. Forrest St., 4 three-st'y brick tenements and store in corner; total cost, $20,000; owners, S. Liebnann's Sons, Forrest St., cor. Bremen St.; architect, Th. Engelhardt; mason, Geo. Lehrian.

Henry St., w s, 50' n Orange St., four-st'y brick store and flat; owner, Edward Phelps, 53 Orange St.; architect, M. J. Morrill; builders, H. D. and W. A. Southard.

Park Ave., s s, 25' e Steuben St., three-st'y brick store and tenement; cost, $4,500; owner, William Plath, on premises; architect, J. D. Reynolds; builders, J. Rickard and T. Donnelly.

Nevins St., No. 175, between Wyckoff and Warren Sts., four-st'y brick tenement; cost, $5,000; owner and architect, James McGarry, 491 Warren St. builder, T. McCoy.

Lefferts Pl., n s, 320' e Grand Ave., 3 three-st'y freestone dwells.; cost, each, $6,000; owner, architect and builder, B. Linikin, 216 Greene Ave.

Willoughby Ave., n s, 450' w Marcy Ave., 3 two-st'y brownstone dwells.; cost, each, $4,500; owner, architect and builder, David Weild, 358 Gates Ave.

Third Ave., w s, 50' n Twenty-fifth St., 3 three-st'y brick stores and dwells.; cost, $3,300 each; owner and architect, Thomas Pitbladdo, 213 Seventeenth St.; builders, W. & T. Corigan.

Bond St., n w cor. Second St., three-st'y brick dwell.; cost, $3,000; owner and builder, Chester Bedell, 337 Smith St.; architect and carpenter, Theo. Pearson; mason, Wm. Rountree.

Willoughby Ave., n s, about 80' e Throop Ave., two-st'y frame dwell; cost, $8,000; owner, Mrs. A. A. Comstock, 274 St. James Pl.; architect, M. J. Morrill; builder, Jas. Lock.

Moore Ave., No. 87, n s, 100' e Graham Ave., three-st'y frame tenement; owner, Jacob Kiefer, 152 Graham Ave.; architect, Th. Engelhardt; builder, J. Hofgesang; carpenter, not selected.

Central Ave., s e cor. Myrtle St., 2 three-st'y frame tenements; cost, total, $8,000; owner and architect, A. Sedlmeyer on premises; architect, Geo. Hillenbrand.

Bushwick Ave., e s, 125' n Manhattan Ave., 25' x 46', three-st'y frame tenement; cost, $4,000; owner, architect and builder, Wm. Snowden, 294 Ewen St.

Nevins St., cor. Sackett St., one-st'y brick building for storing; cost, $2,500; owner, Fulton Municipal Gas Co., 342 Fulton St.; architect, J. F. Harrison; builder, R. Deeves.

Nevins St., cor. Sackett St., one-st'y brick purifying-house; cost, $20,000; owner, the Fulton Municipal Gas Co., 342 Fulton St.; architect, J. F. Harrison; builder, R. Deeves.

Park Ave., n s, 105' e Marcy Ave., 6 two-st'y frame dwells.; cost, each, $2,500; owner and builder, Geo. Loeffler, 82 Tompkins Ave.; architect, M. Engelhardt.

Chicago.

BUILDING PERMITS. — Mrs. Mary May, two-st'y and basement brick store and dwell., 24' x 54', 846 North Clark St.; cost, $4,500.

U. P. Smith, three-st'y brick dwell., 44' x 50', 3261 Cottage Grove Ave.; cost, $8,000.

Theodore Rhinehart, two-st'y brick dwell., 21' x 60', 149 Larrabee St.; cost, $2,500.

Peter Kimmey, two-st'y brick dwell., 22' x 40', 496 West Congress St.; cost, $2,500.

John Kuba, two-st'y and basement brick dwell., 22' x 50', 2521 Hanover St.; cost, $3,000.

H. Smith, two-st'y brick dwell., 22' x 50', 555 Warren Ave.

John B. Mallers, two-st'y and basement brick dwell., 40' x 48', in Groveland Park; cost, $7,500.

Dr. Mueller, two-st'y and basement brick dwell., 24' x 60', 724 Twenty-first St.; cost, $5,000.

Lawson Varnish Co., one-st'y brick factory, 50' x 80', Kinzie St., near Bixby Place; cost, $3,500.

Geo. Hoefert, two-st'y brick dwell., 22' x 45'; Washtenaw Ave., near Jackson St.; cost, $2,500.

Peter Adler, three-st'y and cellar brick dwell., 24' x 57', 272 East Huron St.; cost, $8,000.

Le Grand Smith, three-st'y and basement brick flats, 50' x 80'; Illinois St., near Cass St.; cost, $15,000.

Mrs. E. W. Evans, two-st'y brick dwell., 23' x 43', 59 Page St.; cost, $3,000.

Armory Association, First Regiment Cavalry, armory building, 125' x 200', on Michigan Ave., between Madison and Monroe Sts.; cost, $25,000.

J. Murphy, three-st'y and basement brick dwell., 21' x 60', 284 Hurlbut St.; cost, $4,500.

Mrs. A. Fleming, two-st'y and basement brick dwell., 22' x 50', 89 Evergreen Ave.: cost, $4,000.

W. K. Thomas, two-st'y and cellar brick dwell., 22' x 53', 260 West Congress St.; cost, $5,000.

D. O'Connell, two-st'y brick dwell., 23' x 80', 3452 Halsted St.; cost, $3,500.

M. O. Flaherty, two-st'y brick dwell., 22' x 56', 700 Thirty-first St.; cost, $4,000.

Wm. Walh, three-st'y and basement brick store and dwell., 577 Blue Island Ave.; cost, $15,000.

S. C. Wheedon, two-st'y and basement brick dwell., 32' x 46', 987 and 989 Wilcox St.; cost, $3,500.

Cincinnati.

THE MANUFACTURE OF BUILDING MATERIAL. — The forthcoming report of the Builders' Exchange is now going through the press, and the essential portions of it are furnished for publication. It shows that the amount of manufactured material used for building purposes during the past year aggregated from $12,000,000 to $13,000,000 in value. Such material only is included as is manufactured in Cincinnati. The increase of the product of last year is about fifteen per cent. This amount it is hardly probable will be equalled another year, for the reason that the strike of the building trades has seriously interfered with the operations of the present summer. It is observed that the character of the buildings in process of erection has improved. In the city proper the old two and three-story buildings are giving way to substantial six and seven story structures. Blocks of French flats have been found to pay a high rate of interest, and capital is being put freely into them. — *New York Times.*

ELEVATOR BIDS. — The bids for the Court-House elevators were as follows: William Miller, for elevators and towers combined, $8,650, and for elevators only, $5,285, H. J. Reedy, elevators alone, $5,650; James L. Haven & Co., elevators alone, $5,865; N. M. Dennis, elevators alone, $5,143; Malloy bid for the tower alone $3,365, which with Dennis's bid for the elevators makes the two bids together $8,408, or $142 less than any other bids. The Commissioners awarded to William Miller, the only bid for elevators and towers combined.

BUILDING PERMITS. — Since our last report the following building permits have been issued: —

W. W. Scarborough, addition to two-st'y brick dwell., Seventh and Vine Sts.; cost, $6,000.

Geo. Heeder, three-st'y brick dwell., No. 748 Vine St.; cost, $5,800.

St. Xavier's Church, to rebuild the steeple destroyed by fire; cost, $10,000.

Peter Frantz, two-st'y brick dwell., Spring Grove Ave.; cost, $5,000.

Chas. S. Sargeant, alteration to store on Fourth St. near Vine St.; cost, $3,000.

Wm. C. Huntington, addition to three-st'y brick dwell., Elm St., near Fifth St.; cost, $2,000.

Baptist Church, one-st'y frame dwell., cor. Dayton and Whitemore Sts.; Chas. Crapsey, architect; cost, $2,500.

N. Wells, three-st'y dwell.; Stoers St., near Baum St.; cost, $4,500.

Nich Mey, 2 three-st'y brick dwells., Gest St., near Mill Creek; cost, $10,000.

Nine permits for repairs; cost, $5,400.

Cleveland.

CHURCH. — A brick church on Aaron St., for the Third Evangelical Reformed Church Society: cost, $8,500; Coburn & Barnum, architects; Geo. King, builder.

HOTEL. — A brick hotel, cor. St. Clair and Seneca Sts., for Mr. Hawley; cost, $22,000; N. P. Charlott, architects; Jas. Philips, builder.

STORES. — A brick block, cor. St. Clair and Academy Sts., for Mr. Scofield; cost, $100,000; Levi Scofield, architect; Kane & Brooks, builders.

A brick block on St. Clair St., for Mr. Scofield; cost, $30,000; Cudell & Richardson, architects.

A brick block on St. Clair St., for Worthington & Co.; cost, $75,000; Cudell & Richardson, architects.

A brick block on Champlain St., for Wm. Body; cost, $15,000; Cudell & Richardson, architects; Philips & Doyle, builders.

A brick block on Euclid Ave., for Cobb & Bradley; cost, $50,000; Smith & Meyers, architects.

TENEMENTS. — A brick block of 6 tenements, for L. E. Holden, on Stearns St.; cost, $12,000.

HOUSES. — 2 frame dwells. on South Logan St., for J. M. Slaght; cost, $5,000.

A frame dwell. on Oakdale St., for Wm. Ormiston; cost, $3,000.

A frame dwell. on Oakdale St., for Mrs. B. Hewitt; cost, $4,000; W. G. Rattan, builder.

A frame dwell. on Bolton Ave., for A. G. Harbaugh; cost, $4,000; Robt. Quigley, builder.

A frame dwell. on East Prospect St., for George Lawrence; cost, $3,000.

A frame dwell. cor. E. Prospect and Lincoln Sts., for Jno. W. Coy; cost, $3,800; L. G. Middaugh, builder.

A frame dwell. cor. E. Prospect and E. Madison Sts., for Col. Pickering; cost, $2,600.

A frame dwell. on Madison Ave., for Wm. Sabine; cost, $3,000; Geo. Rattan, builder.

A frame dwell. on Geary Ave., for Julius Schulz; cost, $2,900.

A brick dwell. on Euclid Ave., for C. C. Canfield; cost, $5,000; F. Uhl, architect.

A frame residence on Strator Ave., for Wm. McReynolds; cost, $3,500.

A frame residence on Fairmount St., for C. W. Torry; cost, $3,000.

A frame residence for Wm. Marsh, on Stearns St.; cost, $2,000.

A frame dwell. for George Rattan, on Stearns St.; cost, $3,500.

A frame dwell. on Mayfield St., for Theo. Bates; cost, $3,700; C. O. Arey, architect; Hillborn & Marsh, builders.

A frame dwell. on Fairmount St., for C. Davis; cost, $3,600; Coburn & Barnum, architects; L. G. Middaugh, builder.

A frame dwell. on Fairmount St., for M. King; cost, $4,000.

A frame dwell. cor. Doan and Wilbur Sts., for A. Wilbur; cost, $2,900.

A frame dwell. on Republic St., for G. C. Ashman; cost, $3,500.

A frame dwell. on Republic St., for Chas. Lewis; cost, $3,000.

A frame dwell. on the "Ridge," for J. W. Heisley; cost, $3,800; Coburn & Barnum, architects.

A brick residence on Euclid Ave., for J. H. Ammon; cost, $18,000; H. L. Blair, builder.

A brick residence onEuclid Ave., for N. C. Brewer; cost, $12,000.

2 brick dwells. on Euclid Ave., for McBride Bros.; cost, $34,000; Coburn & Barnum architects.

A frame dwell. on Fourth Ave., for R. S. Kennedy; cost, $3,000; Smith & Meyers, architects; Kennedy & Lathold, builders.

2 frame dwells. cor. Scoville and First Aves., for Jas. Parker; cost, $4,600; Smith & Meyers, architects.

A stone dwell. cor. Euclid and Giddings Aves., for S. J. Miller; cost, $20,000; Jos. Ireland, architect.

A frame dwell. on Madison Ave., for T. M. Irvine; cost, $5,000; L. G. Middaugh, builder.

A frame dwell., cor. Euclid Ave. and Logan St., for J. E. Twitchell; cost, $6,000.

A fra e residence on Wilson Ave., for C. A. Grasselli; cost, $18,000; Coburn & Barnum, architects; Cass & Simmons, builders.

Grand Rapids, Mich.

BUILDING PERMITS. — Mr. Thomas D. Gilbert, a large three-st'y warehouse; cost, about $8,000.

Mr. A. E. Stockwell, dwelling-house, Madison Ave.; cost, $6,000.

Mrs. C. Cumming, dwelling-house, Crescent Park; cost, $3,000.

The city is building two new ward school-houses, at a cost of about $8,000 each.

Mr. Allen Durfee, dwelling-house, on Fourth Ave.; cost, $2,000.

Mr. W. D. Frost, house on Clancy St., n of Trowbridge St.; cost, $1,800.

Mr. C. W. Colt, two houses on Lyon St., n of College Ave.; cost, $1,500 each.

Mr. G. B. Clark, residence on cor. of North Lafayette and Hastings Sts.

It is estimated that there are in course of construction 1,000 dwelling-houses within the city limits. A large proportion of them are tenement-houses, ranging in price from $800 to $2,000 each.

Louisville.

BUILDING PERMITS. — The following building permits have been issued since last report: —

Jacob Meffert, brick dwell.: cost, $3,000.

Geo. Birch, brick stock-shed; cost, $3,000.

C. W. Kompfe, brick dwell.; cost, $2,000.

Home of the Aged and Poor, brick asylum; cost, $8,000; H. Struby, architect.

W. W. Sinton, brick dwell.; cost, $2,500.

Miss Johanna Barrett, brick dwell.; cost, $3,500; C. A. Curtin, architect.

New York.

CHURCHES. — On the s s of Fifty-seventh St., between Eighth and Ninth Aves., St. Timothy's Episcopal Church is to be built. The church will be built of brick, with sandstone front, in the Gothic style; Messrs. D. & J. Jardine are the architects.

The same gentlemen are drawing plans for the Emmanuel Baptist Mission Church, which is to be built on Suffolk St., near Grand St., from a donation of Mr. J. A. Bostwick. The building will be of brick, with granite finish, and will include lecture, class and school rooms.

STABLE. — A stable, 50' x 100', which will probably cost about $60,000, is to be built of brick, with Carlisle stone finish, at Nos. 157 and 159 West Fifty-sixth St., for Mr. Frank Work, from designs of Mr. Geo. Edward Harding.

BUILDING PERMITS. — *Fortieth St.*, n s, about 400' from bulkhead, 430' w of Eleventh Ave., two-st'y brick office; cost, $4,000; owners, C. E. Appleby, Broadway, Horatio Reed, Manager Union Stock Yard and Market Co.; architects and carpenters, Axford & Cranmer; mason, O. E. Perrine.

Broome St., Nos. 358 *and* 360, six-st'y brick furniture warehouse; cost, $29,000; owners, P. Nathan & Co., 87 Bowery; architect, W. Jose; builders, Jos. Schaeffler & Co.

Eighth Ave., s e cor. One Hundred and Twenty-fifth St., 5 four-st'y brick tenements; cost, one $25,000 and the others each $12,500; owner, Alva S. Walker, 43 West One Hundred and Thirtieth St.; architect, T. E. Thomson.

West Fifty-sixth St., Nos. 157 *and* 159, one and two st'y brick stable; owner, Frank Work, 13 East Twenty-sixth St.; architect, G. E. Harding; builders, W. A. and F. E. Conover.

West Sixteenth St., Nos. 418 *and* 420, 2 five-st'y brick tenements; cost, each, $12,000; owner, John W. Dexter, 120 Broadway; architect, J. M. Dunn; builders, Smith & Prodgers.

West Sixteenth St., Nos. 418 *and* 420, rear of lots, 2 three-st'y brick stables; cost, each, $5,000, owner, etc., same as last.

One Hundred and Thirty-second St., n s, 280' e Sixth Ave., four-st'y brick tenement; cost, $14,000; owner and mason, Cowan Kays, 172 East One Hundred and Twenty-seventh St.; architect and carpenter, A. T. Wilson.

One Hundred and Twenty-first St., n s, 211' 6" w Fourth Ave., 3 three-st'y Connecticut brownstone dwells.; cost, each, $12,000; owner and architect, Alfred Kehoe, 259 West One Hundred and Twenty-third St.; builder, John Askey.

One Hundred and Twenty-first St., n s, 142' 6" w Fourth Ave., 3 four-st'y brownstone tenements; cost, each, $15,000; owner, architect, etc., same as last.

East Fortieth St., No. 127, four-st'y brick and brownstone dwell.; cost, $12,000; owner, J. L. B. Smith, 125 East Fortieth St.; architect, E. H. Kendall; builders, Sinclair & Wills.

Elizabeth St., No. 209, three-st'y iron, brick and stone dwell.; cost, $18,000; owner, City New York; architects, N. Le Brun & Son.

Third Ave., w s, 20' s proposed One Hundred and Fifty-fifth St., Twenty-third Ward, three-st'y brick store and tenements; cost, $7,000; owner, Mrs. Sophia Lerch, One Hundred and Fifty-first St., near Courtlandt Ave.; architect, H. S. Baker.

Fifty-second St., n s, from 425' to 500' w of Sixth Ave., 3 three-st'y brick and New York State bluestone stables; cost, each, $20,000; owners, architects, and builders, McCafferty & Buckley, 810 Fourth Ave.

One Hundred and Seventh St., s s, 75' e Second Ave., four-st'y brick dwell. and stair-builder's shop; cost, $3,000; owner, Mrs. Bridget Hogan, Second Ave., n w cor. One Hundred and Seventh St.; architect, A. Spence.

Eighty-first St., s s, 100' e Fourth Ave., 2 six-st'y brick and brownstone tenements; cost, each, $60,000; owner, Frederick Correll, 110 East Eighty-second St.; architect, J. Hoffmann.

East One Hundred and Fifty-seventh St., s s, lots 238 and 239, two-st'y frame factory; cost, $2,900; owner, David Sturzegger, One Hundred and Fifty-seventh St., near Elton Ave.; builders, John Diehl and F. Schwab.

Gramercy Park, n e cor. Twentieth St., eight-st'y brick hotel; cost, $300,000; owner, James Campbell, No. 62 South Fifth Ave.; architect, G. W. Da Cunha.

One Hundred and Thirtieth St., n s, 175' w Eleventh Ave., 3 four-st'y brick tenements; cost, each, $11,000; owner, Charles Bornkamp, 170 Robbins Ave.; architect, Jas. Barrett.

Cortland St., No. 37, five-st'y brownstone building; cost, about $25,000; owner, Peter Henderson, Vreeland St., Jersey City; architect, L. H. Broome.

One Hundred and Third St., n s, 100' w Second Ave., 2 four-st'y brick tenements; cost, $13,500; owner, C. Nurge, Eighty-second St., near Ave. B; architect, J. Brandt; builder, not selected.

Beekman St., Nos. 134 *and* 136, 2 four-st'y brick stores; cost, each, $7,500; owner, Mrs. Cordelia J. Stewart, 152 Fifth Ave.; architects, D. & J. Jardine.

Park or Fourth Ave., e s, 51' s Eighty-first St., 2 five-st'y brick tenements; cost, total, $50,000; owner, architect and builder, J. Bentley Squire, 21 East Seventy-ninth St.

Third Ave., e s, 75' n One Hundred and Fortieth St., four-st'y frame tenement; cost, $6,000; owner, Richard Gaffney, Mott Haven; architect, J. Rogers; builder, J. O'Kane.

Third Ave., s w cor. Sixty-fifth St., four-st'y brick saloon and dwell.; cost, $12,000; owner of leasehold, Ernest Conrades, 270 East Seventy-eighth St.; architect, J. Kastner.

Lexington Ave., s e cor. Eighty-first St., six-st'y brick apartment-house; cost, $80,000; owner and builder, Bernard Spaulding, 150 East Forty-sixth St.; architects, Thom & Wilson.

ALTERATIONS. — *Broadway, No.* 49, two st'y brick extension, main building altered for offices; cost, $37,000; owner, Angelo L. Myers, 103 East Thirty-seventh St.; architect, Hy. Fernbach; builder, Marc Eidlitz.

East Forty-first St., No. 11, two-st'y brick extension, etc.; cost, $5,000; owner, Samuel V. Day, on premises; builders, Smith, Prodgers & Co., and Morton & Chesley.

Fifth Ave., No. 252, two-st'y brick extensions, first st'y and front alteration; cost, $3,000; lessee, Eliza Rallings on premises; architect, G. E. Harding.

Eighth Ave., Nos. 351 *and* 353, add one-st'y mansard roof; also, two-st'y iron and brick extensions, etc.: cost, $14,000; owner, Eliza J. Ross, extrx. of George Ross, 353 Eighth Ave.; builders, Robt. L. Darragh & Co.

St. Mark's Pl., No. 23, three-st'y brick extensions, etc.; cost, $6,000; owner, Wm. Schwind, on premises; architect, R. Maynicke; builders, John Schmitt and Hy. Weiler.

West Fourteenth St., No. 38, one-st'y brick extension; cost, $3,500; lessee, Bernhard J. Ludwig, on premises; architect, R. N. Anderson.

East Fifty-third St., No. 62, three-st'y brick extensions; cost, $2,500; owner, Edward V. Loew, on premises; architect, A. Selleck; builders, R. Shapter & G. Culgin.

Broadway, Nos. 877 *and* 879, front alterations, etc.; owner, B. Cunard, England; architect, S. D. Hatch; builders, R. L. Darragh and Haden & Winans.

West Forty-fifth St., No. 12, two-st'y brick extension, etc.; cost, $5,000; owner, Frank C. Hollins, 12 West Forty-fifth St.; architec , H. E. Ficken; builder, A. Gibbons.

West Fifty-third St., No. 17, one-st'y brick extension, interior alterations; cost, $5,000; owner, W. B. Baldwin, on premises; architect, G. B. Pelham.

Third Ave., w s, 75' n One Hundred and Thirty-eighth St., raised one st'y, new brick front; cost, $3,000; owner, Michael Schmiderer, on premises; architect, John Kaeb.

West Twenty-third St., No. 109, two-st'y addition, etc.; cost, $6,000; owner, Joseph Morette, on premises; architects, Berger & Baylies.

State St., No. 15, covering block between Bridge and Pearl Sts., two-st'y addition; cost, $9,000; owner, R. A. Chesebrough, 17 East Forty-fifth St.; builder, J. M. Kelly.

East Fifty-first St., No. 119, one-st'y brick extension, 18' x 69', tin roof; cost, $2,500; owner, R. A. Chesebrough, 17 East Forty-fifth St.; builder, J. M. Kelly.

Fifth Ave., Nos. 252 *and* 556, *and West Thirty-sixth St., No.* 32., are being overhauled, decorated and improved, under directions and from designs of Mr. Geo. Ed. Harding.

Philadelphia.

HOTEL. — Mr. P. S. Donner intends to build on Tenth St., above Chestnut St., a five-st'y hotel, 38' x 90', to be built of pressed brick and galvanized iron; E. F. Durang, architect.

BUILDING PERMITS. — *Church St.*, s s, e of Hamilton St., three-st'y dwell., 14' x 16'; Martin Kellar, contractor.

Frankford Road, e s, s of Clearfield St., three-st'y dwell., 20' x 68'; James McCartney, contractor.

Fifth St. and Lehigh Ave., s w cor., 2 two-st'y dwells., 18' x 28'; W. Bartholomew, contractor.

N. Broad St., No. 833, four-st'y brick building and two-st'y stable, 16' x 50' and 30' x 40'; R. J. Whiteside & Son, contractors.

Eighth and Arch Sts., n w cor., two-st'y store, 54' x 72'; Levi Koder, contractor.

Leiper and Arrat Sts., s e cor., three-st'y dwell., 20' x 40'; J. K. Foulkrod, owner.

Wharton St., No. 640, three-st'y dwell., 15' x 52'; A. Taylor, contractor.

N. Sixth St., No. 2119, three-st'y store and dwell., 25' x 80'; Eldridge & Stewart, contractors.

Hope St., e s, n of Somerset St., 4 two-st'y dwells., 20' x 36'; W. A. M. Fuller, owner.

Hancock St., w s, n of Huntington St., 2 two-st'y dwells., 19' x 46'; William Steel, contractor.

Huntington St., s s, bet. Mascher and Mutter Sts., three-st'y dwell., 24' x 46'; William Steel, contractor.

Twelfth St., e s, s of Nevada St., two-st'y factory and two-st'y stable, 34' x 45' and 16' x 16'; John Klebe, contractor.

Eleventh and Colona Sts., n w cor., 2 two-st'y dwells., and 1 three-st'y dwell., 17' x 54'; John Klebe, contractor.

Snyder Ave., n s, w of Fifth St., 5 two-st'y dwells., 16' x 42'; Clayton Allen, owner.

Frankford Road, e s, bet. Richmond and Allen Sts., two-st'y brick building, 46' x 50'; W. R. Farrell, contractor.

Meehan Ave., n s, bet. Main and Musgrove Sts., 2 three-st'y dwells., 15' x 32'; William Garvin, contractor.

Cumberland St., s s, bet. Jaspar and Emerald Sts., three-st'y dwelling, 18' x 60'; John Mitchell, contractor.

Hancock St., e s bet. York and Cumberland Sts., two-st'y dwell., 18' x 46'; John Mitchell, contractor.

Jackson St., No. 4658, 2 three-st'y dwells., 16' x 42'; R. B. Ott, owner.

N. Tenth St., No. 2409, three-st'y dwell., 16' x 52'; L. K. Slifer, owner.

Randolph St., No. 1441, two-st'y brewery, 19' x 44'; George Kessler, contractor.

Fifth and South Sts., s e cor., three-st'y store, 36' x 120'; Snellenberg & Co., owners.

N. Tenth St., No. 1629, two-st'y factory, 18' x 93'; C. Bachle, contractor.

Green St., No. 1825, four-st'y brick building, 21' x 54'; Morrell Dobbins, owner.

Fleming St., n e s, n w Cotton St., 2 two-st'y dwells., 16' x 40'; J. W. Gilton, contractor.

Markle St., n of Terrace St., two-st'y dwell., 14' x 32'; Peter Mullen, owner.

N. Fourth St., No. 414, two-st'y stable and carriage-house, 15' x 22'; J. F. Betz & Son, owners.

Fowler St., n e s, n w of Jefferson St., two-st'y dwell., 17' x 32'; Charles M. Horner, owner.

Cumberland St., e s e, bet. Mill and Coulter Sts., two st'y dwell., 14' x 27', John Patrick.

Front St., e s, n of Dauphin St., third and fourth st'y addition to factory, 46' x 114'; Eldridge & Stewart, contractors.

Carlisle St., n w cor. Dauphin St., 3 two-st'y dwells. and 1 three-st'y dwell., 19' x 42'; J. N. Pattison, contractor.

Somerset St., n s, between Helen and Jasper Sts., 12 two-st'y dwells., 15' x 38'; Duryea & Childs, contractors.

Amber St., n e cor. Rush St., two-st'y dwell., 18' x 52'; Chas. Hohberger, owner.

Thirty-eighth St., No. 749, s of, 2 three-st'y dwells., 18' x 58'; J. A. Palmer, contractor.

Cook St., s s, w of Goul St., 2 two-st'y dwells., 18' x 58'; J. C. Beiber, contractor.

Eleventh St., s w cor. Marks Lane, three-st'y brick building, 19' x 24'; W. P. Fogg, contractor.

Norton St., s s, between Wayne and Green Sts., two-st'y stable, 16' x 31'; H. H. Burzby, contractor.

Walnut St., s s, 115' e of Forty-second St., three-st'y dwell., 35' x 88'; W. S. Kimball, contractor.

South Broad St., No. 1120, three-st'y dwell., 20' x 45'; W. Brooks, owner.