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THE death of General M. C. Meigs is an event of considerable importance in the history of American architecture. Besides being a military man of extraordinary energy and executive ability, General Meigs was a skilful engineer and a distinguished expert in matters of construction. The Washington Aqueduct, including the splendid Cabin John and Rock Creek bridges, the former of which is one of the widest stone arches in the world, was constructed entirely from his plans, and under his supervision. During the execution of the wings and dome of the Capitol, he was associated with Dr. Walter as superintendent of construction, and it is said that these eminent persons never subsequently agreed as to how much of the design was due to each. Most architects, we imagine, would say that the internal evidence favored Walter's claim, unless, perhaps, in regard to certain details of the dome; but General Meigs gained a high and undoubtedly deserved reputation for his work on the building, and on his retirement, in 1882, from the active list of the army, through having reached the limit of age fixed by law, he was, by Act of Congress, made sole architect and superintendent of the new Pension Bureau Building, the erection of which had just been decided upon. Our readers are probably familiar with this structure which was rapidly and skilfully constructed, and, though of cheap material, presents an imposing effect. This important work, in which he took great interest, occupied the remainder of his life, and it can hardly yet be said to be entirely complete. In Washington, where General Meigs had been stationed most of the time for nearly forty years, he was a conspicuous figure, and his death, even at the advanced age of seventy-five, will leave a vacancy, not only in Washington society, but in the ranks of the most accomplished and active servants of the nation, which it will be hard to fill.

IT seems to be agreed that rates of insurance will be materially raised during the coming year throughout the country. Since the action of the Chicago Underwriters' Association in refusing altogether to insure future lofty buildings, and raising enormously the rates on those now existing, the Boston Underwriters' Association, which is a strong and compact body, has made a general advance in premiums, and it is almost inevitable that the example should be generally followed, particularly as many of the smaller companies, whose reckless competition has kept down rates, have been nearly ruined by the losses of the last year, and are now in process of retiring altogether from the business. As the people of the United States pay already about seven hundred thousand dollars a day for insurance premiums, the addition of ten or fifteen per cent to this sum is a tolerably serious matter to the community. It should never be forgotten that an insurance company is simply a device for distributing fire-losses over a large number of contributors, who are obliged to make up about twice the actual loss to allow for the portion which sticks to the hands of the companies and agents who distribute the indemnity, as compensation for their trouble. Naturally, the underwriters care nothing how large the losses are, so long as they can get the contributors to furnish money enough, in the shape of premiums, to pay the losses and leave a good surplus for them; and, if the rates are advanced, all inducement for the insurance companies to help along the work of reforming methods of construction will disappear. This would be a serious misfortune, as there is no question that the rules adopted by a strong Board of Underwriters, like that of Chicago or Boston, are far more efficient in regulating construction than any building laws; and it seems as if it might be well worth while to try to devise a method by which premium rates should be kept at a point which would make it an object for the underwriters to employ their immense power in promoting better habits of building. It is said abroad, as it has been here, that the influence of the insurance companies tends to encourage bold and reckless building. In other words, the underwriters find it profitable to promote the destruction of property, in order that the contributions of the public to rebuild the ruined houses, or pay for the burned goods, may be the larger, and that, consequently, the size of the portion which sticks to their own fingers may be enhanced. Occasionally, as during the past year, the growth of the losses runs ahead of the increase of premiums. Then, evidently, losses must be kept down by greater attention to sound construction, or premiums must be raised. For the public, the former is the proper remedy; but the latter suits the insurance companies best, and, so long as they can apply it, they will never trouble themselves about the other.

IT is no longer a secret that the new Public Library in Boston is to have, as one of its many artistic charms, the advantage of being decorated by some of the most noted living painters. Mr. Sargent is already at work upon a great decorative picture, designed to occupy a wall-space in one of the principal rooms; Mr. Abbey, who is best known here as a brilliant illustrator of books, is to have a hand in the work, and it is reported that M. Puvis de Chavannes is considering a proposition to undertake an important portion of the building. Except M. Puvis de Chavannes, the artists engaged have done no decorative painting that is known in this country, and their work in the Library will excite great interest. Mr. Sargent, particularly, is regarded as an extremely original and clever portrait-painter, but the example of family groups painted from a point-of-view in the ceiling, and showing mainly the tops of the heads of the sitters, affords hardly any clue to the means by which the attention of the public will be attracted to a decorative work, and some curiosity is naturally felt as to what sort of pictorial sensation may be in store for the Bostonians. The tax-payers of the city will undoubtedly be relieved to learn that the work already engaged is to be paid for by private individuals, who have most generously subscribed the very large sum needed for the purpose; but, with such an example to lead the way, it would be well worth while for the tax-payers themselves to provide painting of a similar class for the other rooms of the building. So long as La Farge, Crowninshield and some others live and consent to work, American decorative painting need not shrink from competition with that of the best foreign artists, and anything nobler or better calculated to extend the reputation of Boston among the lovers of art than such a building as the Library, decorated throughout by the most eminent painters in the world, it would be difficult to conceive.

OUR readers will undoubtedly be interested in the translation which we give of the discussion in the French Chamber of Deputies about architects. The publication, in *L'Architecture*, of the report of the debate excited much attention in the profession, and M. L. Gardelle, the municipal architect of the city of Montauban, who, it will be noticed, was made the hero, by M. de Goirand, the critic of architects, of a story very little to the credit of the eminent architects attached to the Ministry of Public Instruction, immediately wrote a letter, correcting, in the most effectual and honorable manner, what he briefly calls the false statements made in the Chamber. It was true that he made plans and specifications for the great lycée for girls at Montauban, and that these were submitted, as the law requires, to the Ministry of Public Instruction; but they were neither returned nor remodelled, nor was any architect, or any one else, charged with making a report on them. On the contrary, the architect and the mayor brought with them from Montauban the plans and papers, and laid them before the officials of the Ministry. Some observations were made upon points of detail, but the plans were not even taken out of the hands of the two visitors from Montauban; and it was the local architect himself who, with a feeling which deserves the highest praise, represented to the mayor that the buildings for an establishment of such recent creation, and involving such special requirements, might with great advantage be entrusted to M. Vaudremer, whose eminence, and experience in this particular work, peculiarly fitted him to carry them out successfully. Nothing could well be more striking than the contrast between the professional principles exhibited on this occasion by the Montauban architect, and those which M. de Goirand tried to make his hearers believe that architects habitually cherish; and we hope that, on future occasions of the kind, the members of the most unselfish of all professions, except those of medicine and the Church, may find more defenders, as able, resolute and honorable as M. Trélet and M. Gardelle.

A LARGE building, in Long Island City, N. Y., which was in process of erection, was blown down a few days ago, severely injuring several persons. The building was intended for a theatre, and appears to have been of the cheap and flimsy construction usually adopted for such purposes in places out of reach of building laws and inspectors. The lower stories were of brick, and the two upper stories of wood. About a week before the catastrophe, the eccentric, but energetic mayor of the town, Mr. Gleason, conceived suspicions of the strength of the building, and sent Mr. Le Brun and another architect to examine it. They reported at once that the structure was frail and unsafe, but before their report was acted on by the Board of Health, to which it was addressed, a strong wind brought the whole affair down in a heap. Three carpenters, who were on the roof, jumped to the ground, a distance of forty-two feet, and escaped unharmed, but fourteen other men, who were in or about the building, were more or less severely hurt, and two will probably die. The contractor and architect, besides the foreman of carpenters, were promptly arrested, and are to be held on a charge of assault, which will be changed to one of manslaughter, if any of the injured men should die from their wounds.

THE *Engineering News* makes a contribution to the science of constructing high buildings, by suggesting that the use of cast-iron columns in them should be forbidden. It says that it knows of a case where one of these lofty structures, when partly built, was found to be from six to nine inches out of plumb. An attempt, the result of which the *Engineering News* does not describe, was then made to straighten it up by the extraordinary means of pulling and pushing it into place by means of jackscrews and tackle, and then drilling holes in the cast-iron columns, into which diagonal rods were to be inserted as braces. We should say that any decent architect would feel the blood freeze in his veins at the bare thought of jerking about in that fashion a structure of cast-iron columns; and the story only emphasizes the opinion expressed by all the engineers and architects before the Committee of the Chicago City Government, that, in the hands of men who understand their business, lofty building is perfectly safe; but that, so long as no law prevents owners from entrusting ignorant pretenders with the task of piling up bad and cheap materials and worse construction, two hundred feet into the air, it must be expected that the inevitable consequences of technical folly and ignorance will show themselves sooner or later.

THOSE people who like what may be called sepulchral novelties will be pleased to hear that a "columbarium" is now building in Pittsburgh, and will soon be open to the public for the reception of ashes, or mortal remains in other condensed forms, enclosed in suitable receptacles. Something of the kind, on a large scale, was projected for New York a year or two ago, but the scheme appears to have fallen through, and the proprietors of the Pittsburgh columbarium announce that it is the first that has been built "since the time of ancient Greece and Rome." The building is only fifteen feet by twenty, but seems, from the description in the New York *Tribune*, to be cleverly designed. The exterior is of granite and the inside of terra-cotta, and a terra-cotta dome, with a skylight in the centre, forms the ceiling. There are one hundred "cells" for "urns," which are of various materials and patterns, and, we suppose, are furnished by the company. Of course, before a person can occupy one of these cells, he must be incinerated, and a crematory is a necessary adjunct of a columbarium; but, as Pittsburgh already has a crematory, this matter is provided for. On the whole, the idea of consigning the mortal part of one's friends to a comfortable cell in a brightly-lighted columbarium, instead of to the earth, is rather pleasing, and we should not be sorry to see the fashion spread, for its own sake; while the designing, not only of the columbaria themselves, but of the urns which are to be put in them, might furnish endless employment to artists of the highest talent.

FOR several months the daily papers of Brooklyn, N. Y., have been filled with a most animated discussion of the question whether or not the street railroads should be allowed to introduce electric cars with the force drawn from the unprotected overhead trolley-wire, and, as may be supposed, both parties to the very heated discussion drew largely for their supporting facts upon the experience which the citizens of Boston had had with their electric street-cars, whose propelling force was secured in the same uncivilized manner. It was truly remarkable how many apparently authenticated disasters caused by the Boston system the Brooklyn opponents of a similar system managed to lay before the public. So many more serious accidents and slight mishaps seemed to have occurred than ever were reported in the Boston papers, that one was forced to believe either that these newspapers were not doing their duty to the public, or that the Brooklyn papers had a large and varied assortment of prevaricators as correspondents. At length the backers of the electric cars prevailed, and the legislative branches of the city government voted to give the promoters their franchise. At this point the mayor's term of office expired, and we rejoice to see that his successor's first act was to veto the measure. For some reason it is not possible to get the people in Boston waked up to the vast injury they are suffering under the delusive pretence of enjoying rapid transit. The system of electric surface-transit in use in Boston is installed in an exceptionally perfect and workmanlike manner, and it is really a pleasure to see how successful both inventors and engineers have been in accomplishing what they have undertaken to do. At the same time, its mere existence in the crowded and narrow streets of Boston is one of the greatest outrages that the citizens of that town — too prone to attend merely to their own private interests — have ever had to endure. Three times within a year have stay and guard wires of the electric railroad broken in front of our office with explosive violence and with the usual pyrotechnic display, stopping traffic until some one with a rubber coat or gloves could come along and handle the wires. Collisions have happened again and again near the same spot, and it is a matter of daily occurrence to see people jump for their lives if they have been so foolish as to cross *behind* one of these terrible vehicles of modern selfishness, for the nearest car under such circumstances will conceal four or five hundred feet of the opposite track — a distance which cars running ten or a dozen miles an hour do not make much of, as the little lad found who was ground to death in this way last week. In another way we have had personal experience with this modern nuisance, for the firemen were hampered by the trolley-wire and its feeders at the time of the fire which attacked this office recently. In twenty years it will seem incredible that a community of 400,000 which continually assails the steam railroads which maintain grade crossings should have endured, even temporarily, a grade crossing thirty miles or more in extension. Brooklyn is indeed to be congratulated on escaping so dangerous a "convenience."

ITALIAN ARCHITECTURE.[1]—IX.

SEVENTEENTH AND EIGHTEENTH CENTURIES.

Fig. 1. Fountain by Bernini in the Piazza Navona, Rome.

IT was not unintentionally that Rome was mentioned above, for the school in which the genius of Lorenzo Bernini is reflected more, without, however, exhibiting the violently reactionary character which appears in some of his works, had an extraordinary success at Rome. The sumptuous Roman palaces, villas and fountains, famed the world over, belong largely to the seventeenth century and the following. Examples of these are the Barberini Palace, begun under Urban VIII, after the designs of Carlo Maderno (1566 † 1629), a native of Capolago, though Bissone is often wrongly given as his birthplace, who was succeeded by Bernini and perhaps Borromini, another of the chief architects of the time; the Borghese Palace, begun by Cardinal Deza, in 1590, on plans furnished by Martino Lunghi the elder — active between 1560 and 1594 — and finished by Flaminio Ponzio († 1613); the Chigi, an imposing palace begun by Giacomo della Porta (1541 † 1604), who was succeeded by Maderno and Filippo della Greca, the latter completing it; the Mattei Palace, opposite the nunnery of Santa Caterina de' Funari, a magnificent construction by Maderno; the palace of Monte Citorio (now fitted up for the use of the Italian Parliament), in which the work of the three architects, Bernini, his pupil, Mattia di Rossi (1637 † 1695), and Carlo Fontana (1634 † 1714), may be seen combined; and the Odescalchi, by Maderno, Bernini, Salvi and Vanvitelli. Let me also call attention to the Palazzo del Laterano, by Domenico Fontana (1534 † 1607); the Sciarra-Colonna, by Flaminio Ponzio, aided, possibly, by Antonio Labbaco; the Torlonia, partially the work of Carlo Fontana; and the Spada, by Giulio Mazzoni and Borromini.

Among the most remarkable villas, I will, for the sake of brevity, merely refer to the most famous, the Villa Doria Pamphili, outside the Porta S. Pancrazio, planned by Alexandro Algardi (1602 † 1654) at the instance of Prince Camillo Pamphili, a nephew of Innocent X.

Of the fountains, may be cited that of San Pietro in Montorio, or the Acqua Paola, restored under Paul V by Giovanni Fontana (1540 † 1614) and Maderno, and the Fontanone dell' Acqua Felice, by Domenico Fontana. The two most beautiful fountains of the city must not, however, be forgotten: the one in the Piazza Navoni (Figure 1), erected by Bernini under Innocent X, through the agency of Nicolo Ludovisi, and the Fontana di Trevi, which belongs entirely to the eighteenth century; it was begun in 1735 by Clement XII (Corsini), after designs by Nicolo Salvi (1699 † 1752), and completed in 1762 by order of Clement XIII (Rezzonico).

As for religious edifices, the number of those belonging to the seventeenth and eighteenth centuries is very great. During this period the architectural activity of Italy was centered in the Eternal City. The pope and cardinals, as well as the brotherhoods and private individuals, possessed great wealth, which they employed to a certain extent for the advancement of art. Notable among these churches are the Church of Gesù e Maria, reared in 1640, after the plans of Maderno, with the later coöperation of Rinaldi; that of San Giacomo degli Incurabili, which was wholly rebuilt by Francesco Ricciarelli of Volterra, and on which Maderno was afterward engaged; the Church of San Martino ai Monti, where work was actively carried on in 1650, 1676 and 1780; that of San Pantaleo, restored in 1614; San Ignazio, begun in 1626 and completed in 1685; and Santa Marta, which was entirely reconstructed in 1670 by Carlo Fontana. We need not repeat that Maderno had a large share in the collaborative construction of Saint Peter's, and that Borromini's name also recalls Saint John Lateran and the Church of Santa Maria and San Gregorio in Vallicella. It seems, also, unnecessary to remind the reader of Bernini's connection with the admirable colonnade on the Piazza di San Pietro, begun under Clement IX, or of that of Fernando Fuga (1699 † 1783), with the basilica of Santa Maria Maggiore, the façade of which he constructed in 1743.

It is well for us to note here the constant recurrence of Lombard names among the artists engaged on the Roman constructions of the seventeenth century. The Lombard colony of artists and kindred workers was so large at Rome at that time, that they founded churches, hospitals and guild-halls exactly as if they had been at home. And for this reason they may be said to have held the monopoly of architecture, sculpture and the artistic industries there.

The architectural development of the seventeenth century in Italy may be perfectly traced in the works of two artists: Lorenzo Bernini, of Naples (1599 † 1680), and Francesca Borromini, of Bissone, on Lake Lugano (1599 † 1667), both of whom are already known to us. When I say that Bernini and Borromini embodied the architectonic movement of the seventeenth century, I do not mean that there were not other eminent artists who produced remarkable works in the country at this period. It suffices merely to recall the celebrated Padre Andrea Pozzo, of Trent (1642 † 1709), an able master of perspective and an architect of striking imaginative power. Who does not remember his magnificent chapel in the Gesù at Rome, admirable in its decorative features, rich in *lapis lazuli*, alabaster, gilt bronze and antique marbles of all sorts; also the chapel of Saint Louis in the Church of San Ignazio?

Turning again to Southern Italy, we encounter a few artists at Naples whom we have already met at Rome. For example, Domenico Fontana, the celebrated architect of Sixtus V, among whose Neapolitan productions the royal palace is the most remarkable. However, in the construction as it is seen to-day, Fontana can lay claim to nothing but the façade, as the rest was destroyed by fire and rebuilt in 1837. We find, likewise, in Naples, Julius Cæsar Fontana, son of Domenico, who carried forward the work on the National Museum by order of the Count of Lemnos; Cosimo Fansaga (1591 † 1678), who embellished the Fontana Medina and conducted the remarkable reconstruction of the Carthusian monastery of San Martino; and lastly, Francesca Fuga, who furnished the designs for the façade of the Church of San Filippo Neri, or de' Gerolomini, erected between 1592 and 1619.

I cannot pass over these structures without referring to their magnificence. San Martino, occupying an enchanting site in front of the castle of Saint Elmo, is fantastically rich and sumptuous.[2] The Church of San Filippo Neri is decorated with paintings by Luca Giordano and Francesca Gessi, the pupil of Reni, by Guido Reni himself, by Spagnoletto (Guiseppi Ribera), and with a few statues by Bernini.

Another artist of this period who is not as well-known as he deserves, Gherardo Silvani (1579 † 1675), worked much at Florence, where he was engaged in 1637 on Santa Maria del Fiore. He took a prominent place among his contemporaries with his construction of the Fenzi palace, erected in 1634, the Giaconi and the façade of the Rimediotti, built at the expense of the Bartorelli family. The stately forms of the seventeenth century appear at Florence in all their splendor in the Church of San Firenze, erected partly on the plan of Pietro of Cortone; the *chevet* was constructed in 1668 by Antonio Ferri,

[1] From the French of Alfredo Melani, in Planat's *Encyclopédie de l'Architecture et de la Construction.* Continued from No. 836, page 4.

[2] After the expulsion of the Carthusians in 1866, the monastery was placed under the management of the National Museum.

and the façade is by Fernando Ruggeri (1715). They are likewise exhibited in the Church of San Gaetano (San Michele and San Gaetano), re-erected on the old foundations, between 1604 and 1648, under the supervision of Matteo Nigetti († 1649), Silvani and his son, Pier Francesco, who made numerous changes in the design originally furnished by Don Anselmo Canigiani. Our studies in the seventeenth and eighteenth centuries recall the completion, one might say, of the Pitti Palace, for Ammanati's edifice was enlarged by Giulio Parigi († 1635), a Florentine architect very active at Florence, and his son Alfonso. In 1764, the arcaded wing on the right, forming an obtuse angle with the palace, was built, and in 1783 that on the left. The completion of the Pitti Palace belongs to recent times.

At Venice, the art of the seventeenth century also found able representatives. First among these stands Alexandro Vittoria, of Trent (1522 † 1608) the Venetian Michael Angelo and one of the greatest of the disciples of Giacomo Sansovino. Sculptor rather than architect, Vittoria opened the way at Venice for the so-called Baroque style. Curiously enough, he was employed at Vicenza by the Classic Palladio on sculptures. The chapel of the San Rosario at Venice, dedicated to St. John and St. Paul was constructed by Vittoria, with the coöperation of Geronimo Campagna, as was also the Scuola of San Geronimo, now the Venetian Athenæum, in the Campo San Fantino.

Vittoria's influence was, to tell the truth, mainly felt on sculpture, either in decoration or figures. However, in all this, we must see, to a greater extent here than elsewhere, something more than the personal influence of an artist; it is rather the general tendency of the period that is to be recognized. Among works of especial interest must be noted, at Venice, those by Balthazar Longhena, a native of Maroggia, on Lake Lugano (1631 † 1682), who was perhaps a pupil of Scamozzi. His fame is due largely to his work on Santa Maria della Salute, begun in 1631 and finished in 1660. The ingeniously built dome has been treated by M. Raymond, in

Fig. 2. Santa Maria della Salute, Venice.

connection with that of the Church of the Invalides at Paris (*cf.* "*Mémoires de l'Institut national des Sciences et Arts,*" t. III). A real grandeur is imparted to the Venetian dome by the volutes, which, like buttresses, reinforce the angles of the octagonal drum. The Church of Santa Maria della Salute is one of the most admirable of the Italian edifices of the seventeenth century (Figure 2). Longhena was also the architect of the

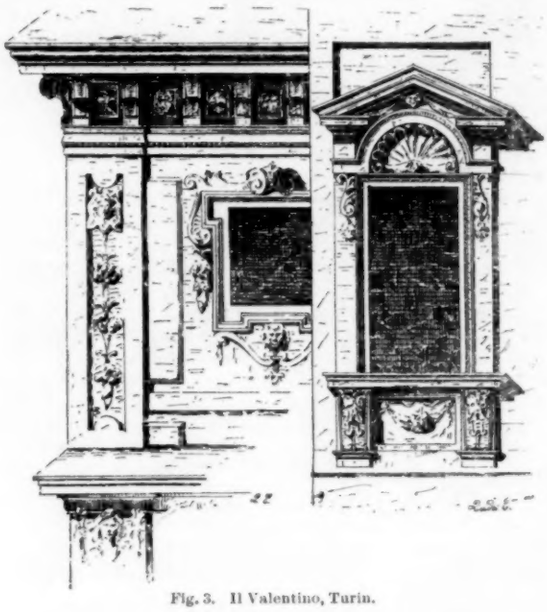


Fig. 3. Il Valentino, Turin.

Pesaro Palace, one of the most original in Venice, the Rezzonico (not wholly by him), the façade of the Ospedaletto and the Pesaro monument in the church of the Frari, executed in 1669, one of the most sumptuous of all the Venetian monuments. Venetian seventeenth-century productions are by no means confined to the above; but I have merely sought to point out the most characteristic, those which best delineate the architectural movement in this part of the peninsala.

If from Venice we direct our steps still farther to the north, on reaching Turin we encounter examples of the style in question, notably Il Valentino, one of the most important castles in Piedmont. The main part of it was constructed for the queen-regent, Marie Christine, who ordered it in 1633. The architect is not certainly known (Figure 3). The interior decorations are magnificent. We find also the works of Padre Guarino Guarini (1624 † 1683) of Modena, and of Filippo Juvara or Ivara (1684 † 1735) both ranked among the most celebrated Italian artists of their time. Guarini was the architect of the celebrated Capella del Santissimo Sudario, the Church of the Consolata, the Carignano Palace and the Academy of Sciences; Juvara was the architect of the Superga, the Church of the Carmini, the Madama Palace (façade and stairway) the superb royal villa of Stupinigi, the Seminary, etc. I have discussed elsewhere the works of the Piedmontese architects, Carlo and Amadeo of Castellamonte, who likewise exercised a powerful influence on the architecture of Turin in the seventeenth century. Genoa and Milan, the two cities in which the marvellous talent of Alessi had been largely exercised, likewise offer splendid specimens of seventeenth-century Italian art. Genoa, the city of sumptuous palaces adorned with magnificent courts, was tributary, even at this period, to Lombardy, while Milan embellished itself with the magnificent Palazzo dei Giuriconsulti (Figure 4) built in 1560 at the instance of Pius IV by Vincenzo Seregni, a Milanese (1509 † 1594); with the works of Pellegrino Tibaldi, architect and painter from Puria in the Valsola (1532? † 1596); with admirable constructions by Francesco Maria Richini (1583 † 1658) and with others by Leon Leoni (born about 1509 at Arezzo) who, like Tibaldi, did some very successful work in Spain.

The eighteenth-century architecture of Italy was less important than that of France. France swayed Italy at this time as in the fifteenth century Italy imposed her rule on France. The Louis XIV, Louis XV and Louis XVI styles still find followers and admirers in Italy.

The eighteenth century must be divided into two entirely distinct periods; the first covers the time during which art followed the tendencies of the preceding century; the second

embraces the years in which Classic architecture had a fresh flowering out — laborious, it is true, but general. Freedom and picturesqueness of style were totally abandoned in the second half of the eighteenth century, and architects turned to the sources of sixteenth-century art, that is to the study of the artists who had established a cult of the Vitruvian theories. And so, while architecture was being built up on a foundation of traditional imitation, especially on the ideas of Palladio, sculptors abandoned the lyricism of the eighteenth century and followed the Greek lead.

Canova, the obscure peasant of Possagno, going to Rome from Venice, received the title there of the new Phidias. In Venice and Venetia, where Palladio had reigned in the sixteenth century and where his masterpieces could be easily studied, this tendency to Neo-Classicism was especially pronounced. Palladio's structures had moreover been made accessible to every one by designs and descriptions by the Vincenzan architect, Ottavio Bertolli Scamozzi, (see "*Le Fabbriche e i Disegni di Andrea Palladio raccolti, ed illustrati*," X). The discoveries made at this time in Herculaneum and Pompeii, had revived the worship of antiquity, as well as the studies of architectural *Romanism*. Publications on Classic architecture followed one another rapidly. Giovanni Battista Piranesi published his great work on the antiquities of Rome (Rome,

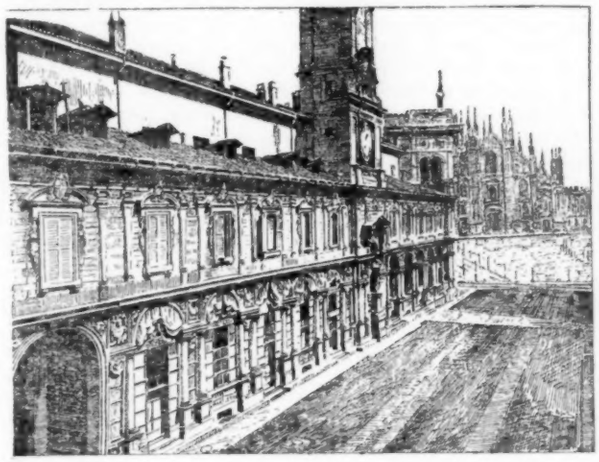


Fig. 4. Palazzo dei Giuriconsulti, Milan.

1756);[1] the Marquis Poleni printed his "*Esercitationes Vitrivianæ*"; Francesco Algarotti (1712 † 1764) and Francesco Milizia (1725 † 1798), in quite widely read treatises, like Piranesi and Poleni, extolled Classicism.

A conventional architecture grew up imitative and pedantic in style, which feared the free flights of fancy, and opposed the lyricism of the earlier period.

It must not be forgotten that we are indebted to the Italian architecture of the eighteenth century for one of the finest constructions executed since the Renaissance, namely, the dome of the Cathedral of Mondovi, completed in 1748, a work of the architect Francesco Gallo (1672 † 1750); this dome is suggestive of that of Santa Maria del Fiore and that of Saint Peter's. The architect Gallo was indeed a perfect builder, a fact also attested by his other works at Mondovi, Cuneo, Fossano, Bene Vagienna and Carrù.

As has been remarked, the especial characteristic of the Italian architecture of the second part of the eighteenth century is a worship of Classic forms, which strengthened continually down to our own times, that is, down to the period when historic research and independence in criticism proved that all merit did not lie in the imitation of Vitruvius, Palladio and Vignola.

Romanizing became then the order of the day. At Venice the Church of San Simeone Piccolo was erected in imitation of the Pantheon at Rome; at Milan, Louis Cagnola (1762 † 1833) Romanized in the Arco del Sempione and in the Porta Ticinese, and recalled Palladio in the Rotondo of Inverigo (not far from Milan), while Louis Canonica (1764 † 1844) copied the ancient Roman amphitheatres in the grandiose structure known as the Arena, and Joseph Zanoia (1752 † 1817) reared in 1813 the Porta Nuova on the model of a Roman triumphal arch. At Turin the church dedicated to the "Gran Madre di Dio," by Fernando Bonsignore (who worked 1797–1810), and inspired by the Pantheon belongs to the same time. At Rome, the apostle of the new teachings was Louis Canina (1795 † 1855), whose numerous publications are well known to students. The entrance to the Borghese villa at Rome, in wholly Classic style, is by Canina. The movement was indeed general. To this period also belong two of the most beautiful Italian cemeteries of Classic style; the cemetery of Naples, begun in 1836, and that of Genoa, begun two years later. And both at Naples and Genoa the chief theatre is in the same style; San Carlo, at Naples, constructed, it is said, in two hundred and seventy days and opened in 1737; at Genoa, the Carlo Felice, opened in 1828.

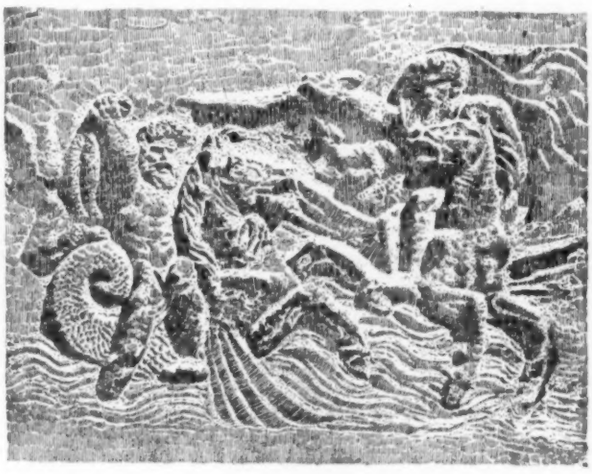
What has been said of Venice, Milan and Turin, of Rome, Naples and Genoa, is equally true of the other Italian cities. It is therefore useless to pursue the subject farther because the more or less interesting examples that remain to be cited are scarcely distinguishable in their organism and style from those already discussed.

[To be continued.]

[1] I refer to the work entitled "*Antichità di Roma*" (Rome 1756, 4 vols., fol. max.); Piranesi published later "*Sui monumenti degli Scipioni*" (Rome, 1785) and the "*Raccolt dei templi antichi*" (Rome, 1790), the "*Teatro di Ercolano*" (Rome, 1783) and the "*Vedute della villa Adriana*" (Rome, 1788), etc.

ARCHITECT, OWNER & BUILDER BEFORE THE LAW.[2] — XV.

ARCHITECTS EMPLOYED ON COMMISSION.



Tritons Fighting. Mantegna, Sculptor.

WHERE an architect is employed in the more usual way, under an express or implied agreement to do certain work for a fixed price or commission, the rule for calculating the damages to which he is entitled if deprived of his employment without cause is simpler.

Like persons employed at fixed wages, he is entitled, in such a case, to treat the contract as rescinded by both parties, and sue, on *quantum meruit*, for the fair value of the labor which he has already expended; or he may consider the contract as broken by the other party, and, if his offers to go on and complete his part of it are rejected, may sue for damages for the

DAMAGES FULL COMMISSION, LESS EXPENSES.

breach of it; and the damages will usually be reckoned by the court at the full contract price or commission, less what he would have had to lay out for materials and draughtsmen's services; or, in other words, the profit that he would have made out of the transaction.

Naturally, such cases in which architects are concerned are not very common, and there appear to be none mentioned in the American courts of record. A suit, in which Messrs. Fuller & Wheeler, of Albany, were plaintiffs, was, however, decided by a referee in exactly this way, and the rule seems to be general in regard to contracts for other sorts of personal service. A lawyer was engaged to defend certain suits at an agreed price, and was discharged from his employment without cause before the suits were concluded. He had fully performed his agreement until the time of his discharge. In his suit[3] for

[2] Continued from No. 836, page 7.
[3] Webb *vs.* Trescony, 76 Cal. 621.

damages for the breach of the contract of employment, the Supreme Court of California ruled that the measure of damages was the full amount agreed to be paid.

WHAT IS INCLUDED IN THE ARCHITECT'S SERVICE.

There is occasionally a doubt as to what is included in the service which the architect is to render, the architect thinking that he ought to have extra pay for certain work which he has done at the owner's request or suggestion, and the owner thinking otherwise. In most cases this would be a question for the jury, who would have to decide from the evidence what the contract of employment really comprised; but the decision occasionally turns upon a point of law or custom, which must be decided by the court.

When the tunnel for supplying the city of Chicago with water was built out into Lake Michigan, the contractors for the work, Messrs. Dull & Gowan,[1] employed a Pennsylvania carpenter, named Bramhall, to superintend the construction of the crib, which was afterwards to be taken out into the lake and sunk at the end of the tunnel. At the conclusion of operations in the autumn Bramhall went to work in a reaper-factory, and Dull & Gowan asked him to devise some plan for launching the crib the following season, and for sinking the two iron cylinders which were to be placed at the lake end of the tunnel.

DRAWINGS NOT INCLUDED IN SUPERINTENDENCE.

No plans for doing this part of the work had been provided by the city, but several schemes were prepared by different parties, and submitted to the contractors and the city engineer. Bramhall made his plans in the evenings, after his work in the reaper-factory was over, and they were adopted. When he heard that they had been adopted, he made in his book a charge of $500 apiece for them. In the spring, Bramhall was persuaded to leave his place in the reaper-factory and superintend the launching of the crib and the sinking of the cylinders; and he also, at the request of the contractors, devised in his evenings a scheme for anchoring the crib in position. He remarked to Gowan that he had made a charge for his plans, and both Dull and Gowan told him that he should be paid "well" or "something" for them. After the work had been successfully accomplished in accordance with his scheme, he agreed with the contractors to take $200 as payment for his plans, and Gowan promised to pay it, but failed to do so. Bramhall then sued for compensation, and Dull & Gowan resisted the claim, on the ground that the making of the plans was included in the services which Bramhall was to render under his agreement for superintendence. The jury in the court below gave Bramhall a verdict for $650, and the Supreme Court sustained the verdict, saying that Bramhall "worthily earned the "pittance the jury gave him," and that "there was no doubt "that it was extra work."

PLANS PAID FOR BY OWNER.

A decision is sometimes quoted to show who is the person regarded by the law as the proper one to pay for the plans of a building. An architect named Webb[2] was requested by one Harper to make a design for a portico. Harper contracted with School, a carpenter, to build the portico according to the design of Webb, and in accordance with his working drawings. When the portico was finished, Webb asked Harper for compensation for the working drawings, as well as for the design; but Harper paid him for the design, and refused to pay anything more, saying that the working drawings formed no part of the contract between them. Webb then sued for payment for them from the contractor, on the ground that, if Harper was not bound to pay for them, School, who used them, was. The report goes on to say: "But the defendant (School) was not shown to have made any prior request or subsequent promise, and the presumption, which might have arisen from the use of the drawings in the execution of the work, was rebutted by proof that the architect usually furnishes the means of carrying his plans into execution by designing the details as well as the general outline, and that the obligation of paying for the whole ordinarily rests on the employer."

OWNER MUST STATE COST OF BUILDING FOR COMPUTING COMMISSION.

Where the architect's compensation is to be reckoned by a percentage on the cost, an attempt is sometimes made to cheat him out of his pay by concealing or falsely stating to him the cost of the building. Courts, however, will not suffer such evasions, and an owner in England is said to have been compelled to bring his books into court, that the judge might reckon up the cost. In an American case,[3] an architect named Lambert agreed with one Sanford to make plans and specifications, and procure bids, for a block of three houses, for two and one-half per cent on the estimated cost. He made preliminary sketches, and submitted them to Sanford. Sanford examined them, and told Lambert to go on and prepare a full set of drawings and specifications, which he did, making separate specifications for the mason-work, carpenter-work and plumbing. Sanford then told him to submit the plans and specifications to responsible masons and carpenters and get bids, which was done. The bids were opened by Sanford's direction, and in his presence, and amounted to $8,800. Sanford afterwards concluded not to build that season, and so informed Lambert, but did not accept or reject the bids, or direct others to be procured. Lambert sued for his pay, and Sanford allowed the case to go by default, but appeared to have the claim of Lambert reduced, saying that he only agreed to pay two and one-half per cent on the actual cost of the buildings when completed, and that, if he concluded not to build, he was only to take the plans and specifications and pay a reasonable sum for them. The court rejected evidence of this, saying that it was shut out by the default, which was an admission of the contract as set forth in the complaint.

Sanford then claimed that the estimate intended by his contract with Lambert must be agreed to by both parties; that the bids were not estimates, and had not been accepted, and that no estimate had therefore been made, and there was nothing to show that the two and one-half per cent was due, or when it was to become due.

"ESTIMATED COST" MEANS REASONABLE COST.

The Supreme Court held that "estimated cost" meant reasonable cost; not necessarily the amount of some actual estimate made by a builder, nor an estimate agreed to by the parties, nor one accepted by the owner; and that the court below had properly decided the case, on suitable evidence as to the cost.

THE FIVE PER CENT RULE.

Where no stipulation has been made beforehand as to the definite sum or percentage which shall be paid for the architect's services, it is usually supposed by architects that they are entitled to collect compensation according to the schedule of the American Institute of Architects, or that there will, in general, be no difficulty in obtaining a verdict for the five per cent on the cost which is accepted by architects in all civilized countries, and by the public in most, as the proper and reasonable compensation for the architect's services upon such buildings as those which generally come under his charge.

SCHEDULE FEES REASONABLE IN AMOUNT.

It is true that the higher courts do not often quarrel with the amount of the fees which the architect claims under the schedule, but they often object to the introduction of the schedule itself, or to any evidence in relation to the custom of regulating the charges of architects by any sort of percentage. One English judge is said to have refused to hear evidence as to the five per cent rule, on the ground that a custom, to be of any authority in law, must be a reasonable one, and this was not a reasonable one. A more sensible objection is that a custom, to be binding between two parties, ought to be known to both parties, and the public generally knows little of the rules which bodies of architects establish among themselves; but an obstacle of the same sort does not seem to prevent real estate brokers from collecting their regular commissions without difficulty, and the legal mind appears, as is shown by the remarks sometimes made in court on the subject, to be unfavorably impressed by a custom which, as the lawyers assert, makes it for the interest of the architect to have his employer's building cost as much as possible. Probably this circumstance never enters the head of most architects; but lawyers are not remarkable for looking on the bright side of human nature.

SCHEDULE, AS EVIDENCE OF CUSTOM, NOT FAVORED IN COURTS.

The consequence is that architects who are compelled to collect their pay at law should be cautious about having the

[1] Dull *vs.* Bramhall, 43 Ill. 364.
[2] Webb *vs.* School, 3 Phila. 125.
[3] Lambert *vs.* Sanford, 55 Conn. 437.

schedule, or any custom or usage of charging by percentage, mentioned in court. Occasionally, judges are found who will rule, like those of the Supreme Court of Minnesota,[1] that a charge of five per cent on the cost, for full service, "would seem to be customary and reasonable"; but there is always some risk that the custom itself may be held to be unreasonable, or not binding on the other party, and that evidence in relation to it may be excluded; and the opposing counsel may be relied upon to expatiate on the folly and wickedness of an alleged custom which enables the architect to fill his pocket by the ruin of his client.

SCHEDULE VALID WHERE KNOWN TO CLIENT.

Where, however, it can be proved that the client knew, or had reason to know, that the charge would be five per cent on the cost, and made no objection, the case is quite different, and he will be regarded as having agreed to pay on that basis, however unreasonable the basis may seem to his lawyer. How much notice to the client is necessary to satisfy the judges that he knew and assented to such terms is uncertain, and no case which establishes definite principles in regard to architects has yet been decided. In the case of Gilman *vs.* Stevens, previously quoted (page 45), the Institute schedule was read in court, and not objected to; and the judge charged that Mrs. Stevens knew the standard and regular rates of architects' fees, because it appeared that she had been charged the same rates by Mr. Gilman on several previous occasions.

WHAT NOTICE NECESSARY.

In default of such clear evidence of knowledge of the custom as this, it is probable that if the architect, as many architects do, had the Institute schedule printed at the top of his sheets of letter-paper, and his client, after receiving several letters in relation to his building, written on this paper, had made no objection to the terms, a court would hold that the client knew the terms, and had tacitly agreed to them, and could not escape from paying in accordance with them.

Where the architect simply had them framed and hung up in his office in a conspicuous position, it seems to be more doubtful whether a client, if he denied having read them, would be held to have necessarily a knowledge of them. It is true that this is all the notice that real-estate agents usually give to their customers in regard to their charges, but the usages of architects seem to be regarded as less reasonable in themselves, and, therefore, as requiring stronger evidence in their favor than those of the real-estate brokers.

SCHEDULE USAGES VALID FOR NON-MEMBERS OF THE INSTITUTE.

It is to be observed that the custom of architects, as shown by the Institute schedule, where it is admitted at all, is nearly as valid in favor of architects who do not belong to the professional body issuing the schedule as of those who do. Membership in the Institute would imply a high grade of professional attainment, and a person who proved his membership might expect to recover remuneration on the highest scale if the jury thought that any classification ought to be made among architects in this particular; but, although a professional association has power over its members, and can, as is said to be done in Germany, expel those who do not conform to the schedule of charges it has adopted, it has no power over the public, and its schedule has no authority, as against the public, except so far as it represents the reasonable and customary charges of all skilful architects. In the case of Gilman *vs.* Stevens, although the Institute schedule was read, no attempt was made to show that Mr. Gilman was a member of the Institute; and the fact, except as indicating his professional standing, would have been quite immaterial.

[To be continued.]

THE PALACE OF ST. CLOUD. — What was the favorite residence of Napoleon III at St. Cloud was reduced to a ruin by Prussian cannon in 1870-71, and it is now in such a dangerous state of dilapidation that it is to be removed entirely by the Government. The municipal authorities of that beautiful suburb, however, are desirous of having a new château erected in its place, to be used by the President as his summer home. M. Carnot's personal preference, though, is for Fontainebleau, so that there is little prospect at present that the scheme will be realized. — *N. Y. Tribune.*

[1] Knight *vs.* Norris, 13 Minn. 473. Gilman *vs.* Stevens, 54 N. Y. P. R. 197. Irving *vs.* Morrison, 37 C. P. (Upper Canada) 242.

ARCHITECTS IN THE FRENCH CHAMBER OF DEPUTIES.

A DEBATE, of which the following account is condensed from *L' Architecture*, took place in the Chamber of Deputies, in Paris, November 12 and 14. M. Trélat, who replied with such spirit to the attacks on the members of his profession, besides being a Deputy, is a very distinguished architect, the author of several important technical works, and now the architect-in-chief of the Department of the Seine.

At the session of November 12, in which the appropriation bills were under discussion, M. Léopold Goirand, having the floor, said, "I wish to call the attention of the Chamber to the very defective conditions under which are executed the works connected with the Administration of Fine Arts.

"You know, gentlemen, how most private as well as public works go on. The architect first makes his estimate, very modest in items, as well as in total; then, as the execution advances, the figures grow also, and, when the whole is done, the proprietor, or the State, whichever may have to pay the bills, recoils in terror at the truly extraordinary dimensions of the expense. [*Cries of* "Good! Good!"]

"This is a danger against which private owners, however careful they may be of their interests, find it difficult to guard; but what is difficult for private citizens is much more so for the State. Every one knows that, whatever may be the zeal with which officials defend the public interest, they cannot be expected to show the same tenacity and care as private persons defending their own money.

"We all agree that the money which we vote should be expended by architects under strict supervision; and that it should in no case be put into their hands with carte-blanche to spend it at their fancy; yet we do not find any trace of the application of these principles in the Administration of Public Instruction or of Fine Arts.

"Who among you would suspect that the millions of appropriations which we vote for historical monuments, for lycées and colleges, after being discussed and fixed by men acting as members of a Special Council, or of a great Commission of Administration, will be immediately put into the hands of the same men, in another capacity, that of professional architects, to be spent by them under the usual terms, that is, at a remuneration of percentage, which will, naturally, vary in amount with the size of the expenditure which they have induced us to sanction? [*Observations:* "That is so!"]

"When we vote these sums, who of us suspects that they are to be handed over to these same architects, who spend them without supervision — I do not say without effective supervision, but without any supervision whatever? How could we have dreamed of such abuses?

"If we examine the principles on which the funds appropriated for historic monuments are used, we shall find everything systemized and in order. There is a Commission of competent and distinguished men, who discuss the items, approve contracts, and make up the schedule on which we vote the appropriation. Subject to the Commission, we find twenty-seven architects employed in construction, who are supervised by three General Inspectors: everything is perfect.

"But if we enter into detail, and examine the names of the architects who execute, and compare them with those of the people who fix the appropriations and supervise the expenditure, we discover that the organization which looks so perfect on paper is a mere blind. The Commission is composed of eight architects, one painter, one sculptor, a few archæologists, the Prefect of Police, the Prefect of the Seine, four directors, the Minister, etc. Obviously, the eight architects, the painter and the sculptor must constitute the most active part of the Commission. Now, if I look to see how the appropriations requested and distributed by this Commission are spent, I discover that half the appropriation is devoted to works under the charge of these same architects; that is, that the architect-members of the Commission of Historic Monuments keep, for carrying out the job which they give themselves, half the money which they get from you. And when we look to see what is the function of the painter and the sculptor on the Commission of Historic Monuments, we discover that it consists principally in giving themselves all the work in the way of painting or statuary which the Commission decides to have done. [*Movements in the Chamber.*]

"I ask you, gentlemen, are these reasonable and proper conditions? Is it not evident that such a system will naturally lead to the misapplication of the public money?

"But this system shows its most extraordinary and shocking effects on the matters concerning the construction of lycées and colleges. When the construction of these was begun, it was considered necessary to establish a commission of four architects, and it was agreed that these architects, who received a salary, should be required to abstain from all professional connection with the buildings.

"At first everything went well. The four architects who had accepted these conditions kept their word for some years; then, little by little, the supervision relaxed. They began to execute themselves the works which they ought to supervise, and now we are astonished to find, out of four architects on the Commission of Supervision, two who have executed, within the last few years, work to the amount of more than twenty-four million francs. [*Exclamations from various quarters.*]

"And, if these architects exceed their estimates, if they spend money for pure fancy, who is there to recall them to reason? Only the Commission can do it, and, of the four architects on the Commission, two are engaged in the construction. Where is the majority to condemn them?

"But there is something worse yet: the action of the Commission in regard to the construction of lycées and colleges in the provinces, which is certainly strange. We find two architects on the Commission who have carried out works at Tulle costing a million and a half, at Montauban a million, and at Grenoble three and a half millions. I ask why these Parisian architects should be charged with work of this kind for municipalities which probably never heard of their existence.

"I will not try to explain, but will mention, gentlemen, how a member of the Commission came to be charged with the execution of the lycée of Montauban: this will serve you as an example, from which you may draw your own inferences.

"The city of Montauban, after having built a lycée for boys, wished to have one for girls. It was satisfied with its architect; he had made a satisfactory building, and had not exceeded his estimates, and he was engaged to prepare the plans of the lycée for girls.

"The specifications were made, sent to the Department, and examined by the Commission of Lycées and Colleges, and rejected. Modifications were required. The modifications were made, and the plans and specifications sent back to the Department and again rejected. The Mayor became impatient — I give the names, because I have no fear of being contradicted." [*M. de Lamarzelle:* "It is so everywhere."]

"The Mayor became impatient, and came to Paris with his architect. He presented himself at the Department of Public Instruction, and requested explanations. He was told: 'Go and see M. So-and-so, who was charged with making the report on the plans.' He accordingly visited this member of the Commission, an architect. What took place at the interview I cannot say; but it is certain that, when they came away, the Mayor and the architect from Montauban were convinced that it would be much better to confide the direction of the works to the member of the Supervising Commission. [*Laughter and movement.*]

"It seems to me that comment on these facts is unnecessary.

"As a matter which, although not strictly within the scope of the present discussion, is interesting by way of illustration, I will add a few words on the manner of proceeding with the national palaces and civil buildings.

"Here, gentlemen, we have another anomaly; there is not even a semblance of supervision.

"Four General Inspectors constitute alone the General Council of Civil Buildings. They are charged with proposing to the Legislature the appropriations which ought to be voted, and they then divide them among the different architects to be expended on the work. This operation is very simple. When they have obtained the appropriations, they divide them among themselves [*Laughter from various quarters*]; and, as it would be strange to see architects spending money without any supervision, they have arranged to supervise each other." [*Renewed laughter.*]

After some explanations from the Minister of Public Instruction, showing that, after several unhappy attempts by local architects to meet the requirements for the school buildings established by the new laws, it was found more satisfactory to have them planned and executed by members of the Commission, who had been chosen in the first place for their skill in such work, and had made special study of it it since, M. Trélat took the floor, and spoke, in substance as follows:

M. Emile Trélat: "I ask the permission of the Chamber to present a few observations, to simplify, or rather, rectify, one point in the present discussion.

"Allow me to assure you, from, I think, a reasonable acquaintance with the facts, that it is mere nonsense, repeated only for argument, to say that architects exceed their estimates ——" [*Laughter and exclamations from various quarters.*]

The President: "Gentlemen, I beg you to allow the speaker to express his thought and prove his assertion."

M. Trélat: "I request permission, for the first time that I have the honor of speaking before this Chamber, to take this occasion for defending the honorable character of the members of the profession of architecture, the greatest art that is practised in France.

"Like every other profession, this of ours has a head and a tail. It is of the members who stand at the head of the profession that we are now speaking.

"We are told that architects exceed their estimates; that they make their estimates with a view to exceeding them, so that they may increase the five per cent which constitutes their fee."

M. Léopold Goirand: "We have not said that!"

M. Trélat: "I request permission to give you some explanations. Gentlemen, I beg you to consider the great work which the Republic has carried on for twenty years past — the uncertainties, the hesitations, the remodellings, which have been made in all the plans of which you observe the realization. Think of the programme of higher instruction which you and your predecessors have studied with so much care. Have you not made, and are you not still making, modifications which change, enlarge or diminish the original conceptions? For the past twenty years, more work has been done in France than ever before; that is to say, architects have been employed. These architects have found themselves presented with programmes, ill-defined, uncertain, and almost always changed in the course of the execution. It is not the architects who have changed the programme, it is you; it is the Administration. During the five or ten years occupied by the construction, all that must be looked out for. Who does this? The architect. But when changes are made in the work, the expense changes, and almost always increases. It is on you, gentlemen, in your love of progress, it is on the development of ideas, it is on the Commissions, charged with advising the directors and the ministers, it is on all the world that the responsibility should be laid, except on the architect, who follows painfully instructions unceasingly renewed, which spoil utterly, in most cases, the unity of the work which he had conceived. This is the source and the explanation of the excess of cost over the estimates. There is no other. [*Various movements.*] I assert it, the architects of whom you speak, that is, the skilful and eminent men who serve the Administration with such resources as are placed at their disposition, never exceed their estimates, so long as no change is made in their original programme.

"This profession is like all the others; it has, as I have said, a head and a tail. It is certain that, if you judge it by its inferior extremity, you will find occasion for the criticisms which have been uttered here; but it is not so with the head, nor with the body of the profession. When you say that the architect changes the contracts to increase his commission ——"

M. Léopold Goirand: "I have not said that!"

M. Trélat: "What is the situation of the architect? Apart from the consideration of honorable conduct, it is his interest to make estimates as exact as possible; for the work will not be voted if the estimates are too high; and he will find himself in serious difficulties if he exceeds his calculations. . . . I affirm again that there are architects, and they are the great majority of artists of reputation, who never exceed their estimates." [*Exclamations of various kinds.*]

THE JOHNS HOPKINS HOSPITAL, BALTIMORE, MARYLAND.[1]

XV Century Frieze. From Havard's "*Dictionnaire de l'Ameublement.*"

THE scheme of this institution embodies all the latest and best methods of planning, being in fact an adaptation of the best existing examples of European hospitals. The grounds cover a space equal to about 14 acres, with a frontage of 709 feet and a depth of 856 feet. The hospital is open to the sick in the city of Baltimore and environs, without any restriction as regards age, sex, or color, and free of charge for surgical or medical treatment. It also provides for patients who are able to make compensation for the ward-room and attention received, these funds being appropriated to the establishment of a training-school for nurses and provision for buildings in the neighborhood for the reception of convalescents.

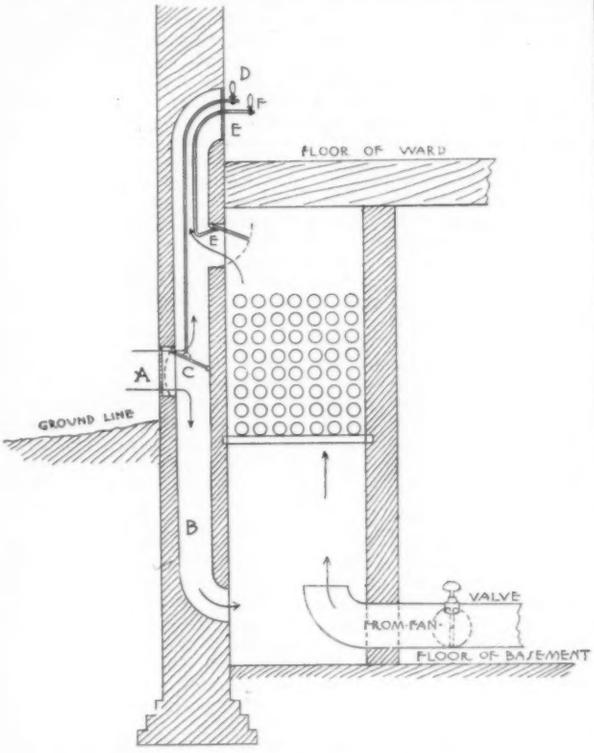
The administrative block has a principal entrance at the centre of the west front. The main floor contains offices, library and reception-rooms. Second floor, rooms for the resident medical-officers. Third floor, rooms for resident medical-students, bath-rooms and closets being placed in the rear projection. At the main-floor level and across the corridor is the apothecaries' block, containing officers' dining-room, pharmacy and apothecaries' rooms, and eighteen rooms for female servants, with bath-rooms. At the end of the corridor is the Nurses' Home. The main floor contains parlor, library, rooms for superintendent of nurses and head nurses. In the basement: kitchen, dining-room, lecture-room, etc. On the second and third floors are rooms for nurses, with bath-rooms and closets. Near the opposite end of this corridor is the bath-house, with Turkish, Russian, and special baths, and the basement is fitted up with common bath-rooms.

[1] Being part of the Series "American Construction through English Eyes," by a late holder of the Godwin Bursary, Mr. A. A. Cox.

The male pay-ward occupies the northwest corner, and comprises a block of officers' bedrooms and rooms for pay-patients. The female pay-patients are placed in a similar block placed symmetrically in the southwest corner. The kitchen block has kitchen, scullery, refrigerators, store-rooms, etc., and on the upper floor, dining-rooms for resident help. The basement provides space for bakery, pastry-room, bread-room, meat and stores. Descending to the cellar floor we find the boiler-vaults, which contain water-meters, filters, coal-vaults, steam ash-lift, four hot-water boilers for general heating, and three steam-boilers which are designed to heat the bath-boilers, ventilator-coils, bath-house, amphitheatre and dispensary. The pipe-tunnel contains hot-water, steam, waste, gas and water pipes.

The hospital wards are placed in a line running from west to east, with convenient spaces between each block for light and air. The octagonal ward contains general ward, central hall, lavatory, nurses' and other closets, patients' clothes-closets, diet-kitchen, dining-rooms, one room being set apart for the colored patients, and two special-cases wards. The second story is similarly planned.

The common wards at present existing are three in number, and are built parallel with each other, connected by a continuous, wide and well-lighted corridor. The isolating ward is at the end of this corridor, and contains twenty rooms for patients, two nurses' rooms, bath-rooms, diet-kitchen, nurses' closets and linen-room. The three rooms on northwest corner have perforated floors. In the blocks on the north boundary are the amphitheatre and dispensary, the former containing lecture-room, small operating-room, consulting



Sketch of Air Mixing Method not drawn to Scale.

Note: — The cold air enters at *A* and passes downwards through the flue *B* to the coil chamber, then through the coil where it is warmed and passes into the ward through the flue and register at *E*. If the air be too hot the valve *C* is lowered by a rod handle *D* by which any degree of heat is obtained. The valve at *F* is used in a similar manner to control the amount of the supply of heat.

and recovery rooms, accident department, etherizing-room, and waiting-rooms, and in the latter block are an out-patients' department, pharmacy, surgeons' and physicians' rooms, closets and baths, and in isolated buildings on the corners of the eastern boundary are the Pathological Building and the laundry.

The wards are built on the one-story plan, with basement below and attic above, and only one ward in each building.

The materials used in the construction are Baltimore red bricks, terra-cotta, Cheat River bluestone and slate roofs, with a sparing use of copper and galvanized-iron.

The floors of bath-rooms, water-closets and lavatories are of asphalt. The floors of main kitchen and all rooms in connection with servants' working departments are of concrete finished with a smooth surface. The ward floors and rooms for the sick are laid with edge-grain Georgia pine 1⅛ inches thick, which was soaked in water for six months, and then preserved dry for several years, before being dressed for use in order to secure the removal of all soluble matters and a thorough seasoning.

All the walling is for the most part plastered with three-coat work finished with a hard surface and painted in oils. In all rooms in which wooden beams were used for the ceilings, wire netting was used in lieu of wooden lathing, in order to prevent cracking, as well as to offer greater resistance in case of fire. The stairways in the wards are of iron, with a layer of asphalt one inch thick in the treads. The wood-finishing is of ash, and is free from quirks, grooves and all undercut or uneven surfaces; plain, chamfered or rounded mouldings, which do not give catch places for dust, and are easily cleaned by rubbing down with a damp cloth, are used, and all hardwood is finished in hard oil.

The arrangement for the disposal of waste-water from the various buildings of the hospital is an adaptation of the system used in the city of Baltimore: the waste-water from the wards, sinks and water-closet sewage are kept distinct from that coming from kitchen-sinks, wash-basins, lavatories and baths, all of which latter are allowed to run into open gutters; while excreta from the former are discharged into pits, wells, cesspools or boxes, some of which are comparatively water-tight, and are cleaned out at stated intervals, or, when they became full or offensive, many of these receptacles allow of more or less leakage of their contents into surrounding soil, while others have the form of deep wells extending to the underlying bed of gravel, and are seldom or never cleaned out. The discharges from ward water-closets and sinks, and from all water-closets and house-maids' sinks in the Administration Building, the Nurses' Home, the apothecaries' block and kitchen, are conveyed by a separate system of iron pipes from each building to an iron pipe which runs in the pipe-tunnel from the isolating ward on the east to the point where the corridor to the female pay-ward is given off. Here the pipe leaves the tunnel and enters the ground, and passes to a well west of the Nurses' Home. The well is 7 feet in diameter and 71 feet deep. At the bottom it enters a stratum of coarse gravel and pebbles, through which water is constantly flowing towards the south-west. The well for the Pathological Building is 5 feet diameter and 81 feet deep; that for the laundry is 6 feet diameter and 75 feet deep; that for the amphitheatre and dispensary is 6 feet diameter and 77 feet deep.

The water from wash-basins, kitchen-sinks, etc., is conveyed by a separate system of pipes to the street-gutters or to the 16-inch pipe-drain about ten feet beyond the silt-trap in the corner of the grounds.

All soil-pipes were delivered on the grounds as they came from the foundry without being tarred or painted. They were then tested by passing through each length or section a swab dipped in a mixture of linseed oil and red lead, the slightest defect in the coating being indicated by an appearance of an oily stain on the external surface of the pipe so tested. All soil-pipes are trapped near the wells into which they discharge, and have fresh-air inlets inside the trap; the wells are also ventilated with pipes taken up above the level of windows in the buildings. The water-closets are "wash-out" closets, being what is known as the "Brighton" pattern. Bath-tubs are of iron and not enclosed with work, stand upon iron legs clear of floor and are movable, being unconnected with the plumbing. The sinks are of porcelain. For all wards, the vertical soil and trap vent pipes are placed in a kind of small closet or ventilating shaft, which extends above the roof, and has in it an accelerating steam-coil to secure a constant upward current. Into this shaft pass ventilating tubes from the water-closets and urinals, and the working of this has proved very satisfactory.

The drainage scheme is by no means an ideal one, but it was adopted as a temporary means until the city provide a proper system of sewers, and all the pipes are therefore laid with reference to connections with the sewers when these are adopted by the city authorities.

The main ward-room is 99 feet 6 inches long by 27 feet 6 inches wide; 15 feet high at side walls, and 16 feet high in the clear, in the centre contains twenty-four beds, as shown on plan, giving each bed 7 feet 6 inches of wall space, 106 square feet of floor-area, and 1,768 feet cubic air-space.

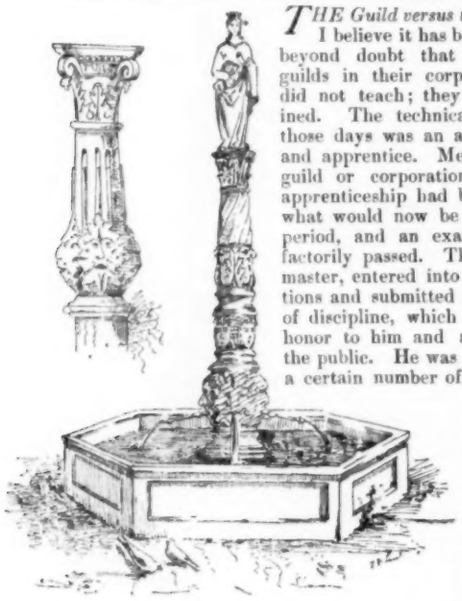
The method of heating and ventilating these wards is of importance, and is as follows: The heating is effected by hot-water coming from the main in the pipe-tunnel and passing through coils of 3-inch cast-iron pipe arranged in stacks in the basement against the outer walls. Under ordinary circumstances in cold weather the average temperature in these coils is 150° Fahrenheit, but it can be regulated to any degree above that of the external air by reducing the velocity of the current of hot-water passing through it, which is readily done by the use of valves placed on the flow and return pipes of each coil.

The fresh-air supply is admitted through openings in the exterior walls of the basement of the ward, coming from over the green lawn which surrounds the wards. This opening in the wall is protected by wire netting, and communicates with a galvanized-iron flue which passes downward to open in the chamber beneath the heating-coil, and also upward directly to the fresh-air register in the ward. In this flue, opposite the external openings, a cast-iron register is fixed, by the use of which a careful regulation is exercised, and it is possible to give one pair of beds a temperature of 70° and another pair in the same room at a little distance a temperature of 60° Fahrenheit, to suit the needs of the different cases. The 80,000 gallons of water contained in the heating apparatus go round and round, carrying heat from the furnaces to the wards, but every building has its own independent means of ventilation, and it is not possible to pass from one ward to another without going into the open air on the way, so that foul air, if any, cannot spread from one block to

another. Nevertheless, the buildings are so closely connected by corridors and underground tunnels that patients walking from one building to another are not exposed to inclement weather or cold air, and the food is not exposed. One of the peculiarities of the wards is that all the service-rooms are collected at the north end, leaving the south free of all obstructions and fully exposed to the sun, the end of the ward being formed into a large bay-window overlooking the central garden, and with a floor which can be warmed, so that the patients who are able to sit there can be thoroughly comfortable. The wards are all arranged for the best possible methods of cleansing and to prevent accumulation of dust in corners and crevices. The corners are in a sense dispensed with and easy curves substituted. This is also done at the junction of the floor and walls, as well as to ceiling angles. The door mouldings, architraves to windows, and other finishings are all designed in rounded forms instead of with the sharp arrises and undercut members which give recesses that it is almost impossible to clean. One ward is especially designed for cases of a contagious or offensive nature. In this block each patient occupies a room by himself, and all these rooms open into a wide corridor through which the wind is constantly passing. Each room is provided with a dry-closet apparatus fitted in a separate closet, which is lined with metal throughout, and is connected with a large ventilating trunk running up through the roof. The apparatus is of a very simple form and is made movable. It is, however, fixed so that the patient cannot disturb or move it. There is a small door at the back, opening into the corridor, through which the pan can be drawn and taken away, without passing through any of the wards. There are numerous other details about the isolation-ward which are worthy of notice, also about the pay-ward, the octagonal ward, and the peculiar fittings and conveniences of the kitchen, laundry, apothecaries' building, etc.

The hospital not only provides rooms for the sick, but gives means for higher medical education. There is a large amphitheatre, with adjacent rooms for the reception of accidents and emergencies of all kinds, and provision is made for thirty students to reside in the hospital and devote themselves, under proper guidance, to the study of disease and the practical care of the sick. Many of the arrangements of the hospital have been constructed with reference to instructional purposes. It is a good laboratory for teaching the practical applications of the laws of hygiene to heating, ventilation, house-drainage, and other sanitary matters.

THE ARCHITECT AND HIS ARTISTS.[1]—II.



THE Guild versus the Academy.—I believe it has been established beyond doubt that the mediæval guilds in their corporate capacity did not teach; they merely examined. The technical education of those days was an affair of master and apprentice. Membership of a guild or corporation implied that apprenticeship had been served for what would now be called a long period, and an examination satisfactorily passed. The member, or master, entered into certain obligations and submitted to certain rules of discipline, which were alike an honor to him and a protection to the public. He was allowed to take a certain number of pupils, who, in due course, became masters, and members of the guild; and this went on from generation to generation. But these customs, which in the sixteenth century were doubtless thought old-fashioned, were largely interfered with by the extraordinary influx of foreign workmen from Italy and France, attracted by the wealth (comparatively regarded) of this country and its desire for improvement in the arts. But so great appears to have been the demoralization, that in 1562, the fifth year of the reign of Elizabeth, an Act was passed which compelled every lad wishing to practise a trade, to serve a master for seven years before he could commence as a master, and the Act was only repealed in 1814, at the instance mainly of the engineers. After this, any trade could be taken up by any person without having served an apprenticeship, and, says Mr. Wyatt Papworth, from whom I have quoted, this led to "the subsequent degradation in trade and manufactures, and to a like degree in art." It was only after the disintegration of the guilds, and prior to the foundation of academies, that a selected few were dubbed, by the personal favor of monarchs and reigning dukes, ducal engineers, ducal painters, architects and sculptors of the king, and permitted to use other high-sounding titles of a like kind. It was such men who, in Paris in the time of Louis XIV, formed the Academy of Painters and Sculptors, and the Academy of Architecture, both of which merged into the Academy of Fine Arts, and were resuscitated as part of the Institut de France by Louis XVIII, in 1816.

The main principle of the mediæval guild was the consolidation of all workers in a particular art or mystery (which means *mestier*, or trade) as a corporate body; and these professed practitioners enjoyed equality among themselves. The main principle of the Academy, as it has come down to us, from Italy through France, is the selection of a few who by personal favor are placed above their fellows in the same art, and who, as members of the Academy, are absolutely free from all professional discipline whatever. The mediæval principle reflected a spirit of true equality; the modern academic spirit is of the very opposite description and totally opposed to the great doctrine of modern legislation which in this country is peculiar to no one political party — the security of the greatest happiness of the greatest number.

In France, the result of the system of placing a few architects on an eminence of social esteem by the favor of a coterie — or, to be precise, by the personal favor of the majority of those composing it — is less injurious to the profession at large than in England. The Architect-Academicians across the Channel are almost invariably chosen from among those who have been specially trained — who have devoted long years of their early career to special studies, who have been examined not once, but several times, and who commence their professional lives on buildings in progress; and often at an age when many Englishmen of ability fancy themselves failures if they are not driving a remunerative practice. Even the most distinguished travelling-student, after four years' study in Italy and Greece, comes back to Paris, at the age perhaps of thirty, to find himself appointed to a place on a public building, the equivalent of which in this country would be that of an assistant to a clerk-of-the-works. From that position he rises to be a chief inspector, afterwards an assistant-architect; and then, as time flows on, sometimes architect to the building.

In England, the genius of the people, throughout all the social strata, is commercial; and commerce without the grain of pluck which renders risky speculation sometimes a success, and always seductive, is a poor wee thing which no more conquers position than an army always on the defensive conquers a new province. Englishmen believe in success, and admire the man who gets placed above his fellows by audacity, whether speculative or competitive, or by genius, as the case may be. They like to have, not always the best of everything, but what is thought at the time to be the best; and as the lives of most men in this country are busy ones, they have not time to think for themselves in any matters with which they are not personally identified. Hence they are very much obliged to the Royal Academy of Painting, Sculpture and Designs for publicly informing them of the names of the painters and sculptors whose works ought to be admired, and of the names of the architects who ought to be employed, not only in London but in every part of the United Kingdom. Hence the academic advertisment of a few men means what most Englishmen prize — a good income; and it is not surprising that among the elect the watchword should be — "The fewer the better." In this assumption I am supported by the remembrance of a conversation I once had with a certain "artist-architect," who advanced a proposition which induced me to say that if his view were accepted in its integrity, the profession of British architects would be reduced to some fifty persons. "Exactly so," replied this philosopher, "and then So-and-so" [naming a Royal Academician] "would join us!" That reply is unanswerable, and in it lies concealed much of the thought and intention of those leaders who incite their followers to denounce what they call professionalism. The leading artists of the Royal Academy and those who seek to be members thereof do not want to be hustled in the hurry of existence by a scientifically educated body of professional architects.

The influence of an academy, especially when subventioned by the State, is always largely enhanced by the fact that it is situated in the capital city, Imperial, Royal, or Republican as the case may be; and as all such centres possess an extraordinary attraction for the youth of a country, as success in the provinces is always burning to repeat itself in the metropolis, great capitals swell every year in dimensions. A lifelong struggle for work is deemed preferable by a great mass of Englishmen to a modest practice in a provincial city, principally because the best men of a nation are supposed to collect in its metropolitan centre; and if this superstition hold good generally, the elect of the best men — the chosen few, say, of a great profession — must hold a position not less advantageous to their own interests than prejudicial to those of their brethren in the same capital. It follows, therefore, that that position must be still more prejudicial to the interests of the whole body of the profession throughout the entire kingdom.

In France, the professional star is of an order very different from those similarly placed in this country. The French Architect-Academicians design and personally superintend the execution of public buildings, or they hold the post of inspectors-general of national monuments, or diocesan edifices, or State schools, or prisons,

[1] Portions of a paper read before the Sheffield Society of Architects, England, by Mr. William H. White, F. R. I. B. A., Tuesday, December 8, 1891. Continued from No. 836, page 14.

etc., but they seldom accept private practice; and their annual incomes are often less than those of the ordinary practitioner. So recognized, however, is their position that the post of President of the Central Society of the Architects of France is allowed to be held only by one of the eight Architect-Academicians; and no member of the Society, except he be of the Academy, can rise higher than Vice-President. Yet no one grudges the Academicians their well-earned distinctions, and no one fails to pay them the respectful homage which is their due. Very different is the position of an architect-member of the Royal Academy in London. There is no need for him to earn by any special training the honor of election; there is no standard of excellence, scientific or artistic, except perhaps the fashion of the decade and the personal esteem of those in power, to which he need conform; and his chief obligation is to exhibit sketches of his works in the Academy "Architectural Room."

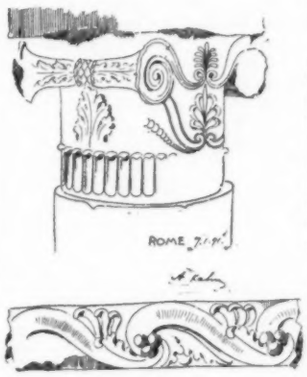
Architectural Exhibitions in London and Paris. — The wall-space of that room, which is presumably for all the architects of England, is much less than is devoted to the works of some three or four distinguished travelling-students in Paris at international exhibitions. Hence, perhaps, the reason why such drawings as show how buildings are constructed find no place in the exhibitions of the Royal Academy of London. "Where are your plans and sections?" said the French architects to me at the Exhibition of 1889; "what are your materials, of what is your construction, how do your towers and domes stand, and on what?" The same thing was asked me at the International Exhibition of 1867, and I was then similarly powerless to reply. Frenchmen admire the pretty sketches of English architects and the picturesque designs represented thereon, but they are not complimented by the inference that working-drawings and constructional details are things of little interest to them. Indeed, the one or two Frenchmen who were in London when an exhibition of the working-plans, sections, and elevations of buildings, executed by Burges and Street, was held at the Royal Institute of British Architects, took back to France a far higher appreciation of English work than they ever derived from the collection of sketches sent over to Paris in 1867 and 1878. But by these pretty sketches the British public, whose tastes it is the custom of British artists to condemn, are fascinated; and from them the patriotic and wealthy Philistine before mentioned often makes his choice of an architect, in precisely the same fashion as he buys a picture which is hung "on the line," or orders a conspicuously-placed model in clay to be converted into sculpture by one of the modeller's assistants.

"*Architectural Art*" *during the Victorian Era.* — It will, doubtless, be admitted that when a youth chooses, as it is called, a profession, he takes a leap more or less in the dark; and if one who has jumped into the crowd of painters, or into the crowd of sculptors, finds out, as day breaks, that he has made a mistake, it is difficult for him to acknowledge the error. Though he hopes to mend his position, he has learned the rudiments of painting only, or of sculpture only; but if he had studied the rudiments of architecture, the choice not only of that art, but also of its endless subdivisions, would have been open to him. At the worst, if he ultimately decided to relinquish the pursuit of it or any subdivision of it, the time he had devoted to its study would not be lost to him, no matter what calling he might choose for a career. All hope, however, of making the study of architecture the basis of art education must be given up if it is to be treated as a specialty, or as an art only in the modern æsthetic sense of the term.

What is that art? What, in fine, is "architectural art" in its modern æsthetic sense? Let us test it by the experience of the present happy reign of Queen Victoria, for even those who are but approaching their half-century can offer a reply to this crucial question. When, about a generation ago, they were beginning their professional lives, there existed among British architects a supreme, an irrepressible contempt for the artistic character of the works executed by their fathers and grandfathers; and at the present time I encounter everywhere signs of doubt and disappointment respecting the artistic merits of works designed and executed less than fifteen and thirty years ago — during a period, in fact, when artists have been more or less confident that the right thing was being achieved. What is the obvious inference?

It was a pretty poetical idea of the ancients to represent the Temple of Nemesis as always open during a Triumph, and the new architect, in the present hour of his newest success, may even now, perhaps, be haunted with the warning words poured into his ear by some miserable cynic: "As your fathers and grandfathers despised the works of their predecessors, as you contemn the works of your fathers and grandfathers, so will your works be treated by the sons and grandsons who outlive you." But the see-saw may ultimately become tiresome, and his wiser brethren will perhaps seek safety in a return to principles, the nearly forgotten principles which Pugin, Viollet-le-Duc, and Burges advocated — principles which were identical in both the great periods of true and progressive architecture, the period of which the ruined Parthenon is the chief example and the period of the domination over Western Europe of the University of Cluny. It was the intimate knowledge of this truth which induced William Burges to tell his brethren in this country that they would find salvation nowhere out of the thirteenth century — meaning thereby, outside the artistic principles which governed the architecture of that great epoch. It is not proved, to the satisfaction of the intellectual and thoughtful minority of Englishmen, that æsthetic art alone, however good, makes architecture good. The short experience of half a century suffices to show that the architectural art which a comparatively recent generation believed to be good, the succeeding generation believed to be bad; and architectural art of the modern type applied to a building seems to be neither tangible nor capable of progressive development. Scientifically and artistically constructed buildings are what the educated public want, and if they are sometimes hard upon an architect it is because of his bad building, not of his bad art. I am sorry thus to dissociate building from art, and can only offer in excuse the present pernicious application of the ancient word "art" to something ethereal in the domain of architecture. With the followers of Mr. Norman Shaw, art appears to be a sentiment, a feeling or a fancy derivable from a fund of æstheticism in their leader's possession; and the leader is apparently unconscious that the promissory notes now drawn upon it may be dishonored at the first radical change of fashion, or the next reversal, in the lifetime of half a generation, of every artistic principle that the preceding half held to be true and irrefutable.

THE ARCHITECT AS A BUILDER.[1]



WHO cares where wisdom is gathered, so long as you possess it, whether gleaned in the Polytechnic Schools, at the carpenter's bench, or at the stone-cutter's banker? A mind well stored with practical knowledge, no matter how humbly obtained, makes its possessor fit to instruct, to advise, and to be able to take the lead in whatever he undertakes.

Now the "Architect as a Builder," in great cities like ours, is not always such as he ought to be. It is very true that rarely can we find in any one person all the attributes which make success in any calling; so that, out of the vast number of our architects, how many of them can themselves execute drawings which would be acceptable in competitions, and still, would be practical enough to be thoroughly competent to supervise and superintend the execution thereof?

We all know how rare it is to find the designer able to construct his own creation. It is rarer still to point out the architect who himself makes his own artistic picture for a competition. So it is that by being a conceded fact that, while it is almost an impossibility to blend the artist and the mechanic in one person, it is absolutely necessary, and becomes obligatory to train and educate the qualities we fall short of, so that the poetry of our profession shall mingle harmoniously with its prosaic facts. . . .

It is a great mistake in the young architect, fascinated with the pleasures of his draughting-board, that he postpones until after years his study of construction. He will have spent most of that time in vain, if he persists in making himself believe, that being able to give a sort of outline of an object, will prepare him for a profession which exacts a greater comprehension of its work before attempting to draw it, than any other.

The architect must always be able to discuss, with the builder, that mode of construction which it is his intention to adopt; and well does it behoove the architect, the chief head of the building, to understand what he is talking about, or the man with brawny arm and positive knowledge, who is to execute the work, will soon discover how much the architect knows about what he professes to know. As the chief head of the building, he cannot afford to know less about the governing points in construction than his builder. When he does, his case is humiliating, and the architect who, with pompous assurance and limited experience, attempts to teach competent mechanics that which it has taken an apprenticeship of years to learn, is short-sighted indeed. . . .

No architect can talk understandingly with a master-mechanic who knows not the definition of his terms any more than we can understand the surgeon or physician, or the machinist or the electrician, or any master of structural subjects.

Everything, and every way of working in each trade, has a name and a significance. No man should be allowed to practise architecture until he has familiarized himself with them.

You have heard me say, some of you, that there is always something that the most experienced architect can learn about building, even from the man who carries the hod. It may not bear upon the finer points in practice, but it should be enough to convince us that any man who has spent the best part of his life in any specialty about or on a building must have something to teach us, who have only a fair, general knowledge of it.

We built a house once for a man who professed to know much about building. He had occasionally looked over it, and when it

[1] Portions of a lecture delivered before the class in architecture of the Department of Architecture of the Brooklyn Institute, December 22, 1891, at the Art Institute, by Walter Dickson.

was completed, during our absence, he inspected it. We received a note from him one day, stating that he was afraid of an accident — that there was some woodwork in the ceiling of the cellar which was an eye-sore, and that they didn't dare touch it, for fear of its letting the brickwork above it come down. We sent our superintendent to see it, and what do you suppose it was? Well, it was the wood centre under his arched kitchen hearth, that the mason had forgotten to strike! It had served its purpose, was now useless, and had been overlooked!

Perhaps we should conceal the fact that architects make mistakes; but they do, and the majority of their mistakes are caused by a lack of practical knowledge. Mark it in your memory, that to the profession at large, and to you as well, mistakes, oftener than otherwise, make the wiser and more careful practitioner. I do not by any means, recommend carelessness, but, depend upon it, that man does not live, who has ever amounted to anything, who has never made a mistake — unless it has been some terrible and inexcusable one — but that the experience derived from that mistake was of incalculable benefit to the world as well as himself.

Do not disregard the suggestions of your builder; do not let real or imaginary superiority on your part, either in position or attainments, cause you to hold yourself aloof from him. Remember that in these great cities there are structures which redound to the fame of architects who owe their reputation to the caution and good judgment of the builders, who have by their foresight strengthened weak spots, held together walls and arches, prevented settlements, bridged over threatening dangers — in fact, saved the building from condemnation and disaster, and the architect's reputation from criticism and ruin.

If the architect be deficient in the practical department of his profession, I defy him to be able to draw a correct specification, properly explaining the whole of the work intended; and when a specification is deficient, the architect, in order to maintain his dignity and save himself, has been known to exact from the builder by some peculiar interpretation of his own the work so omitted. Many a builder has been ruined, in consequence, and by the architect's also refusing to give proper compensation for extra work, thus withholding the certificate until the works were completed to the architect's satisfaction and the contractor's ruination.

We have heard builders say that they would not estimate upon work designed by certain architects, who had grievously wronged and ruined them by thus taking advantage of their position. What a reputation for an architect! What a tumble from the lofty pedestal of accumulated knowledge, to cope with the humble artisan to whom he is indebted for the rearing of his edifices and the spread of his fame! . . .

I need not enumerate the thousands of important points to be kept constantly in mind in erecting a building. It is this practical knowledge, which is the builder's and tradesman's knowledge, which we must possess, and use, from the digging of the trench to the chimney coping of the building, if we wish to have our building as we have intended it.

There is no evading it; it is only to be gotten by experience, so the earlier the architect familiarizes himself with these things, the better judge of building will he become and the quicker, and hence more useful as a practical man and architect.

Of course, as you might well say, if our architects were all so very practical, where would we look for ideality in design. Where for that beauty and harmony which belongs to the imagination! We do not often expect to find the full latitude of both of these qualities in the same person. That would be true genius. But, what we do wish to impress upon you upon this occasion more than anything else is the great error in so generally giving such a great preference to the theoretical in our offices, to the "buildings on paper," to becoming accomplished draughtsmen only, while the part which lies at the base, for which all this designing is done, — the great structure itself and its vast epitome of intelligence is treated as if it was ungenteel; that it is the place only for the toiler, for machinery devices, for the sturdy, strong men of positive knowledge, rather than the artisans who metamorphose the mountain quarries and iron-beds into lofty fabrics, and capitals and arches into forms of exquisite loveliness, who transform the forests into all of the delightful panellings and carvings which enrich our homes and appeal to our endless admiration. . . .

We have, as the subject implies, unqualifiedly advocated the knowledge of building or construction, hand-in-hand with draughting and designing. The architect, as a builder, should know as much as it is possible without being one.

There is nothing so small or apparently simple in the materials used, or in their mode of application, but what should be made, as far as possible, a special study. It is already tending that way in all other professions. In the ailments which afflict humanity, we find specialists making each disease his concentrated study, and see, accordingly, how skilled they are becoming in the treatment of them.

A building in progress is a school, and every man should not only be there to learn, but to show his willingness to exchange ideas, and to receive all the instruction possible, to add to his strength in the calling which he follows for a livelihood.

A thousand times more ready is the builder to impart information to the diligent searcher after knowledge, who is eager and desirous to learn, than to the conceited or indifferent, who are unwilling to humble themselves to be taught.

To such an extent should the architect possess a builder's knowledge, that the technical phraseology of the builder should not only be generally understood, as has been stated, but should be, as is commonly termed, "at his finger's ends."

These things which I have addressed to you are for the purpose of having you start right in life. They are not theories, but facts, which, if you have not already begun to understand, you will and must if you would become strong men in your profession.

Again remembering that, while architecture is certainly the art of building, on the other hand, building is not of necessity architecture. Or, in other words, the builder need not know how much of architecture, while the architect should know all about building. The architect, as a builder, ought to be competent to not only think out and plan, but to show the workman what he wants.

Therefore, in conclusion, to you who are so nobly pursuing your studies in or out of your offices, we say be frank, open and generous; be slow to decide until you have heard both sides; be elastic in your ideas until experience fixes them. Bring your good sense and good manners always to the front, for your profession is a business, and, like anything else which carries its purpose on its face, commands honest admiration, so that good common-sense shall be shown in your work as it is in your actions.

AMERICAN THEATRES.[1]

Fountains d'Amboise, Clermont-Ferrand, France. From Havard's "*Dictionnaire de l'Ameublement.*"

THE author in his introductory remarks said that, having been, during twelve years' residence in the United States, four years a practising architect, and the remainder a dramatic critic and writer, he had had exceptional advantages for studying the American theatre. The theatre was, as now understood, a comparatively modern institution, and less hampered by precedent or tradition than most public buildings; but certain influences caused all theatres to present a family likeness, though the features offered points of difference. It was a curious fact that the American theatre-type followed the French in having no pit, although the theatre in America had, from an historic as well as an architectural point of view, generally followed England rather than France.

It was not until the middle of the last century that a permanent theatre was established even in New York, and, as far as could be judged, it was not unlike one of the smaller London play-houses of the same epoch. A generation or so ago, however, the Americans had become a theatre-going people, and theatres of pretension, such as the Old Bowery, the Academy of Music, and Wallack's, were built, following the English model with one important exception — the pit. It was, he thought, the inherent democracy of the people which led to the planning of the theatre with its "pit" (a term unknown in America) on the ground-floor level, and to the abolition of all boxes save the four on each side of the proscenium. In every case the theatre, even at that date, was conceived on a simple and sensible plan, viz, an oblong block divided in three parts transversely, of which the largest was in the middle, occupied by the auditorium; the second in size at one end, devoted to the stage; while the third was again divided into three parts by lines parallel to the greatest length of the oblong, the central of the spaces being devoted to the main entrance, which thus led directly from the street to the auditorium, and in the space on either side were the means for ascending to the higher portions of the house. The

[1] From a paper read before the Royal Institute of British Architects by Mr. H. Townsend, December 14, 1891, and printed in the Journal of Proceedings of the Society.

very latest American theatres were planned more or less on the same broad lines, but for some score or so of years the theatres erected afforded very few points of difference, many being built from one set of plans. During the 'seventies, however, a great influx of theatre-building took place, but it was not until the close of that decade that a small theatre erected in New York introduced a new era of American theatre architecture.

The Madison Square Theatre, presenting many original points, was the outcome of the talents of more than one man. Two brothers named Mallory provided the funds; an actor and manager, one Steele Mackaye, a portion of the ideas; and two clever young architects, Francis H. Kimball and Thomas Wisedell (an Englishman), the professional skill which put the theories into practice and materially improved upon them. Though the old form of horseshoe balcony or gallery, with the floor sloping upwards on one plane, offered excellent opportunities of hearing, people seated at the sides had a limited view. These architects obviated this difficulty, and gained a fairly large seating accommodation in an auditorium of limited capacity by sloping the main floor uniformly upwards from the stage, which was raised but slightly above the level of the auditorium, and each row of seats on the main floor was raised about four and a half inches above the one immediately in front. The balcony above this main floor was very deep, approaching in its centre much closer to the proscenium line than usual; but instead of the horseshoe curve the front was twice broken abruptly in its outline, being in the centre a little flatter than semi-circular, with the sides of an ogee form.

Other details of the Madison Square Theatre were then given by Mr. Townsend, notably the arrangement of a double stage, the ventilation and warming of the auditorium, the picture-framed proscenium and the overhead orchestra. Although the theatre was very successful, the practical good sense characteristic of the American people prevented a slavish imitation of it. Certain points not found wholly successful were discarded, but the heating and cooling apparatus and the seat arrangements were in the main followed by subsequent designers.

The author then proceeded to point out the salient points of difference between the ordinary theatre in New York and London, taking, as an example of the former, the Madison Square Garden Theatre [not the building above referred to], and of the latter, Terry's Theatre. The Madison Square Garden Theatre was chosen by him as one of the first built under the new building laws, Terry's Theatre being also selected as of recent date. A noticeable difference was the greater space devoted to the stage and auditorium in the American theatre, though land was, as a rule, dearer in New York than London, and rentals higher, while the population was less than half of that in London. Then the great simplicity of arrangement — the main floor devoted to seats of one character and entered almost directly from the street; the balcony seated in the same homogeneous way, and reached by a broad and direct staircase — and the readier accessibility of the dressing-rooms, some of which open practically onto the stage, and none of them being below the level of the street: a point to be by no means overlooked.

As regards the warming and ventilation, the author was almost inclined to sum up the difference between the two countries by saying the Americans heated and ventilated their theatres, as well as cooled them in the summer, while the English did not; but he thought that might be beyond fair criticism. Certain it was, that in all the later theatres in America ventilation was nearly perfect. Mr. Townsend dealt next with other theatres in New York, giving a description among others of the following: The New York Casino, by Messrs. Kimball and Wisedell, one of the most beautiful theatres he knew of; Palmer's Theatre; the Metropolitan Opera House; the Broadway Theatre; the Lyceum; the new Fifth Avenue; Mr. Hammerstein's Opera House; and Harrigan's Theatre. Though he had intended to be silent on the subject of decoration, he could not refrain from adding that London had no theatres that could be compared with the Metropolitan Opera House, the Lyceum, the Madison Square, or the Madison Square Garden in that respect; each was distinctly individual and original, and distinctly pleasing in effect.

Of other theatrical centres in America, Philadelphia possessed few theatres calling for remark. Chicago, now that McVickar's was burned down, principally the Auditorium, which was a truly American building, called a theatre, and on occasions serving the purpose of one; in point-of-fact it was an enormous hall, designed chiefly for great musical festivals and political conventions. The stage was most marvellous. It was worked by hydraulic pressure, and was divided into sections of a few square feet in area, each of which could be raised or lowered independently of its neighbors by touching a button. No borders were used, but sky effects produced by a species of domed panorama.

In Boston the author referred to the Boston Museum, the Boston Theatre, the Tremont, and the Grand Opera House, which was illustrated by working-drawings lent by Mr. N. B. Goodnow, the owner, and described in detail. Mr. Townsend held that it was characteristic of the American client to consider that the best was the cheapest in the long run, and to this was greatly due the growth of a healthy and advanced architectural school in the United States; and perhaps, also, it was on this account that the New York Building Law was adopted without question or murmuring. The Law was founded upon that of Vienna, and some sections referring to theatres were given by the author in considerable detail.

DISCUSSION.

Mr. C. J. Phipps, F. S. A., *Fellow.* — I have heard so much about American theatres from one and another, that they were so very far in advance of English theatres, that I expected certainly to learn something; but I am bound to say that I have not learnt anything. To start with this theatre that is put forward as a model theatre — the Madison Square Garden Theatre — I am bound to say I do not think it would pass the authorities in London. I fail to see that there is any great novelty about it; in fact, I see a great many positive disadvantages in every one of the plans, though they are incomplete and it is very difficult to criticise them. But to start with the proposition that Mr. Townsend began with, that the American theatres are different from any other theatres because they have no pit, that is simply to my mind a difference of expression. The whole of the area which we call pit and stalls, as far as I can see in most of the diagrams which are round about me, is precisely the same as in our theatres.

The Americans have one price, so far as I understand, for the whole of that area, and I presume the better price; but I fancy that in London, or in any part of this country, if the people that are called upon to pay 10*s.* 6*d.* were put under those balconies, in seats for which people pay 2*s.* here, they would very much complain. Then it is made a feature that all the American theatres have the floor of the house on a level with the street. But that is not very novel. Drury Lane, in London, is on a level with the street; the Princess's Theatre is on a level with the street; and a great many theatres that I could mention, both in London and in the provinces, are all on a level with the street. But where is the advantage? It is simply a question of situation, to my mind. This is a two-tier theatre; most of the theatres in this country are three-tier theatres. Whether such an arrangement may be beneficial or not in two-tier theatres I do not say; I do not think it is; but where you have a three-tier theatre, it is to my mind very much better to drop the floor of the house below the level of the street, so that the people in the top gallery shall have one flight less of stairs to come down; and I have endeavored to do that in one or more theatres that I have built lately. I may mention, though it is not perhaps a pleasant topic, that in the case of the Exeter Theatre which was burned down, the pit was on the floor below the street. There were 500 people in the pit of that theatre at the time of the fire, and every one of those people got out without being injured in the slightest degree. There were only 190 people in the gallery, and 120 of those were killed, that is to say, suffocated. So that I do not see very much advantage in having the pit or the area of the floor of the house on a level with the street. I cannot very well detect the scale of the diagram of this theatre that is put forward to us as a good model, but I am informed that it is a one-sixth scale, and the width is about 90 feet. For a theatre 90 feet wide it appears to me that the front lobby is very poor and insignificant. There is a lobby which, so far as I can see, would not be more than about 10 or 15, or at the most 20 feet wide, and at the end of it is a very poor staircase leading up to the first tier, and I do not see the double staircases to the upper parts of the house.

We pass from that theatre to the Madison Square Theatre. The Madison Square Theatre I know very well, and if I had only known Mr. Townsend sooner I could have provided him with some better drawings of the Madison Square Theatre. So far as I can see from this plan, there is a peculiar arrangement of private boxes. The people who go into these private boxes go there, I should say, simply to be seen. You can hardly call them private boxes; they look to me very much like bird-cages. As regards the orchestra above the stage, that is a very peculiar arrangement; and I do not think it has ever been done before or since. I do not think there is anything very novel about the frame of the picture that Mr. Townsend speaks of. When I constructed, or rather reconstructed, the Haymarket Theatre, Mr. Bancroft came to me, and with the greatest amount of secrecy confided to me that he had some wonderful thing which he almost bound me by an oath not to divulge. So I said, "What is it?" He said that he wanted the whole thing made into a frame. "Well," said I, "that is nothing new." "But," he said, "I want the frame along the front of the stage, as well as all round." I said, "That is new perhaps." I did not like it myself at all, because it gave me the idea of the whole arrangement on the stage being in a picture, instead of people treading on a stage as living people; and Mr. Tree, when he got there, immediately had the frame disestablished, and it has gone, I am happy to say. I do not think it is quite fair for Mr. Townsend to put forward Terry's little theatre as a comparison with this magnificent Madison Square Theatre. To bring forward Terry's Theatre as being the latest and most approved theatre in London will appear, I think, to those who live in London, a little absurd. It is the smallest theatre in London, and I think he might have criticised with more effect some of the larger and more elaborate theatres. I believe the tracings on the President's right are the Metropolitan Theatre of Boston. It appears to me as if the height from the second gallery to the roof is enormous and out of all proportion. I think it was put forward also that in the Madison Square Garden Theatre, which was built in the 'seventies, the architects adopted a novel form of construction in the shape of their balconies. Looking at the plan of the gallery, it appears to have a different curve from that of the balcony; I cannot see whether it is on the same plane; but

there is nothing very new, so far as I can see, in the arrangement of the curve of the gallery. The arrangement of the upper gallery is different, but that is not a novelty. In the 'sixties I constructed several theatres with balconies of precisely that shape. The plans of those were published, and the gentleman who constructed this may have seen those plans. As to Mr. Irving's model theatre, it is really by Mr. Darbishire, in consultation with Mr. Irving, and Mr. Darbishire has since brought it somewhat into reality by rebuilding the Exeter Theatre upon the same model. It resolves itself into a very large hall, with galleries round. But as regards this theatre here (put forward as Mr. Irving's model theatre), it is a plan that you cannot understand; it does not properly exemplify that theatre, because there are no steps shown at any of those exits. I have a section here, and there is a difference of seven feet in level between the front part and the part below by the stalls; so that if you come in on a level with the back part you would have seven feet to get up from those exits. At the same time, no one, I think, ought to put that forward as a model theatre. If Mr. Irving himself was building a theatre, I do not think he would build it upon that model. There are no vestibules; there is no place for people to congregate; and the staircases leading down from the upper tiers come down in a straight line.

There is a great deal in what Mr. Townsend says about the ventilation of theatres. We have not in London, and so far as I know we have not in this country, any scientifically ventilated theatre. We have plenty of well warmed theatres, and the warming is necessary in consequence of the adoption of the electric-light; but we trust to a sort of happy-go-lucky arrangement for ventilation. But scientific ventilation is very expensive. Some years ago, at the instance of the Prince of Wales, I went to Frankfort with Mr. John Hollingshead, specially to go into the ventilation of the Opera House — not to see it, because I had seen it before. It is ventilated on exactly the same principle as the Opera House at Vienna, that is to say, it is scientifically ventilated, and heated, and cooled. But the cost of that was £25,000. It entails the employment of two chief engineers, six sub-engineers, and a perfect army of stokers and other employés to keep it going, but it is absolutely perfect, and every part of that theatre can be kept at a temperature of 62° summer and winter. I have here diagrams of the theatre. The fresh air is drawn in from some distance off on three sides to twenty feet below the level of the vestibule and entrances. There it accumulates over pipes which are heated in the winter, and in the summer is cooled by a spray over ice. Then this air is pumped into a chamber underneath the auditorium, and by a very ingenious arrangement of pipes and tubes and flues, every single box and every single stall has ventilation brought to it. Then there is a control office immediately under the vestibule where you can sit and touch a little bell, or a little disc, and find out exactly what the ventilation is in any particular box or in any particular stall or seat in the whole house, and if they want a little more cold air or a little more warm air they can have it. Underneath the pit there are three floors of what are called mixing chambers, and all the air is warmed or cooled to this temperature of 62°. The Prince of Wales when he was there was so struck with the temperature of the theatre in the summer as being so much cooler than the outside air that he said to Mr. Hollingshead, "Why can't we have this in London?" The practical outcome of that is that it cost £25,000 to do it, which is about the figure we generally have, as a matter-of-fact, to spend in building a theatre. That was, of course, done by the municipality, but municipalities in this country are not quite so liberal.

I do not recognize in the regulations which Mr. Townsend has read any great divergence from the regulations which we have in London — in fact, I fancy our regulations are almost as stringent, if not more so. The only thing is that we do not insist on the iron curtain, as I think we ought, and we have no arrangements for making the scenery incombustible. In my opinion, the question of the iron curtain is the most important of all. It has never yet been put into the regulations by the authorities, though I have over and over again urged them to do so. It seems to me that, if you have good entrances and exits, you have done sufficient for the audience in that way. But unless you can cut off the communication from the stage to the auditorium so as to stop smoke coming through in case of fire, all your good entrances and exits, and all your appliances for fire in front of the house, are useless. It is the smoke that kills the people, and not the fire; and if there were an iron curtain which came down in, say, half a minute, then I think you would have a complete severance between the auditorium and the stage, and the danger would be practically averted, because the audience would not see the danger, and everybody could get out. I think I was the first in this country to put up an iron curtain working by hydraulics in one sheet. There is not much difficulty about it. The first two or three of these iron curtains I had made of double iron plates, with six or seven inches space between; since that time I have always put up those curtains which were invented by my friend Mr. Max Clarke. They are very light, weighing not more than four tons, I think, and being raised and lowered by hydraulic pressure they are down in less than half a minute.

I do not think I have more to say except to thank Mr. Townsend for the very elaborate paper which he has read to us, and to propose a vote of thanks to him. I have here a photograph of the theatre at Brussels, which appears to me to provide the greatest amount of safety for the audience by means of galleries. It is a most ingenious arrangement. The galleries attached to the outside walls are narrowest at the top tier, so that the people can drop from one tier to the other till they get to the street. I forgot to mention that at the Lyric Theatre the whole of the stage — every bridge and every border — can be worked by hydraulic pressure, but they have never used it once.

The President. — Gentlemen, never having built a theatre, I am not versed in the intricacies of theatre construction, but it struck me that the construction of the stage floor in a series of compartments all under hydraulic power, so that any portion of a few feet of floor could be lowered to any level without complicated staging, was somewhat original, and appeared to me to be ingenious. I do not go so much to theatres now as I used to, but I do not remember having been exposed to those gales which Mr. Townsend described. He referred to some large openings in the roof, but did not specify the object of them; perhaps he would tell us what the object of those openings was. I was sorry to hear from so great an authority upon the subject as Mr. Phipps that there is no scientifically ventilated theatre in London. I cannot help thinking that that is a very great reflection upon London, and that we certainly ought to have a scientifically ventilated theatre, no matter what the cost is. [Professor Kerr, *Fellow.*— Surely the Criterion Theatre is scientifically ventilated? I know that there are steam-engines and a great deal of apparatus ever so many feet below the ground; and they must be for ventilation, they cannot be for anything else. Mr. Phipps.— You are quite right, Professor Kerr, there is some scientific ventilation at the Criterion.] I am very glad to hear that it is so. A vote of thanks to Mr. Townsend has been moved and seconded, and I am sure, gentlemen, that I express your feeling when I say that we are very much obliged to him for having put before us his experience of American theatres.

The vote was carried by acclamation.

Mr. Townsend. — As I endeavored to point out, the Madison Square Garden Theatre has no connection at all with the Madison Square Theatre. The novelty of that gallery line which I referred to is confined entirely to the Madison Square Theatre. The Madison Square Garden Theatre was built only last year, and, as I think I expressly stated (I am sorry I did not make it clear), conformed more closely to European and to English models than any theatre that has been built in New York for some years, and therefore it is quite possible that the lines of one of Mr. Phipps's theatres were adopted by Messrs. McKim, Mead & White. The point that I made about the pit had nothing to do with the seating or the prices of the seating. It was simply that I said that in America the ground floor, the main portion of the house, is given up to the best seats, and is, as a rule, on the street level, or very nearly so. Though there may be several cases in London of theatres which follow that rule, I think you will agree with me that in the majority of the London theatres you find the stalls, the best part of the house, at a level very much below that of the street, and those stalls are generally reached, in my experience, by narrow and winding passages, and it will be obvious, I think, to ordinary capacities that theatres built upon a level with the street are bound to be much safer in case of fire and the resultant sudden outrush of the audience, than theatres in which they have to fight their way up narrow and winding staircases. I am sorry that Mr. Phipps does not agree with me — but a man convinced against his will generally remains of the same opinion still. I also pointed out that the position of the orchestra above the proscenium arch had not proved successful. I also pointed out that, in my opinion, the picture-frame idea of the proscenium arch was a mistake, and as such had gone out of fashion entirely in America. I did not say that I thought Mr. Terry's the best or most approved theatre in London. I simply said that I took it as a representative theatre. I compared its plan and elevation with the plan and elevation of several other theatres, and found them to be very similar indeed. I therefore struck an average and took Mr. Terry's theatre, because I had the plans of it, whereas I had no plans of theatres by Mr. Phipps.

The Boston Theatre, of which the tracings are on the board, as I also pointed out, was not representative of a very high class of theatre. It is distinctly a popular theatre — a theatre that answers very much to our Standard Theatre here, or one of the theatres over the water. I went at some little length into it, because it struck me as being very remarkable, that in a theatre built for such purposes, and without any display or elaborate decoration, the owner, probably at the instance of his architect, had gone to such extra, and in this case it was, I believe, very extraordinary expense, in order to make it more commodious and comfortable. I have failed to find any ordinary theatre in London in which I can see that same principle carried out. As regards Mr. Irving, he collected many plans of theatres when he was in America, and he told me himself on more than one occasion, that he thought that what we agreed in calling the vernacular American theatre was distinctly and in every respect superior to the theatres of the same class in this country. That, I believe I may say, is also the opinion of every English actor or acting manager visiting America to whom I have spoken during my service of some six years as dramatic critic of one of the New York papers.

As to the warming and ventilation of theatres, Mr. Phipps tells us that at the instance of the Prince of Wales he went to Frankfort and inquired into the system there, and found that apparently no theatre could be warmed, cooled or ventilated for a less cost than

£25,000 for the installation of the plant. The Madison Square Theatre is well warmed, well ventilated, and well cooled in summer, and by a very elaborate arrangement of pipes leading under every seat. It certainly did not cost anything like £25,000, and the system is run by one man; I think he has one assistant, but he has various other duties about the theatre, and the cost is comparatively little except the cost of ice and coal. One point in the regulation as to fire, and that I do not think — I speak in entire submission to those who know better than I — is made a *sine quâ non* by the London authorities, is a very important one — it is considered so by the best thinkers upon that subject in America — and that is, that over the stage of every theatre there should be a skylight and shaft, of fire-proof materials, so arranged that at the first outbreak of fire, the first rising of temperature in the lower part of the stage, the skylight shall automatically open and form a great air-shaft or flue which will carry the smoke, which is so dangerous, up in a direct line from the stage and prevent its bursting into the house, as it did in the case of the great Vienna fire, which you all remember. The iron curtain, I agree with Mr. Phipps in thinking, is the essential of a safe theatre. In regard to what Mr. Blashill said, I think the sanitary arrangements of the New York theatres, if I may judge from a paper which I read some time ago, in which the sanitary arrangements of the London theatres were dealt with, compare most favorably with them in every respect. I have many times been in every theatre in New York, both behind and before the scenes, and there are only two theatres there which have dressing-rooms below the level of the street, and those two theatres were built long ago, or else that would not be so. Every means has been taken to ventilate those dressing-rooms, and, in the case of one at least, to buy adjacent property, so as to do away with them altogether, and in the course of a year or two that will probably be done.

Mr. Blashill, *Member of Council.* — May I inform Mr. Townsend that we have arrangements here for the ventilation of the stage. I do not say anything of its perfection of working, but that is the idea.

THE ILLUSTRATIONS

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

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[Additional Illustrations in the International Edition.]

DETAIL OF THE HOTEL DE VILLE, AUDENARDE, BELGIUM.

[Gelatine Print.]

LA PORTE MARÉCHALE, BRUGES, BELGIUM.

[Gelatine Print.]

QUEBEC FROM THE BEAUPORT SIDE OF THE ST. CHARLES RIVER.

[Gelatine Print.]

NEW CHURCH, PORT ELIZABETH, SOUTH AFRICA: ELEVATIONS AND SECTIONS. MR. R. NORMAN SHAW, ARCHITECT.

PLAN OF THE SAME.

HOUSE OF DR. ARTHUR OAKES, EASTBOURNE, ENG: THE HALL. MR. LOUIS AMBLER, ARCHITECT.

DRAWING-ROOM OF THE SAME.

KINMEL PARK, ABERGELE, WALES: THE PLAN. THE LATE W. EDEN NESFIELD, ARCHITECT.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

GRECIAN TRIPODS.

BOSTON, MASS., January 6, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — "Grecian" will find illustrations of tripods in Roux's "*Herculaneum et Pompeii,*" Volume 7; in Ménard's "*La Vie Privée des Anciens,*" Chapter 7, Volume 2; in the article "Trepied" in Havard's "*Dictionnaire de l'Ameublement et de la Decoration;*" and in Piranesi's "*Vasi, Candelabri, Cippi, Sarcofagi, Tripodi, etc.*" Also in Clarac's "*Musée de Sculpture,*" Volume 2; in Martha's "*L' Art Etrusque,*" Chapter 17; in Bosc's "*Dictionnaire de l'Art, de la Curiosité et du Bibelot*"; and by searching through the volumes of *L'Art pour Tous,* and of Hirth's "*Der Formen Schatz.*"

Yours respectfully, "TRIPODS."

HUMMELSTOWN, PA., January 4, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — "Grecian" will find tripods delineated in Vols. I, II and IV of Stuart and Revett's "*Antiquities of Athens*" (original edition).

Sincerely yours,
JAMES M. MACQUEEN.

COMMISSION ON SECOND-HAND MATERIALS USED.

ST. LOUIS, MO., December 26, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Will you kindly give me your decision on a question which has been brought to my attention by a client.

In making out the statement, for the cost of his house, I put an approximate sum of $150, for the value of the stone footings which my client furnished to the stone-mason, who had taken the contract for the cellar, without footings, the cutting and setting however, was included in his bid. The stones had to be taken from down-town property, belonging to my client, and I, of course, had to direct the cutting for proper sizes, and see that they were properly set in the trenches.

My client claims I am taking an unjust commission by adding a value for these stones to the cost of house, and thereby getting $7.50 or five per cent on the amount; because he had tried to sell the stones on several occasions, before he thought of using them in the construction of his house, and having failed, claims they have no value whatever, and also thinks, that I have no right to a commission, on material which he has furnished himself.

I am ready to prove that he saved anywhere from $150 to $200 on the mason's figures, in furnishing the stones himself.

Am I correct in making the charge or not?

Yours very truly, SUBSCRIBER.

[THE Schedule of the American Institute of Architects, which expresses, in this respect, the universal custom of architects all over the world, says that the architect's commission is to be calculated on the cost of the work, as if constructed throughout of new materials furnished by the contractor. The owner therefore does not, and should not, save anything out of the architect's fees by using second-hand materials, or furnishing anything himself. Generally, it is much more troublesome to the architect to look over materials furnished by the owner, reject what is unsuitable, and devise ways for utilizing portions which can only be made suitable by the exercise of considerable ingenuity, than to supervise the use of new materials, delivered in accordance with his specification; and a moment's consideration will show that it would be most unreasonable to deny him any compensation for making the plans and specifications showing how the old materials should be used, and supervising the work. If the work had been an alteration, consisting in using old materials exclusively, and putting them in new places, most architects would charge ten per cent commission on the cost, so that the schedule rate where old materials are used in part is very favorable to the owner. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

CARTHAGE'S WATER-WORKS. — The author of "*Salammbo*" tells how Spendius effected an entrance into Carthage in time of siege by floating down the aqueduct. It is interesting, indeed, to be told about the magnificent system of aqueducts and covered reservoirs, from which, 2,500 years ago, the inhabitants of Carthage drew their water. In looking at those works, we must remember that Carthage flourished for over 700 years before its destruction by the Romans, 150 years before

the Christian era. Rising again from its ashes, under Roman rule, it flourished for another period of 700 years, and became one of the most magnificent cities in the world, then fell again, and for 1,000 years was destroyed piecemeal, until nothing remains now except remnants of the water-works. On a commanding eminence, looking out upon the harbor and the sea, there stands the Cathedral and Monastery of St. Louis, marking the spot where Louis IX of France died in the year 1270, and also occupying the site of the citadel of Carthage, called the Byrsa, so named, as tradition says, in commemoration of the artifice by which Dido, 852 years before the Christian era, secured from the natives the ground on which it was erected, agreeing with them for as much land as a bull's hide (byrsa) would cover, and then cutting the hide into thin strips, and inclosing with it a tract of twenty-two stadia. Here it was that Dido watched and waited for Æneas, and from this hill the smoke of her funeral pyre ascended to the sky. Then a great city spread in all directions around the citadel. Now, outside of the white walls of the Monastery, utter desolation reigns as far as the eye can reach, except for the occasional smoke from a railroad train between Tunis and its seaport Goletta. On closer examination of the site of the ancient city, some interesting remains are to be seen, however, of the water-works. The tourist in Tunis may visit the site of Carthage by taking a train on the railroad to Goletta, or he may take a carriage and drive over five miles of dusty, but pretty well-kept macadamized road, out to the great reservoir of Maalaka, half a mile from the sea. The Arabic word Maalaka means "connected together," and typifies the collection of vaulted communicating chambers, which covered a space of about 500 by 750 feet, and served to collect and store the rain-water from the marble-paved area around the reservoir, and the streets of the city. A recent visitor to these ruins says that enough remains to show the character of the workmanship and materials that were used in ancient days, and that it gives one a curious feeling to see the arches of concrete and rubble masonry, which, where not destroyed by the hand of man, having stood unharmed by the elements for more than twenty centuries, and to consider that we are now, with our latest improvements and conveniences for securing pure and wholesome water, simply returning to the practice of the days of Dido. But these are by no means all of the remains. All over the site of the ancient city somewhat similar cisterns are found, and there is another great public reservoir near the sea, about 400 feet long and 110 feet wide, vaulted, and divided into eighteen compartments, two of them evidently intended for filters or settling-basins, and the rest for the storage of the settled water. These reservoirs have been restored, and are now used for the water-supply of the towns of Goletta and Marsa, water being brought to them from the hills of Zaghouan, some forty miles distant, utilizing for a portion of the way the magnificent aqueduct built 1,670 years ago by the Emperor Hadrian. The greater portion of this aqueduct lies on the other side of Tunis, and it is a somewhat arduous journey to visit it. Long colonnades of arches of cut stone cross the valleys, and even in their present state of decay are said to be most imposing. But between Tunis and Carthage the original structure is still utilized, and few things are more impressive and surprising to the tourist than to encounter on the drive from Tunis to Bardo, the palace of the Bey, the lofty aqueduct which crosses the Manouba Plain. We pride ourselves on some of our little modern aqueducts, but here is a conduit carried for more than five miles on piers from seventy to eighty feet high, and which has been in use for 1,700 years, and still is used for its original purpose. — *Fire and Water.*

The Alleged Waterways on the Planet Mars. — From the *Deutsche Bauzeitung* we abstract the following alleged information in regard to the supposed great canals in the planet Mars, which we illustrated and described in our issue of May 18, 1889: As in the years 1892, 1894 and 1896, the above planet will reach its closest approach to our earth, we may expect some highly interesting facts concerning that body. It seems proper to note that similar conditions to ours must be prevailing there, and that the inhabitants of that planet seem to be admirable constructors of waterways of immense dimensions, as they seem to be able to control the ocean itself there. Mars is computed to be 5,000,000 years older than our own planet [by whom or by what means is not stated. — Ed.], so that in about that time the disintegrating process caused by the force of nature here will be so far advanced as to nearly level our mountains. No more natural rivers will be flowing, and artificial basins will have to be constructed without which the whole surface would be flooded. The poles of Mars are covered with ice and snow, the masses of glaciers contract and expand, according to seasons. Both poles are surrounded by seas, which are connected by straight canals, running through the whole continent. Those gigantic waterways of 47 to 62 miles width show as dark straight lines, sometimes as two running parallel with each other, of which one appears lighter and narrower. If the ice melts on the North Pole, then the waters of the Arctic Sea, so to speak, rise and threaten to inundate the adjoining land, which perhaps does not project much above the sea-level. Then those canals, which have no other fall or grade than that caused by the difference of water-level, receive this superabundance of water. Lest the flow of waters should exceed the high-water mark, there are parallel or auxiliary canals constructed, by whose aid the levelling process toward the south takes place. After a half-year, when it is summer at the South Pole, this is repeated toward the north. We see only one line, if the main canal is filled, but if the parallel one has received water, then there is a double line visible. Beside the canals running from north to south we find some radiating or cross canals, at the junction points of which there are lake-like extensions of circular or rectangular, but in all cases regular, form. These must have been shaped, without doubt, by human labor, with a view toward keeping as much land as possible dry in the inhabitable latitudes. The water is collected on the barren poles and only a minimum of land left to it. By suitable distribution of this element the denizens of Mars have control of the precipitation and evaporation of water, so they will not be left at the mercy of contingencies. The area of the water on Mars comprises a much smaller volume than on our earth, because the interior of that planet in cooling contracts, and as the firm crust of the surface cannot follow this motion, great hollows will form between the two, which will fill with water, pouring through cracks in the crust. When once water has entirely disappeared from the surface in this way, then the atmospheric air will follow, and the planet will become unfit for organic life, as we see in the moon, which, on account of her smallness, has reached that state at a comparatively early period. While these apparent great artificial waterways on Mars seem to us beyond the reach of unaided human enterprise and skill, perhaps when we have learned the simple art (as it possibly is), of converting into useful work 100 per cent of the energy in heat, instead of only 3 to 10 per cent, we may take a different view of the matter; beside which, there is the possibility involved in Dr. Crooke's statement that 10,000 foot-tons of potential energy lie locked up in each cubic foot of the inter-planetary ether, awaiting the great discoverer who shall unlock them. Perhaps the Martians have "got onto" the solution to this problem. — *Engineering News.*

A Realistic Tombstone. — At Colmar, in the churchyard, there is a curious monument, which was erected by citizens of Colmar in memory of two Frenchmen who were shot by Germans when the latter entered the town. Viewed from a distance it looks like an ordinary slab, but on examining it more closely it is observed that one side is slightly raised and from the grave comes a hand, which grasps the edge of the stone, while at another part a whole arm is stretched out and is endeavoring to grasp a real French bayonet which lies near. The whole has the appearance of a person who has been buried alive trying to escape from the tomb. The hand and arm are of bronze and life-size. A lady who recently visited the churchyard and who came upon this realistic structure unawares fainted from terror. — *London Vanity Fair.*

TRADE SURVEYS

The general anticipation among financiers, transportation, manufacturing, commercial and general industrial interests is that there will be a sufficient expansion of activity to afford employment to all available capital of labor, and to open up opportunities for more enterprise than has ever been profitably employed heretofore. One danger has been averted thus far, and that is speculative values. It is safe to say the country could stand a moderate advance in values safely, and even advantageously. The characteristic of the past year has been a downward tendency in prices; the characteristic of the coming year, it is thought, will be an upward tendency. All calculations and preparations are being made in view of this. If this anticipation is not realized no great harm will be done. Capacity of every kind has been very greatly increased. Railroad construction, to begin with, has opened up a vast amount of cheap land available for emigrants, and to some extent for new manufacturing enterprises on a small scale. Two movements will probably occur throughout the West this year; namely, a greater outflow of agricultural population to new localities, and a greater outflow of manufacturing capital and enterprises on the heels of this emigration. Throughout the East, the characteristic feature of the year will probably be a greater expansion of building activity and increased manufacturing; this is already evident. Manufacturers of building material have already placed large contracts, much larger than at this time last year, and manufacturers have for a month past been contracting quietly for material and supplies. In New England, no pronounced improvement has as yet shown itself. In the textile mills, the managers are buying very cautiously of cotton and wool and their products. The distribution of textile goods has been very large — larger than in 1890 — and in a great many cases margins have been larger; but, taking the industry all through, the managers feel the necessity of studying market demands and fluctuations very closely. Should manufacturers decide to supply requirements two, three or four months in advance, it will change the entire character of the business of the country. The highest commercial authorities in New York City think that in a general way this will be done, and the same authorities predict that it means an advance of from five to ten per cent in values. Throughout the South there is a very confident feeling, so far as profit-yielding is concerned, on the investments of the past three or four years. New iron and steel making projects are quite common. The continued expansion of the iron industry is an assured fact, not only in the South, but throughout the country. Reputable authorities assert that the mileage of the coming year, instead of being 4,100 miles, will be double that amount. There will also be a very heavy demand for small shop and mill equipments; also a great deal of activity in the construction of lake craft and coast-wise tonnage. Within the past two or three years, opportunities have been increasing and improving for the man of small means, and the year of 1892 promises to be even a better year for him than any year heretofore. These opportunities are developing in the West and South especially, and our commercial agencies show that, even in the older States, there is a more rapid increase of small traders than a few years ago. An equalizing tendency is at work which is, in a certain sense, drawing out manufacturing-capacity from some of the larger cities. Railroad men especially speak of this, and they are, as far as is in their power, stimulating the movement. It is becoming easier year by year for the small manufacturer to succeed in far-out places than in years past; a number of conditions have been arising to make this possible. The tendency is a very strong one, and in a few years the distribution of manufacturing activity will be much more general than to-day. Sections heretofore given up to agricultural activity will be furnished with a great variety of manufacturing, and the East will cease to be so largely manufacturing and the West so largely agricultural. This should not be regarded as a prophecy, because the movement has been in progress for years. It has been gaining greater strength of late. For many years the subject of water-ways has been occupying a good deal of attention. It is evident from the tone of conventions that have been held throughout the West and South during the past year that the movement for improved interior water-ways has taken practical shape. The recent convention at Detroit is the strongest evidence in that direction. Popular opinion from Detroit to Galveston is all that way. The business interests of the country begin to recognize that the water-way facilities have been neglected blindly, and to the disadvantage of all interests. Then, again, the irrigation schemes that have been smouldering throughout the West will probably take practical shape this year, and open up vast areas at an early day to cultivation.

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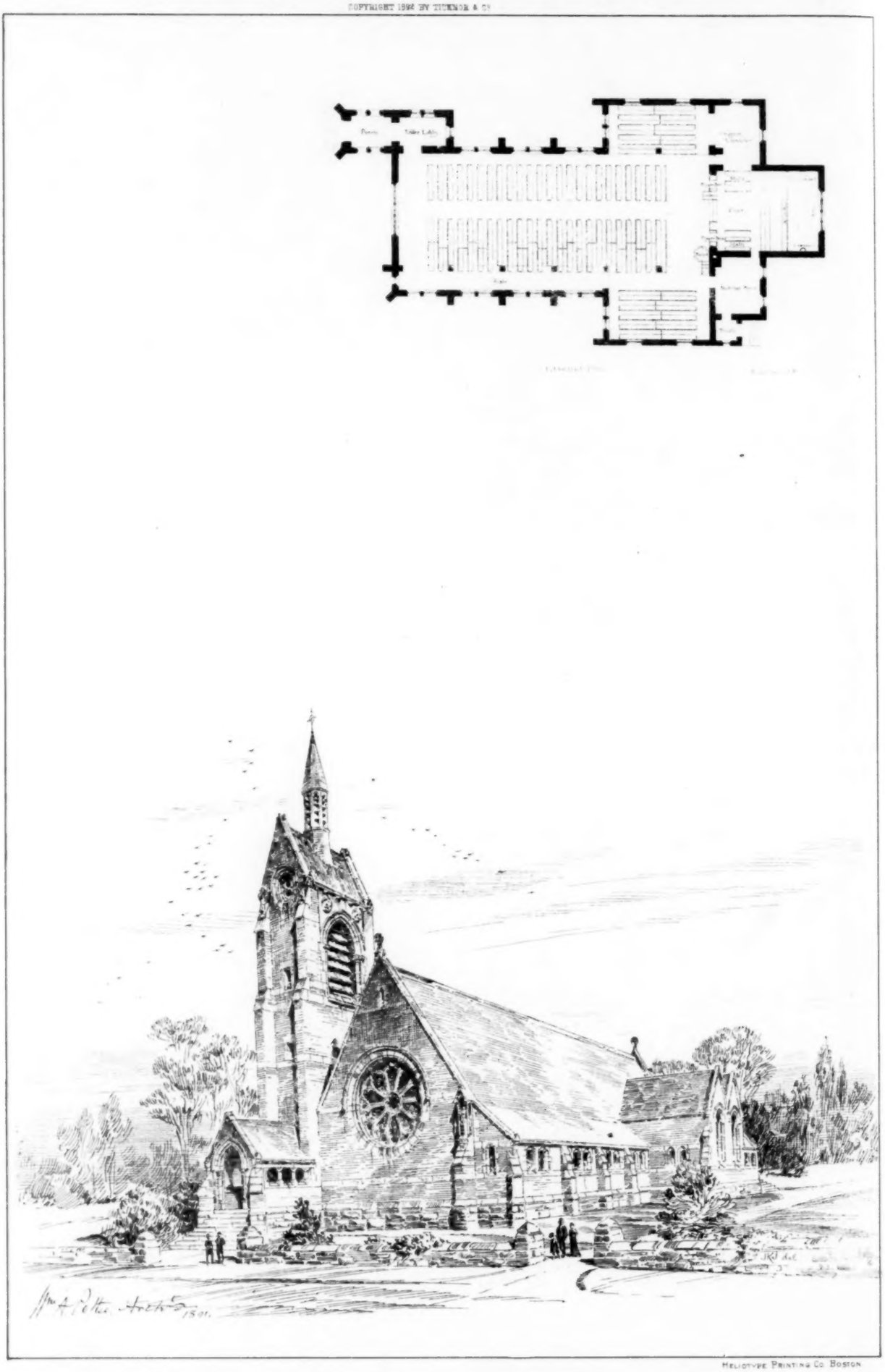

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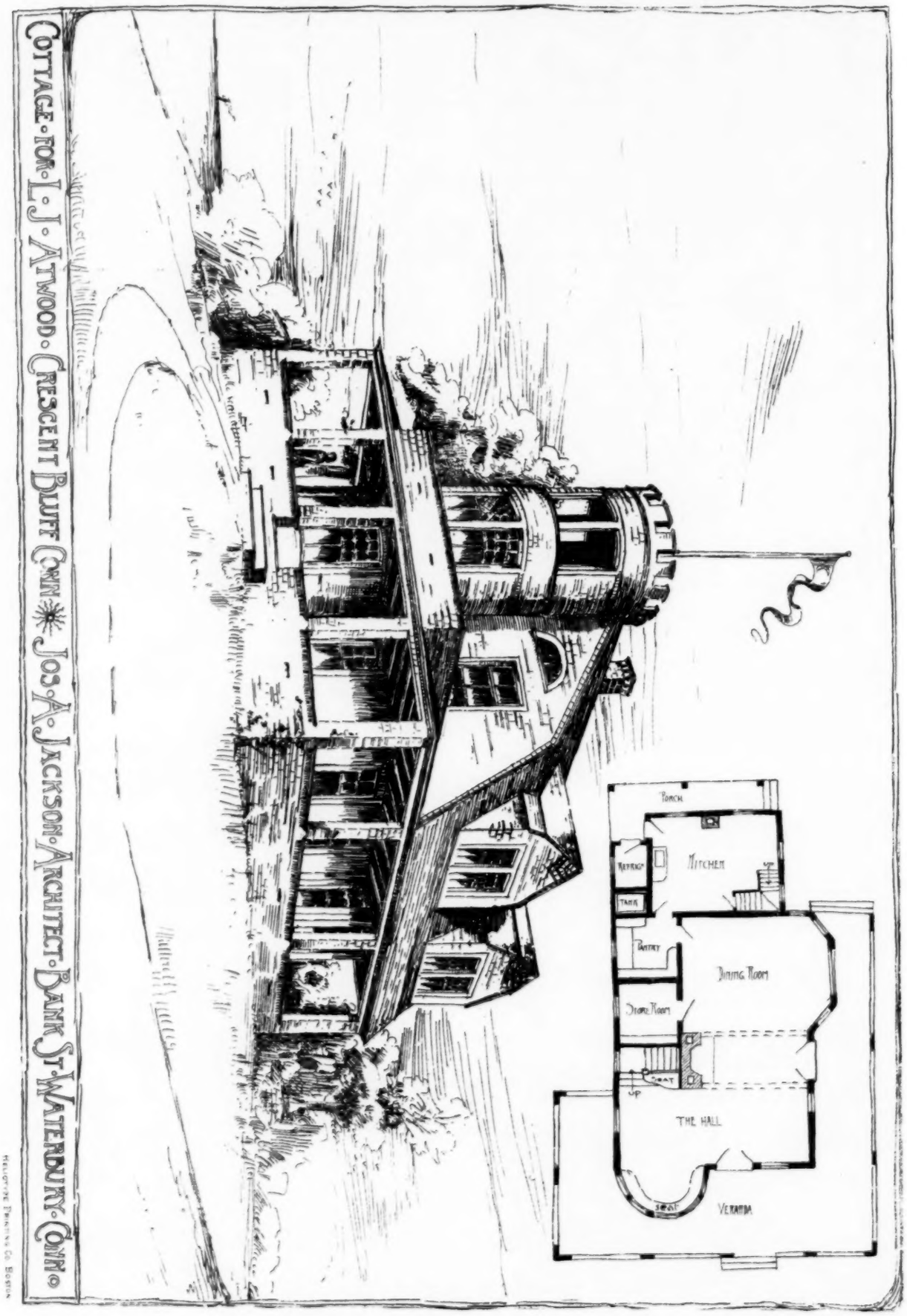

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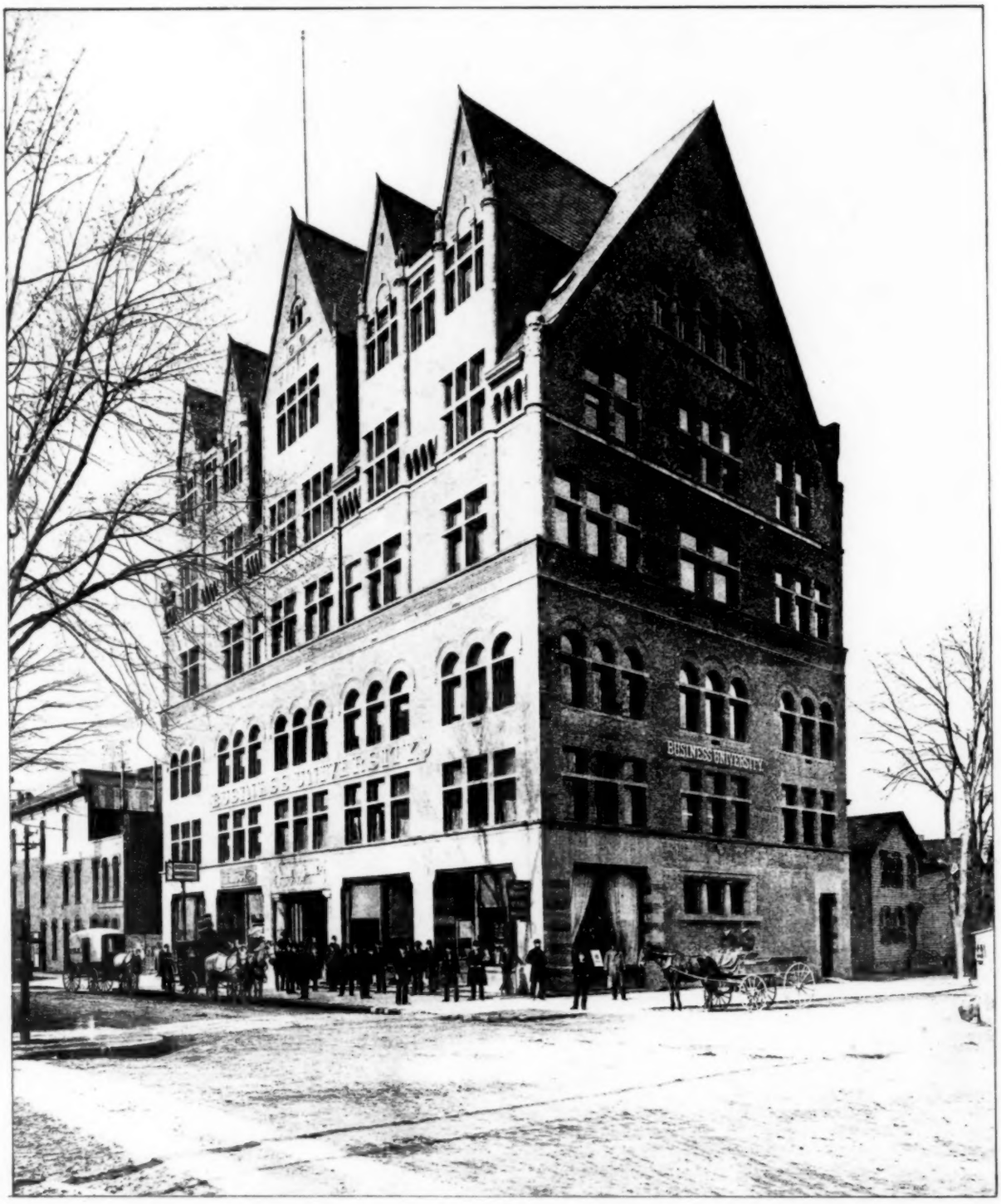

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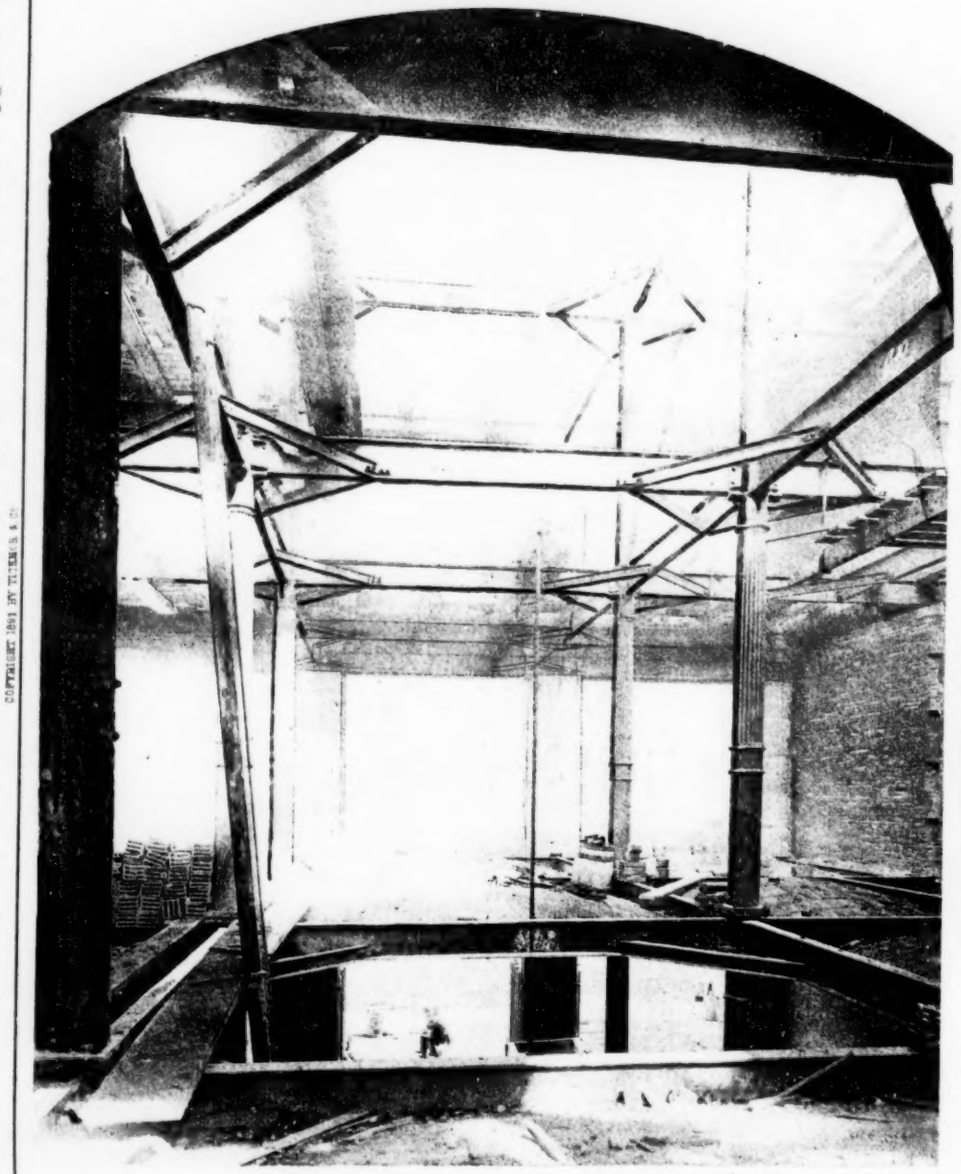

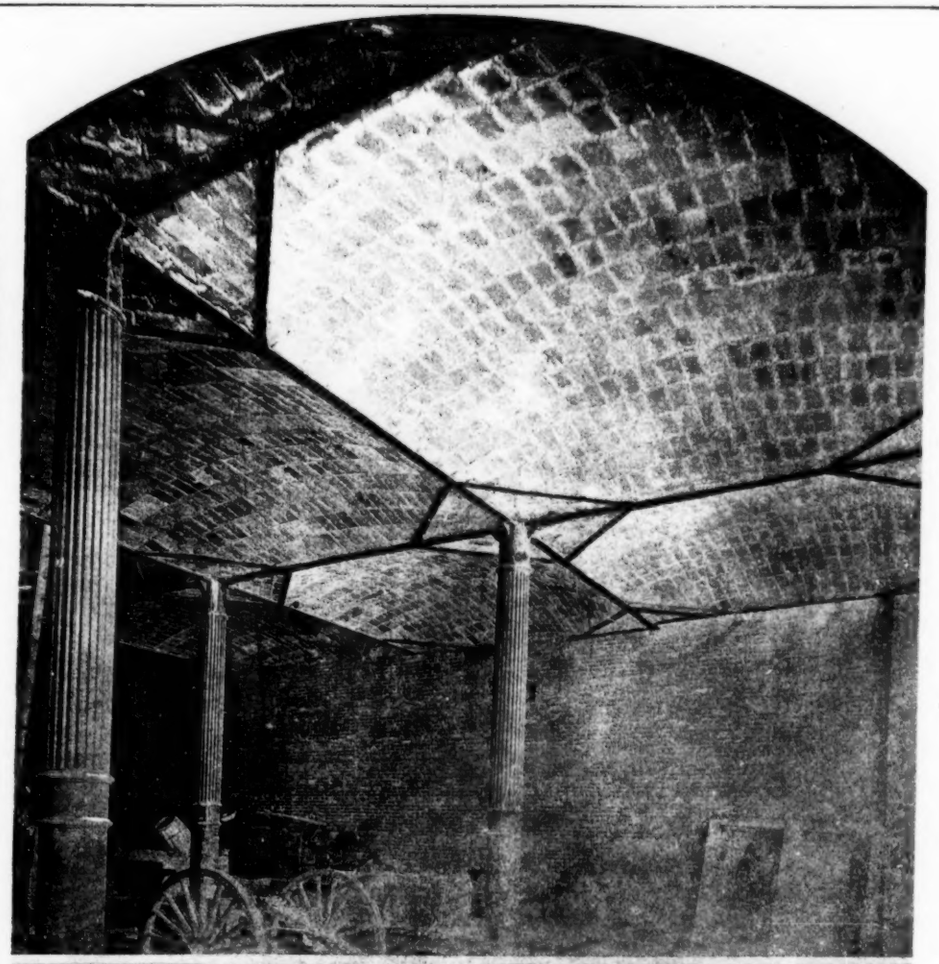

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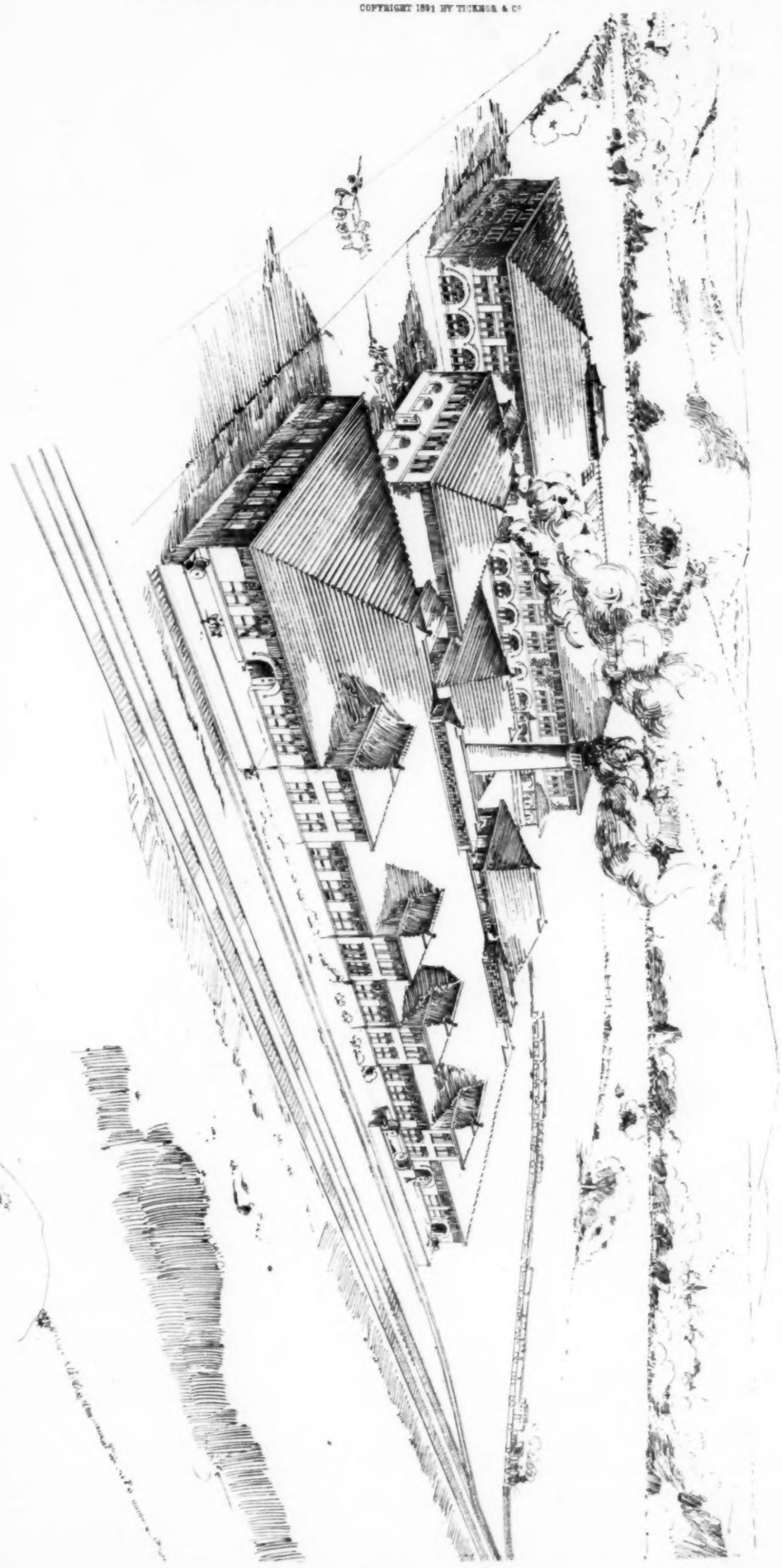

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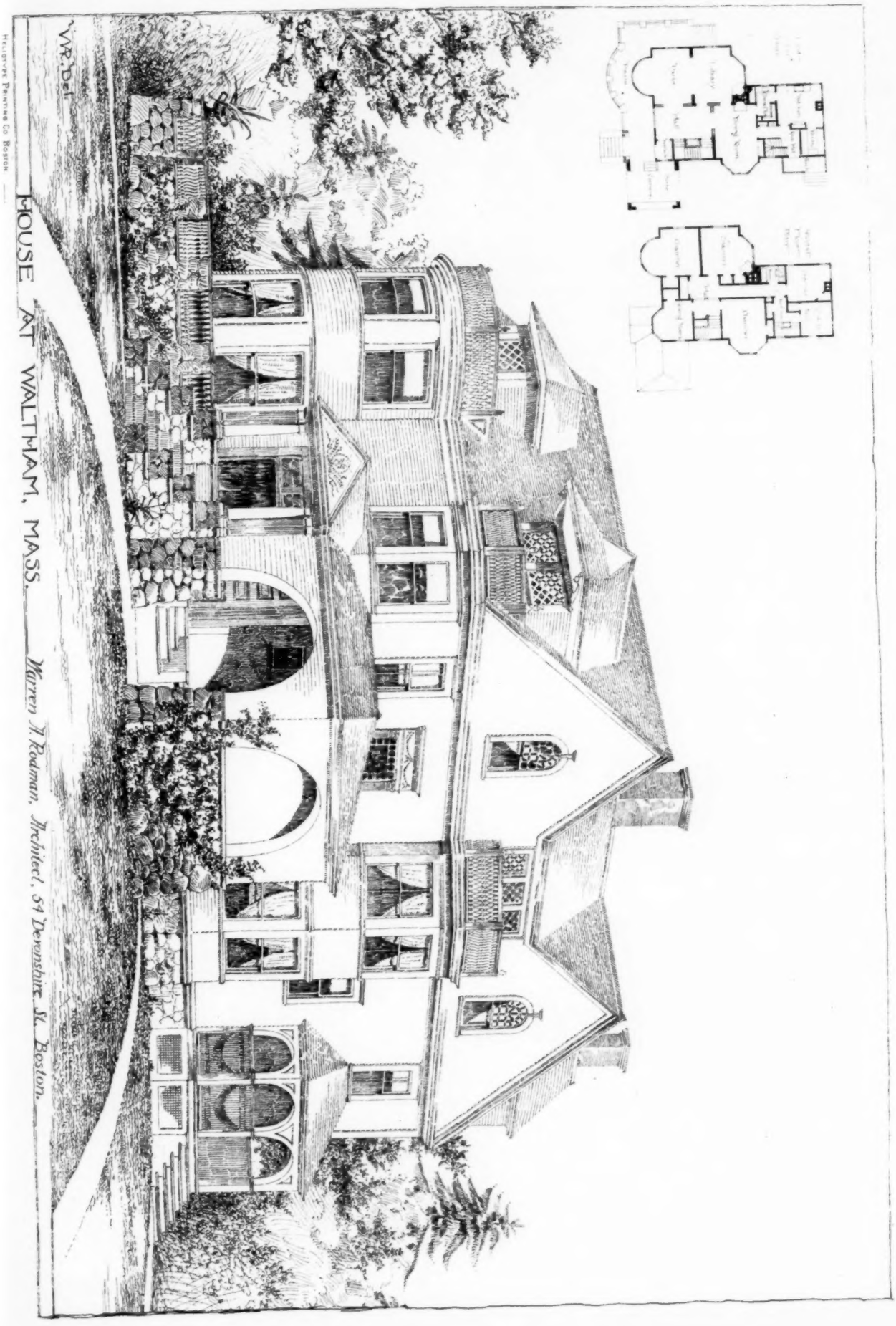

HOUSE AT WALTHAM, MASS. — *Warren H. Redman, Architect, 54 Devonshire St. Boston.*

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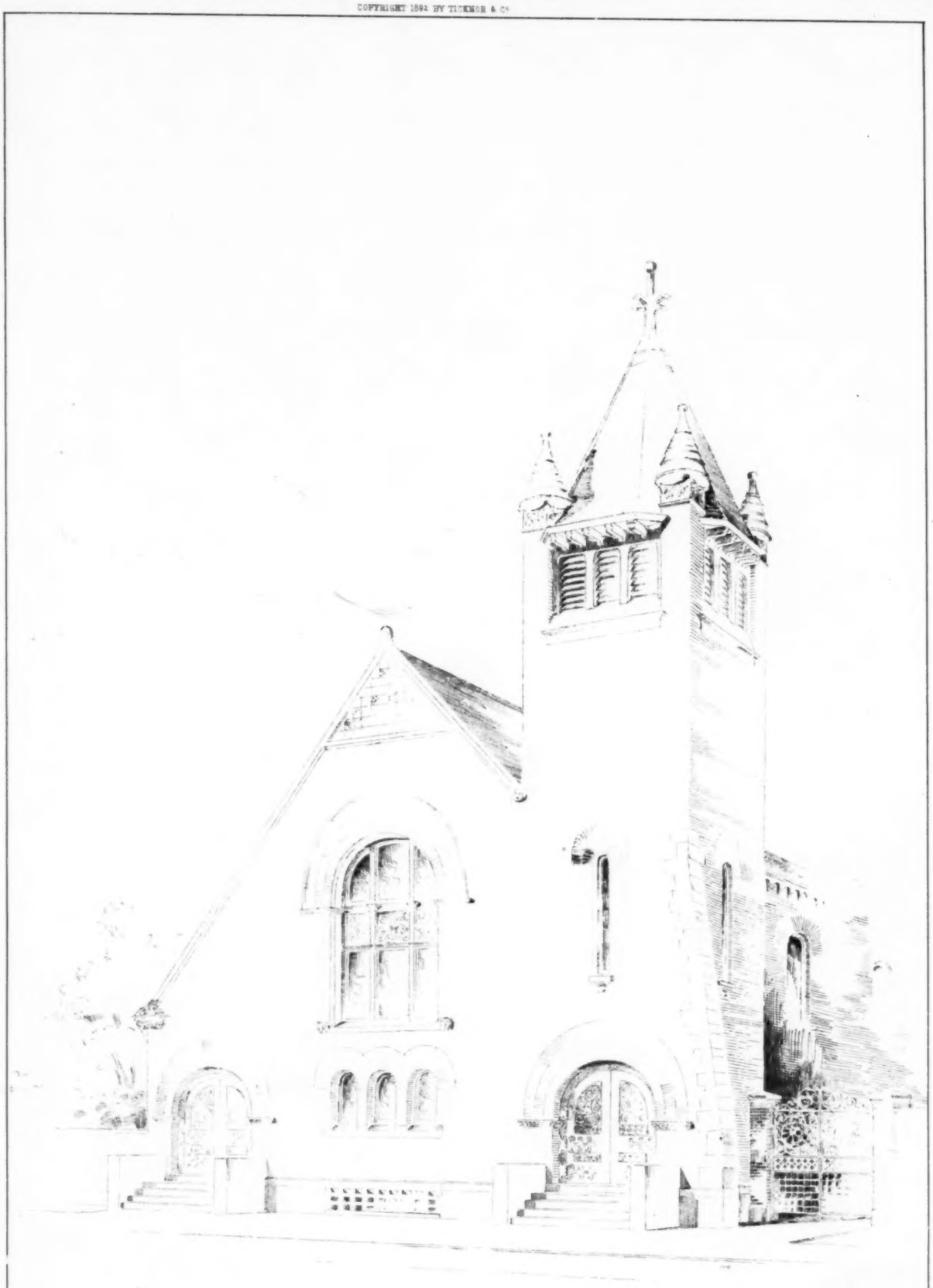

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