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AN important question is brought up by the fall of a wall of the old Swimming-school building, now the Kneipp Sanitarium, on Forty-fifth Street, New York, a few days ago. The wall that fell was, apparently, undermined by the excavation in progress for the new Delmonico Building, adjacent to it, and the managers of the Sanitarium say that it had been showing signs of approaching collapse for some days before it gave way; so that Dr. Doty, the physician in charge, had already notified the Department of Building of the danger, and had also, the day before the accident, requested his lawyer to apply for an injunction to restrain the contractor for the Delmonico Building from proceeding further with the excavation. On the other hand, the contractor claims that he “tried in every way” to persuade the proprietors of the Sanitarium to permit him to shore up their walls when he began excavating, but that they refused to allow his men to enter the place. He thinks, therefore, that they are alone to blame for the accident. Whether the matter will be brought into court remains to be seen, but it may be well to remark that if the contractor’s statement of the facts is correct, the courts are quite likely to take his view in regard to the responsibility for the fall of the wall. While the right of a man to dig out his own land to such depth as he pleases is modified by certain obligations toward adjoining owners which the law lays upon him, the latter cannot, if he offer to fulfil these obligations, refuse to accept the fulfilment, and insist upon preventing him from doing what he likes with his own. As the underpinning of neighboring walls endangered by excavation is, whether required by the law or not, a favor to the owners of the walls, it would certainly seem that they should do their part by allowing the persons engaged in doing the work intended for their benefit such access to their premises as may be necessary for the purpose, and that refusal to give the access required should excuse the other party from his obligation.

ONE of the most notable events in the history of art in this country is the recent exhibition of works from the American Academy in Rome, which was held in New York last week. It is true that the history of the Academy, at least, is in the future, rather than in the past, but there is reason to hope that finally it will be worthy of the nation that it represents. As the earnest artists to whose labors the foundation of the Academy is due have justly felt, Rome is, above all places in the world, the central point of great art. However

charmed we may be for a time with Impressionism, or Barbizonism, or Queen Anneism, or Colonialism, or Mediaevalism, we always come back in the end to Italian Classicism, as, on the whole, the noblest art that the world has known since the Dark Ages. In its presence the scales of artistic prejudice and conceit fall from our eyes, and we return from the study of it with new standards, both of intention and attainment. No one would pretend that there is not inspiration for artists at home, or that Italian cinque-cento work does not fall occasionally into formulas; but this does not alter the fact that there is a greatness in the Italian conception, and a feeling for the abstract principles of beauty, such as no other school can show. It is for this reason that artists from all over the world have for four hundred years studied their art in Rome, and they will probably continue to do so until another school, perhaps the American school of the twentieth century, shall furnish examples of an art still more nobly human. The American Academy, while it does not pretend to teach, except so far as the counsel of its accomplished and sympathetic Director, Mr. Lord, can be called teaching, performs the invaluable service of receiving young men who have completed with high distinction such courses of training as their own country affords, holding them together in such a way as to make their association of the greatest advantage to all, and, at the same time, keeping them surrounded by the artistic atmosphere which centres in Rome. This is the work which the Villa Medici has done for France, with the results that we all know, and we have now to see what the Villa Ludovisi, or, as it is now called, the Villa dell’Aurora, from the painting by Guercino which adorns the wall of the house in the Ludovisi gardens, occupied by the American Academy, will do for a people not less imaginative and sympathetic by nature than the French, and, taken generally, better developed intellectually, and freer from the traditions, and tendencies to aberrations of certain kinds, which have hampered the development of French art.

FOR the benefit of people who take an interest in the continued existence of this Academy, which, as we have reason to hope, may be a most important element in the development of American art, it may be well to say that it is, so far, supported by special subscriptions. The architectural department has no permanent fund, but is maintained by contributions from architects and friends of architecture in this country. The department of sculpture owes its standing for the present mainly to the Trustees of the Rinehart Fund, bequeathed by the late William H. Rinehart, of Baltimore, for the encouragement of sculpture. These Trustees have provided, out of the income of the fund, for two scholarships in sculpture, and have arranged that the beneficiaries shall become resident members at the Villa dell’Aurora; while the committee in charge of the Lazarus scholarship in mural painting have made the recipient of the scholarship a member of the Academy. It is probable that such or similar provision will be continued in these cases, but in order to make the Villa dell’Aurora properly representative of American art, and to give it an adequate influence, the Academy should be enabled to receive and train members from all over the Union. Cincinnati, which has long held a high artistic place in this country, should certainly send an annual scholar; while Chicago could easily keep two or three there; and the National Government, under the guidance of a permanent Art Commission, might well provide the means for opening such advantages to people of real genius from communities too new, or too poor, to have any money to spend on the encouragement of the fine arts.

WHAT may be an important suggestion was made the other day in the New York Board of Estimate. The appropriation required for the District Attorney’s office for the next year was under consideration, and attention was called to the enormous amounts paid by the county and city every year for expert evidence. In the case of Maria Barberi alone, the bill for expert testimony amounts to about ten thousand dollars, and the Comptroller and the District Attorney are said to have agreed that a hundred thousand dollars a year could be saved to the taxpayers by employing experts at a regular salary. We suppose that this means that expert specialists of reputation will be engaged and paid by the year, with

the understanding that they are to appear whenever the city may require their services. If care is taken in the selection of such experts, there seems to be no reason why this would not be an excellent plan, but we hope that it may be extended, after the French fashion, so that the experts, instead of testifying only for the prosecution, shall be required to present an absolutely impartial report, which shall be the only expert testimony admitted on either side, the expense to be divided between the parties, in the same manner as other costs of court.

LE MONDE MODERNE gives an interesting description of the great Church of the Sacred Heart, at Montmartre, in Paris, now approaching completion. All our readers know the general appearance and the plan of the building, but it is probable that few architects know how the money was raised to pay for what will be, although situated in a very wretched quarter of Paris, one of the most magnificent churches in Europe. About six million dollars have already been received in cash subscriptions, and expended on the structure, and several millions more will undoubtedly be required to complete and decorate it; yet there is no doubt that all the money necessary will be easily obtained. The financial scheme for the undertaking is peculiar only in appealing to small subscribers, rather than wealthy ones, the archbishop, or his advisers, reasoning that small subscriptions, if there are enough of them, will furnish as large a sum as a few of a more imposing sort. The only difficulty lay in devising some means of attracting subscriptions, sufficiently diversified to interest a very great number of people; and this problem is solved by assigning a sort of ownership in the different portions of the building in return for contributions, even of the most modest sort. For this purpose, the whole structure is divided into small portions, rated according to a fixed tariff, in such a way that every subscriber, whether his contribution is two cents or twenty thousand dollars, can say that a certain portion of the church belongs to him, and can, if he wishes, identify his particular portion. Thus, a card is made out and registered, describing a particular stone, or a certain roof-tile, or piece of cresting, and a value is assigned to the card. A roof-tile card, of the most ordinary sort, costs ten dollars; cards for more conspicuous tiles are priced higher, up to a hundred dollars in some cases; while a stone in the backing of the wall, or in some other place where it will not be seen, is rated at twenty-four dollars. Each card is cut, if desired, after the manner of a lottery-ticket, into little square pieces, which are sold separately, at prices ranging from two cents upward. A person of liberal mind, but narrow means, may thus become possessed for that modest sum of a five-hundredth interest in, let us say, the twentieth tile in the third course on the north side of the bell-tower; and great wealth is not necessary to secure a similar share in a stone in some specified position. For sixty dollars, a ticket can be had for a stone visible in the facing, and the ticket carries with it the right to have five initials cut on the stone, in a place where they will not be seen. These tickets, which are also divisible, are popular among families, and in small country parishes, which like to commemorate some one in this humble manner in the great Parisian basilica. By paying one hundred dollars, a ticket can be obtained representing a voussoir of an arch, and this carries with it the right to two initials cut on the face of the stone; while for two hundred dollars a stone can be had with a long inscription on the face. For columns, piers, belts, spandrels and so on, the tariff runs, naturally, much higher. The four piers which carry the dome are valued at twenty thousand dollars each, and belong to the Order of Jesuits, the Society of the Enfants de Marie, the College Stanislas, and the journal called *Le Pèlerin*. Smaller pillars and columns are rated at prices vary from one thousand dollars upward; and there are even some colonnettes for two hundred dollars. All tickets valued at two hundred dollars or more carry the right to a visible inscription, or cipher, or coat-of-arms, as may be preferred. Although the scheme seems at first sight rather unpleasantly businesslike, it seems to have been carried out with a conscientious regard for the humblest contributors which befits its sacred object; and the two-dollar subscription of "a shepherdess of the Isère, who has raised a little lamb for the Sacred Heart," or that of the apprentice who has saved up a dollar "out of the money that his father gave him to go to and from his work," appear on the same footing as that of the Comte de Chambord, who gave more than a hundred thousand dollars to the undertaking.

WHAT valuable specimen of legislation, the New York Stone-cutting law, has been called up again by a complaint made by "a labor organization in New York City," to the effect that the contractor who is erecting the Eastern Reformatory in Ulster County is using stone sawed from the ledge, in the usual manner, at the quarry in Ohio. Whether the "labor organization" expects the State of New York to declare war upon Ohio, to compel the citizens of the latter State to quarry their stone in such a way that the members of a certain close corporation in the former State may have a profitable job in trimming it into shape does not appear; but "charges" from "labor organizations" always inspire deep concern in Legislatures, and the Attorney-General has been requested to look into the matter. The result of his investigation is, as he gravely states, that he is unable to find in what way the sawing of stone at an Ohio quarry violates the statute, which was intended to protect stone-cutting labor in New York, not to regulate the practice of quarrying in other States.

IN considering the statutory protection of stone-cutting labor in New York, it is well to keep in mind that the principal stone-cutting firms in New York City have formed a close corporation, to which no new members are admitted, and which has a contract with the quarrymen, by virtue of which the latter will sell no stone to any one outside of the Trust. The members of the Trust, having a monopoly of the business, can pay their men whatever wages they see fit to allow them, and can charge whatever profit they choose on their own operations; and it is evidently for their benefit that the statute in question was enacted, and is enforced. How long the people of this country will endure the monopolizing of employment by these mediæval rings it would be hard to say, but there are signs that revolt is not far off.

THE *Engineering Record* has a letter from Mr. Gravelle, Engineer at the Maryland Steel Company's Works, at Gravelly Point, calling attention to "the fact that too many bolts are used, in building-work, for field connections." It is hardly necessary to say, as Mr. Gravelle points out, that where holes are punched, as is usual with structural steel, it is practically impossible for bolts to fill them, and the bolt being simply "tangent," as Mr. Gravelle says, to the circumference of the connecting holes, no calculation of any value can be made in regard to the resistance of the bolts to the ordinary strains in structural ironwork, until, at least, they have so far yielded as to have been brought in contact, by bending, with a larger surface of the holes. Even if the holes in the pieces to be connected were round, and exactly correspondent, they are always punched larger than the diameter of the connecting bolt or rivet, and, moreover, the punch leaves, necessarily, a conical, not a cylindrical hole. With rivets, the compression of the red-hot metal in heading forces it into all the inequalities of the holes, and it acquires a sufficiently solid bearing against the surrounding parts to afford a reasonable basis for calculating its resistance, so that, as the *Engineering Record* says, with riveted joints "the work is more permanent, less likely to deterioration or injury from meddling, and is made and remains tighter, thus developing to an important and reliable degree the element of friction." In certain cases, building-work has had the holes for connections carefully drilled or reamed, and bolts, turned to fit the holes, used to bind the parts together; but the *Engineering Record* thinks that cases of the use of bolts instead of rivets, where the holes are simply punched, are quite exceptional in building-work. We wish we could agree with it on this point, but it seems to us that in building steel-work, while the metal and the shop-work are, as a rule, undoubtedly better now than they were a few years ago, the field-work has not improved, and that bolted connections are taking the place of riveting in an increasing number of cases. Notwithstanding the greater convenience of bolts, we believe that they should be avoided wherever possible in steel buildings. In bridges, which are comparatively little exposed to wind, and are firmly secured to the ground at many points, bolts are rarely used by engineers, and it seems to us that they are still more to be avoided in office-buildings, extending vertically far into the air, from a comparatively small base, and exposed to great wind-pressure, acting from all directions, and with powerful leverage on the lower connections.

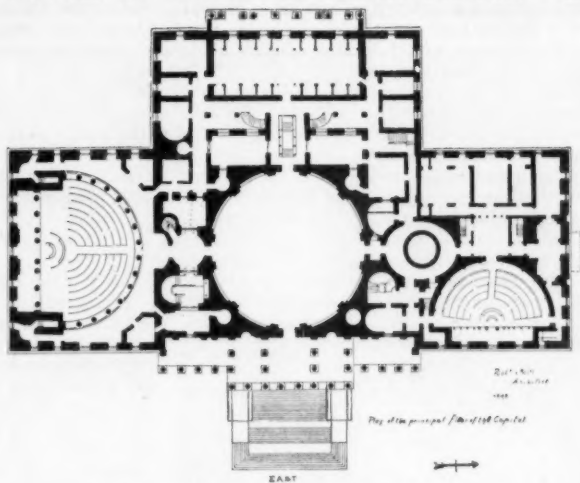
HISTORY OF THE UNITED STATES CAPITOL.¹—X.

Fig. 68. Principal Story: from Drawing of Robert Mills.

THE principal story (Fig. 68) of the Capitol was reached by the broad flight of steps of the eastern portico, or through the basement from the stairway (Fig. 69) in the western projection, or by the two circular stairways on the north and south of the crypt. The direct exterior entrances to the Senate and House of Representatives were from the eastern portico.

The principal eastern and western entrances open directly into the rotunda, which was 96 feet in diameter and 96 feet high (Fig. 70). The circular walls of this apartment, which still remain, are divided by "Grecian Pilasters" into panels. The pilasters are surmounted by a bold entablature ornamented by olive wreaths. Rising from the cornice was a hemispherical dome, divided into sunken panels. The panels on the circular wall are appropriated to paintings and bas-reliefs of historical subjects.

Over the entrances are a series of crude bas-reliefs. Over the western entrance is represented the preservation of Captain Smith by Pocahontas (see Fig. 71), by Capellano, a pupil of Canova. Over the eastern entrance, the landing of the Pilgrims on Plymouth Rock (Fig. 72), by Causici, also a pupil of Canova. Over the southern



Fig. 69. Principal Stairway from Basement.

door is the conflict between Daniel Boone and the Indians by Causici (Fig. 73). Over the northern entrance is Penn's Treaty with the Indians by Gevelot, a Frenchman (Fig. 74).

The other panels have floral wreaths, in which are placed the heads of Columbus, Sir Walter Raleigh, La Salle and Cabot.

The four paintings of Col. John Trumbull filled the large panels

between the pilasters. Trumbull had been the aide-de-camp of Washington in the Revolution, and had studied painting in this country and in Europe with the avowed intention of preserving the portraits of individuals, the record of places, costumes and scenes of the Revolution. In 1786 he produced "The Battle of Bunker Hill," his first



Fig. 71. Pocahontas and Captain Smith. A. Capellano, Sculptor.

picture of magnitude. In 1816, Congress passed a resolution ordering him to paint the following pictures, the material and sketches of which he had been collecting during more than twenty-six years: "The Declaration of Independence," "The Surrender of General Burgoyne," "The Surrender of the British Army at Yorktown," "Resignation of General Washington at Annapolis."²

Although these pictures are not decorative or artistic, they are interesting as portraits of individuals. The other four paintings at present in the rotunda do not belong to the period of the old Capitol.

The north door in the rotunda opens into the small circular hall in which are the "tobacco capitals" (see Fig. 43) designed by

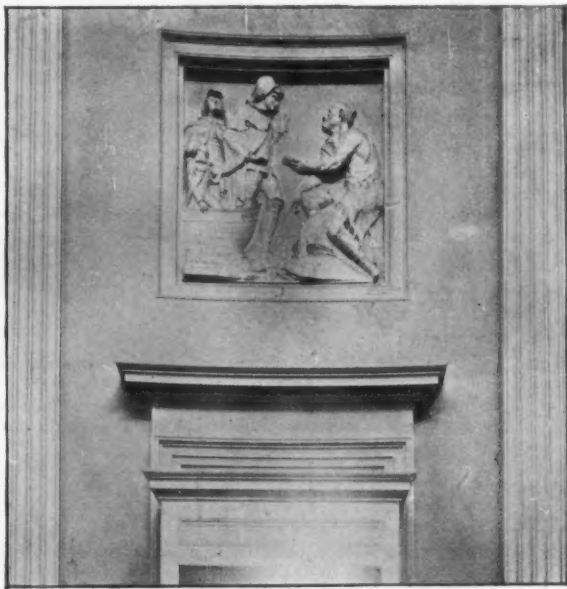


Fig. 72. Landing of the Pilgrims. Causici, Sculptor.

Latrobe. The south door led directly into the vestibule of the House. A door on the west of the vestibule led into the hall of the principal stairway, which runs from the basement to the roof, giving access to

² There is a detailed description of these pictures, how they were acquired and criticisms favorable and unfavorable at the period when they were put in place, published in "Ten Miles Square," by Jonathan Elliott, 1830. George Alfred Townsend quotes criticisms of 1873, in "Washington Inside and Out." Mills gives criticisms, 1847, "Guide to Capitol."

the gentlemen's galleries. The entrances to the ladies' gallery were in the lobby south of the hall.

The circular vestibule south of the rotunda gave access directly to the lobby of the old House of Representatives. On the east was a stairway leading to the library of the House. The Speaker's, clerks' and other rooms surrounded the hall.

The Hall of Representatives at the time of its construction, and for many years afterwards, was considered by enthusiastic Americans the "most elegant legislative hall in the world." (Fig. 75.) The room is a semicircle with a diameter of 96 feet, with a parallelogram on its south side, 73' x 35'. The height to top of entablature is 35 feet, and to the apex of the domed ceiling is 57 feet. The circular colonnade is composed of 14 columns and 2 antes. The shafts of breccia from the Potomac are in solid blocks. The capitals are of Italian marble, modelled from those of the monument of Lysicrates. From the entablature springs the dome, decorated by a young Italian painter, named Bonani, who died soon after the completion of this work.¹

The apex of the dome is crowned by a lantern, through which abundant light reaches the chamber below. The colonnade of the south is composed of 8 columns and 3 antes, similar to the others. An arch of 72 feet chord springs over the colonnade. In the centre of this arch is a plaster cast of a statue of Liberty, on the right of which was an altar entwined by a serpent; at her feet reposed an eagle. Robert Mills commends this group as one of the best pieces by Causici, who died before he was allowed to put it into marble (Fig. 76).

Under the statue of Liberty, on the frieze of the entablature, was a spread eagle carved in stone by Valaperti, an Italian sculptor.

The attitude of this piece of sculpture gave rise to some severe remarks on "its resemblance to a turkey buzzard," which is supposed to have caused the sculptor to drown himself in the Potomac. He disappeared, and the "spread eagle" was the only piece of work he completed in America.

The ladies' gallery was on the south, and the public gallery was back of the circular row of columns. The former accommodated two hundred, and the latter five hundred people.

The space between the columns was draped with crimson curtains, those back of the Speaker's chair being made of crimson silk, "flowing down as from a centre from the top of the capitals of the columns."

Opposite the Speaker's desk, between the draped curtains, was a clock, on which History sits in the winged car of Time. (Fig. 77.)

This piece of work was designed by Giuseppe Franzoni, the second sculptor of the latter name, and completed by Francisco Iardella. Iardella married Mrs. Franzoni, one of whose daughters, by the first husband, acted as the model for the female figure on the clock.

The appearance of the House as finished and furnished was striking. The Speaker's chair was placed on a platform four feet above the level of the hall. This was enclosed by a rich fluted, bronze

balustrade, surmounted by an impost and brass railing. There were desks on each side for the Speaker. Three feet below the Speaker on a marble base was the clerk's desk, "a rich mahogany table," enclosed below with beautiful curtains of damask silk, and above with a dwarf brass railing.

Between the columns were sofas on which the members could lounge. Reporters had boxes between the columns, ten spaces being allotted to them. Each member had a desk: the desks were of mahogany and numbered.

The floor inclined, rising from the clerk's desk to the outer wall. On the last row of seats was a bronzed-iron railing, with curtains enclosing the space occupied by the members.

In the old hall were paintings of Lafayette, by a French artist, and one of Washington by Vanderline.

The doorway on the north of the rotunda led through the small elliptical rotunda to the Senate Chamber and its committee-rooms.

A doorway on the east side of this elliptical apartment led to the main stairway. This marble stairway also gave access to the galleries of the Senate. The western door from the elliptical room led into a hall opening on a toilet and folding rooms, and on a stone stairway that runs from the basement to the roof. From the north the hall passes by the stairway of the ladies' gallery to the vestibule of the Senate—"a quadrangular room lighted from above," with a screen of marble columns on the west, and the entrance to the Senate chamber on the east.

Back of the colonnade is a hall that gave access to the rooms of the President and Secretary, and the other officers of the Senate.

Mills describes the Senate-chamber (Fig. 78, gelatine print) as a large semicircular room, covered with a dome, richly ornamented with deep sunken panels and circular apertures to admit light from above. Across the chord of the semicircle a screen of columns stretches on each side of the

President of Senate's chair, which was placed in a niche on an elevated platform (see Fig. 40), in front of which are the secretary's and chief-clerk's desks. "The columns are Grecian-Ionic, the shafts being of breccia, and caps of statuary marble. A gallery was supported on the entablature of these columns." In front is another lighter gallery running around the circle of the room, supported by reeded bronzed-iron columns, surmounted by a rich gilt iron balustrade.

In this room was a picture of Washington by Rembrandt Peale, which Mills considered the best portrait of Washington in existence.

The desks placed in circles were of mahogany, each senator having a desk. "They were on platforms, each row being above the other." Having plain walls and a flat dome, the Senate was a good room in which to speak. Diameter 75 feet; 45 feet greatest width; 45 feet high.

Jonathan Elliott, 1830, Wm. Elliott, 1837, Robert Mills, 1847, say: "The principal staircases and entrances to the two Houses of Congress are all unworthy of the rooms they communicate with, being confined, dark and difficult to be found by strangers."

The western door from the rotunda passing around both sides of the principal western staircase leads to the library, which is situated in the western projection, at the entrance of which are two marble

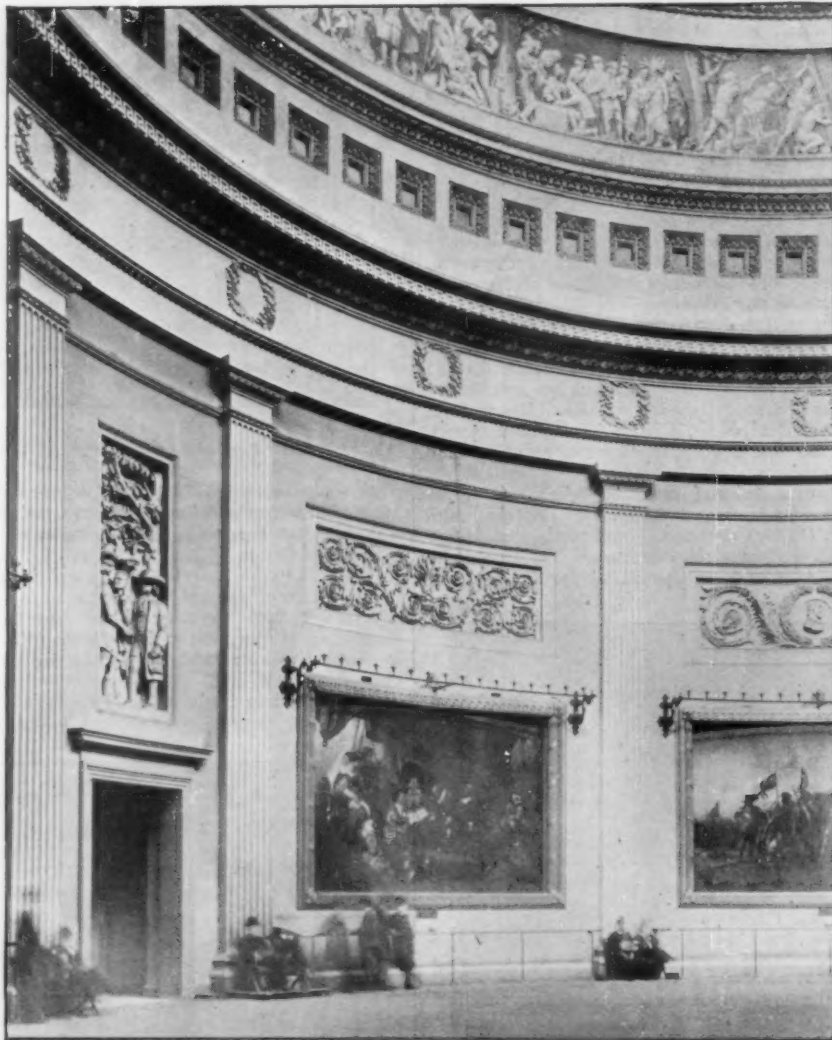


Fig. 70. Interior of Rotunda. [The frieze above, by Brumidi, is of later date.]

¹The American Architect, September 12, 1896, gave a view of this hall as it is to-day—gelatine print.

columns, modelled from the Octagon Tower in Athens. There are similar columns at the door opening out on the western colonnade.



Fig. 73. Conflict between Daniel Boone and an Indian. Causici, Sculptor.

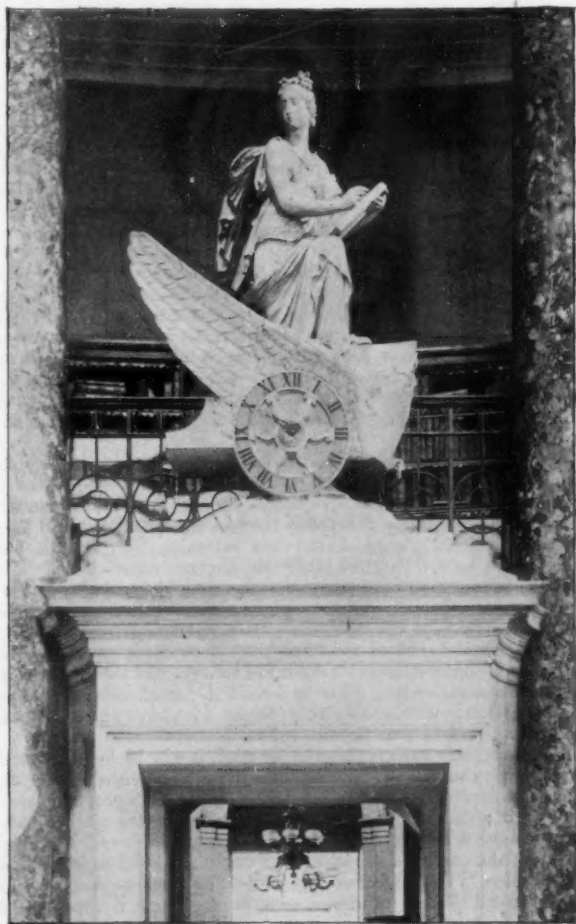


Fig. 77. History in the Car of Time. Giuseppe Franzoni, Sculptor.

The original library occupied only the front portion of the build-

ing, and was without the two ells which are familiar to visitors at the present time.

The old portion of the room was 92 feet long, 34 feet wide, 36 feet

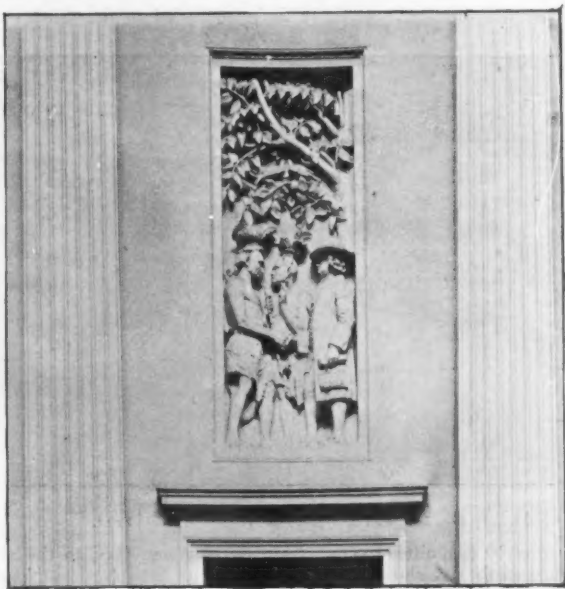


Fig. 74. Penn's Treaty with the Indians. Gavelot, Sculptor.

high. Extending the whole length of the room was (I say was, for the interior has been changed) a series of alcoves ornamented in front with fluted pilasters which, with their entablature, support two

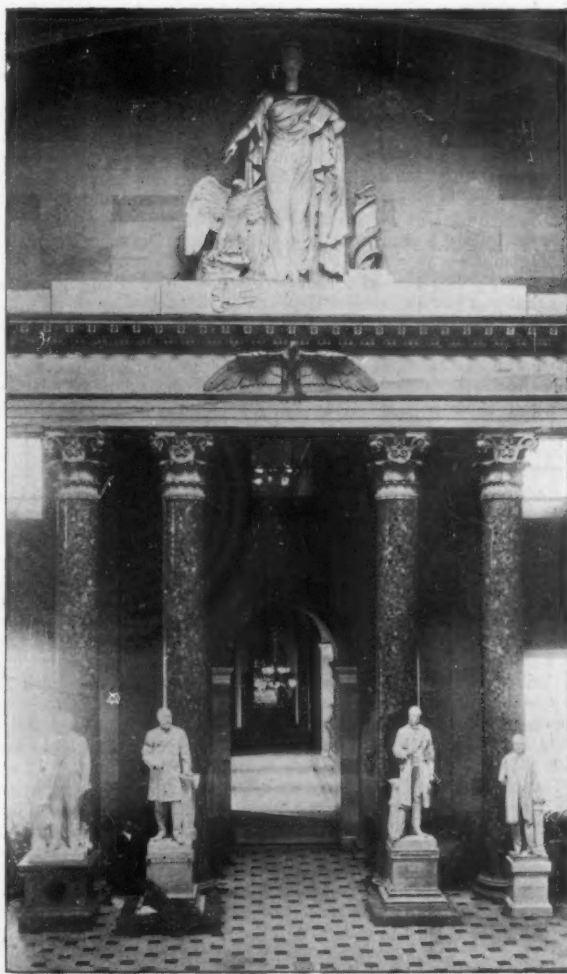


Fig. 76. Statue of Liberty. Causici, Sculptor.

galleries, divided as below into twelve shelved recesses. Above these sprung the great arch, forming the ceiling, decorated with enriched panels, borders and wreaths of flowers, and pierced with three

circular, ornamented apertures, which admitted the light and ventilated the room. "A table and chair was in each alcove." The cases were glazed and labelled. The room was heated by furnace from below.

The stairway to the north of the rotunda led to the third story,

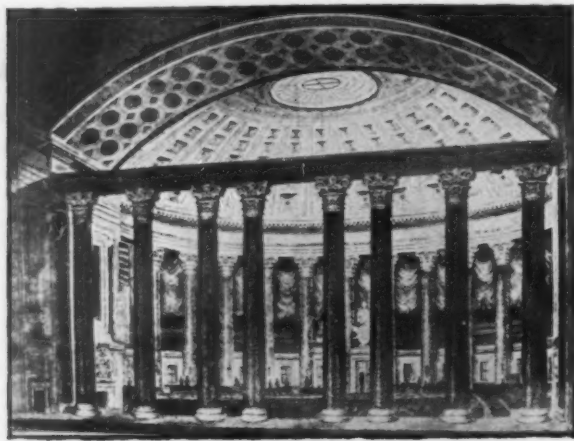


Fig. 75. Hall of Representatives; from an old Print.

occupied by committee-rooms. The stairway continued to the roof, thence on the exterior of and over the roof, to the top of the dome.

GLENN BROWN.

(To be continued.)

TILES.¹

IF you take up any text-book devoted to building construction, or even to brick and tile making, you cannot but remark the smallness of space given to the subject of this paper; and in saying this, I wish you to bear in mind the limits under which I have worked in its preparation, more especially as the manufacture of tiles is no part of my theme, but, rather, the practical part as it would be likely to strike the operative tiler and the observant architect.

The chief value to me of a paper of this kind is that it brings into touch, for however short a space of time, the severely practical minds of operative and business men with those of the profession of architecture, in which each must, in the natural order of things, impart to and take something from the other, resembling, in this respect, the influence exercised by the Craft guilds of the mediæval times, an influence which the Architectural Association in its practice is doing so much to revive.

In dealing with tiles as a roof-covering, the first thing to be sure of is that you have selected a tile capable of excluding all dampness from your dwelling, and at the same time withstanding the disintegrating influence of the weather. These two characteristics go together, the one following the other as a natural consequence.

The characteristics of a good roofing tile are density combined with toughness and incipient vitrification, the last-named quality producing, to some extent, that pleasing tint familiarly known as "bloom," one of the peculiarities of the Broseley tiles. Tiles of a bright red, or an earthy-red color, should be looked on with suspicion, and avoided. They are invariably absorbent, and will not "weather" well. To ascertain the comparative merits of tiles, as to their weathering capacity, there is no better test than the amount of water they will take in.

Most roofing tiles are slightly absorbent, unless you get the highly-fired brindled and blue tiles; and for this reason, old tiles have, in a few isolated instances, attained to a higher market value than new tiles, as by age and atmospheric deposit they have acquired an artificial surface coating, and lost the property of absorption—at least, on their outer exposed surfaces, though I am inclined to think that they have been desired more from an æsthetical point-of-view than otherwise, as in the case of Colonel Makin's house in the Exhibition-road, South Kensington, built some sixteen years ago, and roofed with old tiles.

The old-fashioned tiles have no nibs or stubbs for hanging, and must, therefore, be kept *in situ* by means of two wooden pins or nails. In the old days the oak pins, by reason of their unyielding hardness, were a fruitful source of breakage when driving them through the sometimes badly-formed pin-holes at the ends of the tiles. Still, as far as absorption goes, the best kind of modern tiles are capable of excluding all dampness from your dwelling, if they be laid with due regard to other conditions, with which I now propose to deal.

Where tiles are bedded in lime-and-hair mortar, the tops only should be bedded, the mortar extending, say, not more than one inch below the head of the tile. If brought too low, it may become a source of dampness in exposed situations, by reason of its capillary attraction. As a matter of personal opinion and experience, I would

slightly gauge with Portland cement all lime-and-hair mortar used in the bedding of roof-tiles, the additional cost being very small.

Where your roof is close boarded (and sometimes felted) there is no need for bedding, though, of course, a covering of bedded tiles is less liable to breakage in climbing about a roof than would be one of unbedded tiles. By gauging the lime-and-hair mortar, you make it practically non-absorbent, and therefore less likely to attract and take up moisture.

Secret gutters at dormer cheeks and elsewhere often become a source of dampness, as a consequence of the tiler's thoughtlessly beating down the plumbers' lead welt or turn-over, purposely formed to check or to keep back the rain, that his tiles may lie more evenly and in the same plane as the general inclination or slope of the roof. Sometimes the battens, both in slating and tiling, are wrongly carried over the lead welt and nailed through it, in which case you are very likely to get water into your roof.

The lead welt should stand its own thickness above the backs of the battens, forming a tilt for the tiles, so as to throw the water away from their edges onto the main body of the roof—the secret gutter performing its proper function by receiving and carrying off the water from the dormer itself, or from any gutter discharging immediately above it. The tiles overhanging secret gutters $1\frac{1}{2}$ inches should not be bedded on the lead, nor their edges pointed. In some cases where this has been done I have found rain drawn into the roof. Tiles, and tile-and-half, should be worked against all secret and other gutters, where practicable, alternately on each course.

Secret gutters should be in such positions where they will always clear themselves; especially where the dwelling is surrounded with trees. I have heard of such gutters becoming partly silted up by accumulated atmospheric deposit, and inducing leakage by capillary attraction.

A case in point occurred at an artist's studio, Tile Street, Chelsea, where a secret lead gutter had been formed *under* the tiles intersecting at the re-entrant angle of the roof. Repeated rains had partially silted up the space between the lead gutter and the underside of the tiles, which had been cut close, leaving no space between their opposite edges, with the consequence that a narrow film of water was upheld in the space remaining between the lead and tiles, resulting in an abundant leakage in heavy rains.

Such gutters should have, at least, a clear space of $1\frac{1}{2}$ inches between the opposite edges of the tiles on each slope or plane whose intersection forms the re-entrant angle of the roof.

Where the roof runs into a vertical plane or parapet wall, 4-pound lead-soakers, finished with a skeleton flashing, is always a safe arrangement, though they give the tiling an untidy appearance by preventing the tails of the tiles lying close on the backs of the tiles immediately beneath them. Where a wall cuts obliquely into a roof, this arrangement is indispensable.

Stepped flashings, with the lead extending 6 inches on the roof, should not be used, because of the necessity of distressing the lead to fit the backs and steps of the tiles, and the likelihood of breaking the tiles in the act of so doing.

In a tiled roof, valley and hip tiles should be used in preference to lead gutters, secret or otherwise, bedding the valley-tiles at their heads to keep them *in situ* and steady while laying the plain tiles; but laying the hip-tiles dry, keeping them in position by a single nail at their head.

Hip and valley tiles should not be ordered without proper regard to their enclosed angle or pitch, as they often appear to be, judging by the appearance they make on many roofs in our midst. The dihedral angle made by any two adjacent sides of the roof, intersecting at and forming the hip, should be geometrically obtained (for one cannot wait till the roof is framed before ordering the tiles), and the hip-tiles ordered, with a pitch of 10 degrees greater than the roof, to allow for the tilt and the thickness of the tile under them.

The method of obtaining the dihedral angle is shown on page 97, fourth edition, of my manual on "*Brickwork*."

The enclosed angle of the valley-tile is obtained in the same way, but reversed. The hip and valley tiles, in my opinion, should be in the same inclined planes of the roof of which they form a part, though more frequently than otherwise they are not so.

There is one thing in connection with the subject of this paper I would like to especially impress upon architects—the desirability of making the roofs of dormers and gables, springing from and intersecting the main roof, of the same pitch or inclination as the roof, their intersections with which form the valleys. If this is not done, purpose-made valley-tiles must be obtained, for all hips and valleys stocked by tile-makers are for roofs whose sides have an equal pitch; or else lead gutters must be resorted to.

If the ordinary stock valley-tile be used, it will be found that the line forming the tails of the plain tiles in each course will fall either below or above the bottom of the valley-tile in each case on *one* side of the roof; and so unsightly and distressing is the result, that in one instance I found it necessary to paint the valleys into straight lines that the correct sense of the eye might not be annoyed by looking at them. The practical way of dealing with roofs whose sides have unequal pitches is also shown in the manual already mentioned.

In the case of a complicated roof, I have known a miniature model to be made of the complete roof, and sent to the tile-maker for his guidance.

¹ A paper, by Mr. J. Walker, read before the Architectural Association, November 6, 1896.

Where a minor roof runs in at right angles to a greater, or main roof, intersecting it at a point below the main ridge, it is desirable to use a piece of 4-pound lead dressed to the shape of the minor ridge, and the slope of the main roof, and called a saddle-piece. This, placed over the tiles on the lower roof and under the tiles of the main, or higher roof, prevents the possibility of rain getting in at the junction of the roofs; and the lead can be of such an area as to be covered by the ridge-tile, the appearance of lead in a tiled roof being objectionable wherever it can be avoided.

The verge should start with straight tiles running from the eaves to the ridge (unless interrupted by a chimney-stack) and be bedded on the outside $4\frac{1}{2}$ inches of the brickwork—the battens being cut back $4\frac{1}{2}$ inches for that purpose. The outside brickwork should be cut up to the rake of the roof and nearly flush with the back of the hanging battens, that the verge, when completed, will have a tilt on its outer edge of at least $\frac{1}{2}$ inch to throw the rain on to the body of the roof, and so avoid rain drippings from the verge.

The tiles to be used on the verge should be soaked to saturation and allowed afterwards to drain, and then bedded in Portland cement, as by reason of the battens being kept back $4\frac{1}{2}$ inches from the face of the brickwork there is fixing for one nail only (or stubb) for each tile. The verge generally projects from 2 inches to $2\frac{1}{2}$ inches beyond the finished face of the wall, and is finished either with a plain or angular fillet at its junction with the brickwork. The roof-tiles on the verge should be alternately tile and tile-and-a-half (gable-tile), in its line of direction, and the same remarks apply to the cutting up to hips and valleys; small strips of tiles being undesirable where they can be practically avoided.

The under-eaves tile is seldom used in practice in the way intended by the tile-maker. The tiler simply knocks off the two stubbs or hanging nibs and beds them on their backs, the reverse way intended, for the purpose of getting the under-eaves edge close fitting to the eaves-tile bedded immediately on it, the under-eaves being twice nailed, in addition to the security of position obtained by the tilt or spring of the roof.

Ridge-tiles should be of such a section as to admit of being pressed or made in one piece. Where an ornamental cresting is required, it should be made as a separate piece entirely detached from the ridge-tile proper, the latter being made with a groove to receive the cresting, as shown in Vol. II, "*Rivington's Notes on Building Construction*." Under no conditions should the cresting be stuck on the ridge-tile by means of semi-liquid clay while they are in the clay state. Such work is more or less defective and unsatisfactory in the end.

The simplest form of ridge-tile, and therefore the best, is that used by the London School Board, consisting of the two wings terminating in a roll at their angle of intersection. Another good form of ridge-tile is that of a plain vertical blade rising from the angle of intersection of the wings, and with the square angle at each end of the blade cut off at an angle of 45 degrees, and which can be pressed in one piece by a simple operation. The weakness of this form of tile is at the junction of the crest with the wings, where it is apt to get broken in transit or careless handling.

Ridge-tiles should be well soaked before use, bedded in gauged lime-and-hair mortar and their vertical joints drawn up solid with cement, not simply pointed after they are fixed. The use of dowels I consider altogether unnecessary where this is done. A tile 9 inches in length is made specially for the last course of plain tiles coming immediately under the ridge-tiles.

Where the roof is enclosed on the under-side it is customary to bed in lime-and-hair the eaves-courses only, for the sake of steadiness in the fixing. In one instance I have seen the rafters pugged (in the same way that you would pug a floor), by nailing a fillet on each side of the rafters, about central in their depth, and then lathing between the rafters, and plastering the same from above with mortar and chopped hay, the rafters being afterwards open-battened to receive the tiles.

In another instance I have known the tiles to be laid on open battens and bedded in straw, the architect claiming that the straw prevented the incoming of snow, and did not prevent the air getting at the roof-timbers for their preservation.

Well-formed roofing tiles are straight in their width and hollow in their length, that the tails of each course may lie close and tight on the backs of the undercourse. Straight tiles will not clear themselves one over the other, and should therefore be rejected. Where pointing is necessary—on the verges, for instance—it is customary in good work to grind down some of the broken tiles to mix with the Portland cement as a substitute for sand, that the finished pointing may approximate in color to the general tone of the roof-covering.

In the case of vertical tiling, it was customary to hang and nail the tiles on battens fixed to a brick-nogged, or to an ordinary 9-inch wall. I am told this is not now permissible. Under these circumstances, it seems to me that the proper alternative is the use of Wright's patent fireproof bricks—or bricks somewhat similar—which are capable of being nailed into, by the use of which the $2'' \times 3''$ hanging battens may be dispensed with, the tiles being nailed into the bricks, and the tilt obtained by one or two sailing-out courses at the level where the vertical tiling commences.

There is much that might be added, but what is omitted can be found in the text-books. The Architectural Association has fixed a time-limit of fifteen minutes, and, when conferring this honor upon

me, gave me to understand that a practical paper would be required. With that instruction in view, I have refrained from going to the text-books—except in one instance only, and that to refer you to an illustration—but have drawn upon my own personal knowledge and experience. How far I have succeeded in my attempt to carry out your behest is for my audience to determine.



WASHINGTON ARCHITECTURAL CLUB.

At a meeting held Tuesday, December 8, 1896, in the rooms of the Washington Chapter of the American Institute of Architects, the reorganization of the Washington Architectural Club took place.

It was first organized in the spring of 1892, and for a time great interest was manifested by the members, but for some unknown reason the number gradually diminished until at the beginning of the present year the Club had practically ceased to exist. Through the kindness of the Washington Chapter of the American Institute of Architects, their club-room was placed at the disposal of the Washington Architectural Club, provided a reorganization on a solid basis should be effected. With this offer in view, a meeting was called, and when Mr. E. W. Donne called the members to order, there were thirty present, which number was increased by late arrivals. It was decided to adopt an entirely new constitution, one that would allow greater scope, as regards work to be done at the meetings by the professional members, and by public lectures and exhibitions to increase the aesthetic taste of the public.

The election of officers for the ensuing year took place, which resulted as follows: *President*, George O. Totten; *Secretary*, Walter G. Peter; *Treasurer*, F. B. Wheaton; *Directors*, W. J. Marsh, E. W. Donne, W. D. Windom and A. L. Harris.

Mr. Totten, on taking the chair, made a few well-chosen remarks on the advisability of having such an organization in Washington and its benefits to the members and public at large. After a general discussion among those present, a committee was appointed to meet the committee in charge of the erection of reviewing-stands for the fourth of March next. In the past, these stands have been built along the public reservations, completely hiding some of the best statues in the city, and obstructing the view of the Treasury and other public buildings. The construction has been of the roughest, and the little bunting used to decorate and embellish has been so thoroughly wet by rain and snow that on the 4th of March it hangs in strings with the color all streaking down the woodwork. To do away with all this, the Club will ask to be allowed to submit sketches and a scheme for so arranging the stands that they will not interfere with the view of the best features of the city along the line of the parade, as in past years.

Minor items of business were then discussed.

WALTER G. PETERS, *Secretary*.

THE NATIONAL SOCIETY OF MURAL PAINTERS.

The National Society of Mural Painters held its December meeting on the evening of Dec. 22d, at the studio of the First Vice-President, Mr. Crowninshield. In spite of the bad weather, there was a good attendance, the Honorary President, Mr. John Lafarge, leaving his sickroom to be present.

Among the reports from the standing committees was an interesting statement from the Civic Buildings Committee in regard to the proposed competition for the decoration of the City-hall, Cincinnati, now being carried on by the Municipal Art Society of that city, in which they have arranged for a jury of three, one member of which shall be an expert from the National Society of Mural Painters. This will be the first competition for mural painting in which the principle of expert judgment has been recognized in advance. The designs are also to be submitted under *noms de plume*.

A report was received from the first Vice-President of the decision in the "Lazarus" scholarship, the winner of which, Mr. Geo. W. Breck, leaves for a three years' residence at the American Academy in Rome, his work being the study of Mural Painting in its monumental and architectural aspects.

It was decided to hold the annual dinner of the Society about Easter time next year.

After a discussion of the proposed new Constitution of the Fine Arts Federation, it was referred to the committee in charge with a few suggestions as to advisable modifications.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

DETAIL OF THE FRONT OF THE MANHATTAN LIFE BUILDING, BROADWAY, NEW YORK, N. Y. MESSRS. KIMBALL & THOMPSON, ARCHITECTS, NEW YORK, N. Y.

[Gelatin print, issued with the International and Imperial Editions only.]

COMPETITIVE DESIGN FOR THE CHURCH OF THE ASCENSION, PITTSBURGH, PA. MESSRS. H. A. WALKER & A. S. BELL, ARCHITECTS, PITTSBURGH, PA.

In the limited competition in which this design was submitted the award fell to Mr. W. Halsey Wood.

INTERIOR OF THE SAME CHURCH.

STUDY FOR GROUPING THE BUILDING OF THE CHURCH OF THE ASCENSION, PITTSBURGH, PA.

SEMI-DETACHED HOUSES FOR OFFICERS U. S. NAVAL OBSERVATORY, WASHINGTON, D. C. MR. W. J. MARSH, ARCHITECT, WASHINGTON, D. C.

HOUSE AND STABLE FOR BULKELEY WELLS, ESQ., MANCHESTER, MASS. MR. C. K. CUMMINGS, ARCHITECT, BOSTON, MASS.

"THE CHOIR OF ST. MARK'S, VENICE," AFTER AN ETCHING BY FERDINAND BOBERG.

The etcher of this plate, which was exhibited at the Paris Salon in 1893, is, we are informed, a well-known Swedish architect. A number of his etchings were shown at the Chicago Exhibition, 1893. We are indebted to Messrs. F. Keppel & Co., of New York, for permission to copy this print, of which they are the publishers.

[The following named illustrations may be found by reference to our advertising pages.]

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. XLI: THE CHARLOTTENHOF, POTSDAM, PRUSSIA.

The simple country house which formerly stood here was changed into the present structure in 1826, after the designs of Karl Friedrich Schinkel.

THE HAZARD HOUSE ON THE PARADE, NEWPORT, R. I.: TWO PLATES. MEASURED AND DRAWN BY MR. P. G. GULBRANSON, ARCHITECT, BOSTON, MASS.

A GROUP OF WINDOWS.

[Additional Illustrations in the International Edition.]

ST. AEGIDIENKIRCHE, NUREMBERG, BAVARIA.

[Gelatine Print.]

This church was building from 1711 to 1718 in place of an old Gothic edifice built by Benedictine monks about the middle of the twelfth century, and destroyed by fire in 1696. The new church was designed by Johann Trost, of Nuremberg, but as the latter died in 1700, his son, Gottlieb, was entrusted with the charge of building it. As the old foundations, and partly, also, the old outside walls had to be used again, the general ground plan of the church remained unchanged. The choir, in which only the windows and Corinthian pilasters are new additions, distinctly reflects its Gothic origin. At the intersection of nave and transept, a cupola was constructed, which, however, does not show from the outside and is poorly lighted. The auditorium, which, in the Gothic building, had consisted of a central aisle and two side aisles, was given an oval shape better adapted to the purposes of Protestant worship, with two galleries encircling the hall, supported on brackets projecting far out from the walls. The corners of the original rectangle were utilized for winding staircases leading to the galleries. The stucco ornaments of the vaulted ceiling remind one of Lepautre's and Bérain's work, while the frescoing breathes the spirit of contemporaneous Italian art. The exterior is in the noble forms of the Italian Renaissance, which crossed the Alps in the seventeenth century. Situated upon the summit of a hill, the church affords a very attractive spectacle, all the more surprising as it is totally different from the style of architecture to which quaint old Nuremberg owes its great and peculiar charm.

INTERIOR OF THE SAME CHURCH.

[Gelatine Print.]

OLD SENATE CHAMBER, NOW SUPREME COURT ROOM IN THE UNITED STATES CAPITOL, WASHINGTON, D. C.

[Gelatine Print.]

This plate is Figure 78 of the article on the "History of the United States Capitol," elsewhere in this issue.

THAMES CONSERVANCY OFFICES, VICTORIA EMBANKMENT, LONDON, ENG. MESSRS. HUNT & STEWARD, ARCHITECTS.

LONDON AND SOUTHWESTERN BANK, WIMBLEDON COMMON, LONDON, ENG. MR. EDWARD GABRIEL, 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.]

PROGRESS AND DEVELOPMENT.

PROVIDENCE, R. I., December 27, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The leading editorial in the last issue of the *American Architect* is a pleasant reminder of your ten hundred and ninety-

sixth weekly visit to me; and seldom or never — almost — have you found me out, and never when "at home" have you been an unwelcome visitor. Sometimes I have been obliged to keep you waiting in the outer hall, but I have found you, when admitted, as genial and fresh as you would have been had I given you an immediate audience.

It is not easy, nor is it wise, to too closely weigh in the balance all the influences which have been at work to uplift the profession of architecture in this country, for in so doing it is hardly possible to escape making comparisons which would be esteemed invidious; but that there has been a very great improvement in the architecture of this country, and in the spirit and tone of those who practise it, cannot be denied, and among the potent factors which have brought about this healthful improvement, in addition to individual effort and example, are the several schools of architecture in this country and the Beaux-Arts in Paris — which formed the basis of a most interesting and useful discussion in the meeting of the Boston Society of Architects, which was so fully reported in the columns of the *American Architect* — the American Institute of Architects and its several chapters, and the professional journals, of which yours is the pioneer and the most conspicuous example.

It has from its first issue to the present maintained the high standard which it set for itself, and with wonderful persistency and constancy has resisted all temptations to seek temporary gain by a sacrifice of its high ideal.

With what we hope is to be a return of prosperity, may the coming years bring to you many new subscribers, and to the American Institute of Architects many new members from the ranks of those who are pursuing architecture not alone for the support which it gives them, but because of that love of art which will not permit them to abandon it to charlatans and to "promoters."

I trust that the next twenty-one years of the life of the *American Architect* will be as rich in results as the brilliant promise of its years preceding and up to its majority have given us a right to anticipate.

Very sincerely yours, ALFRED STONE.

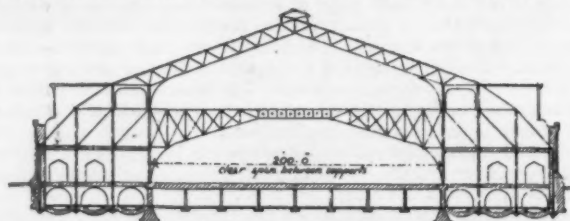
CANTILEVER ROOF-TRUSSES.

NEW YORK, N. Y., December 16, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I see that in one of your recent issues that you refer to the adaptability of the cantilever principle to building and roof work.

Permit me to hand you a general design we made in 1887 for a double-decked armory, which was supposed to take the place of the



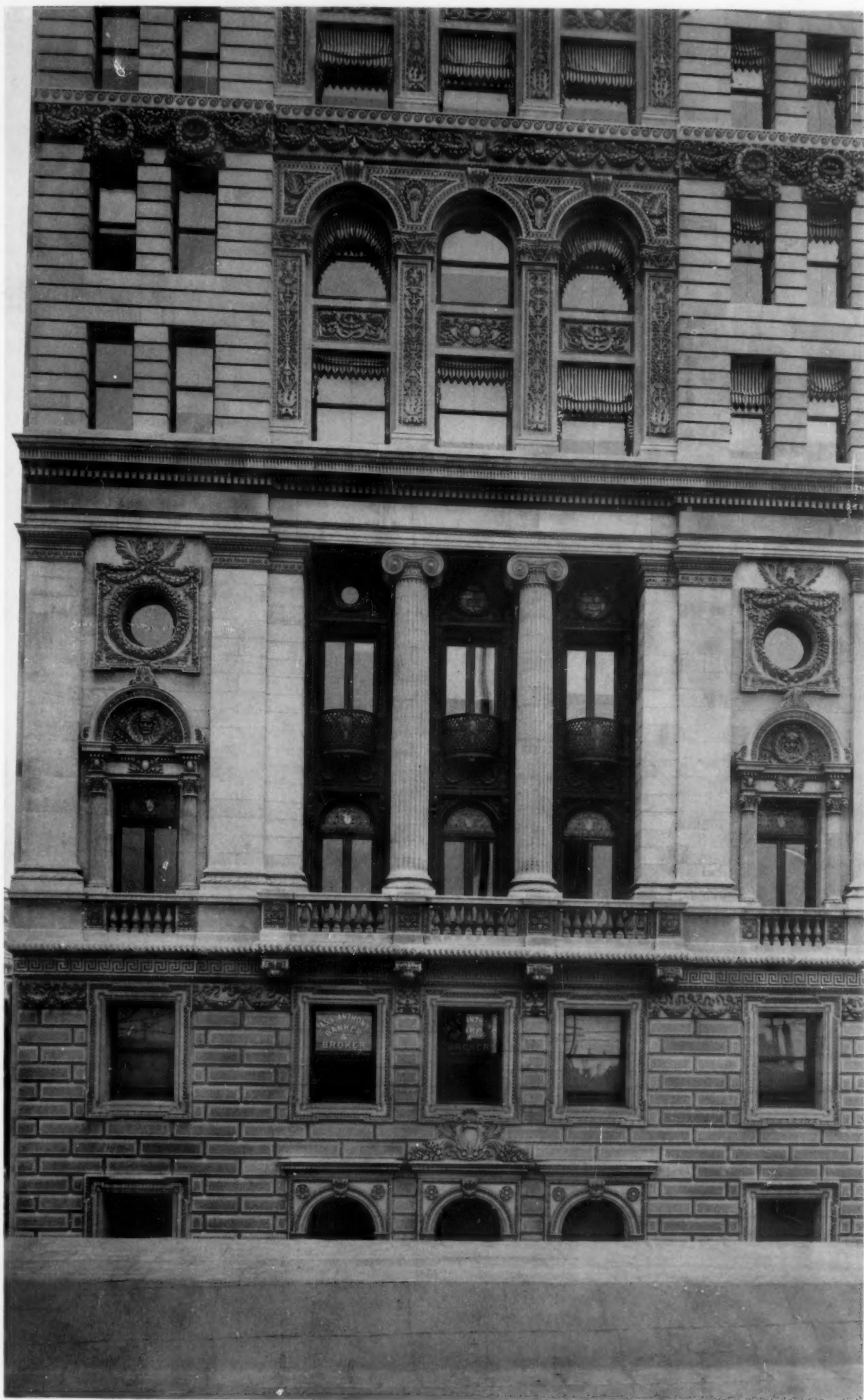
present reservoir in Bryant Park, Forty-second Street and Fifth Avenue. You will see that this principle is applied to both the roof and the floor system, and I think is a good illustration of the point you make.

Yours truly, HOWARD CONSTABLE.

NOTES AND CLIPPINGS

THE TRENTON WASHINGTON ARCH.—One of the most valued relics in Independence Hall, the wooden triumphal arch under which General Washington passed at Trenton on the way to the presidential inauguration in 1789, has been demanded by the owner, and will be placed in one of the rooms in the Trenton Battle Monument. The arch was loaned to the city during the Centennial, and was deposited in Independence Hall, subject to demand of the owner. Benjamin Yardley, of Trenton, built the arch, and it was decorated by matrons who assembled in the house of James Ewing. General Washington sent a letter of thanks to Mr. Ewing, and his letter must be returned with the arch. — *Philadelphia Record*.

WHAT IS A "TOTAL FIRE-LOSS"?—A total loss in fire policy parlance has generally been liberally construed, so far as a building was concerned, as one which rendered that building untenable. Such, at all events, was the opinion held till recently by the Texas district appellate courts until the Supreme Court of that State decided that no loss could be looked upon as total "so long as the remnant of the structure is reasonably adapted for use as a basis upon which to restore the building to the condition in which it was before the injury. Whether it is so adapted depends upon the question, whether a reasonably prudent owner, desiring such a structure as the one in question was before the injury, would, in proceeding to restore the building to its original condition, utilize such remnant on such basis." — *Exchange*.



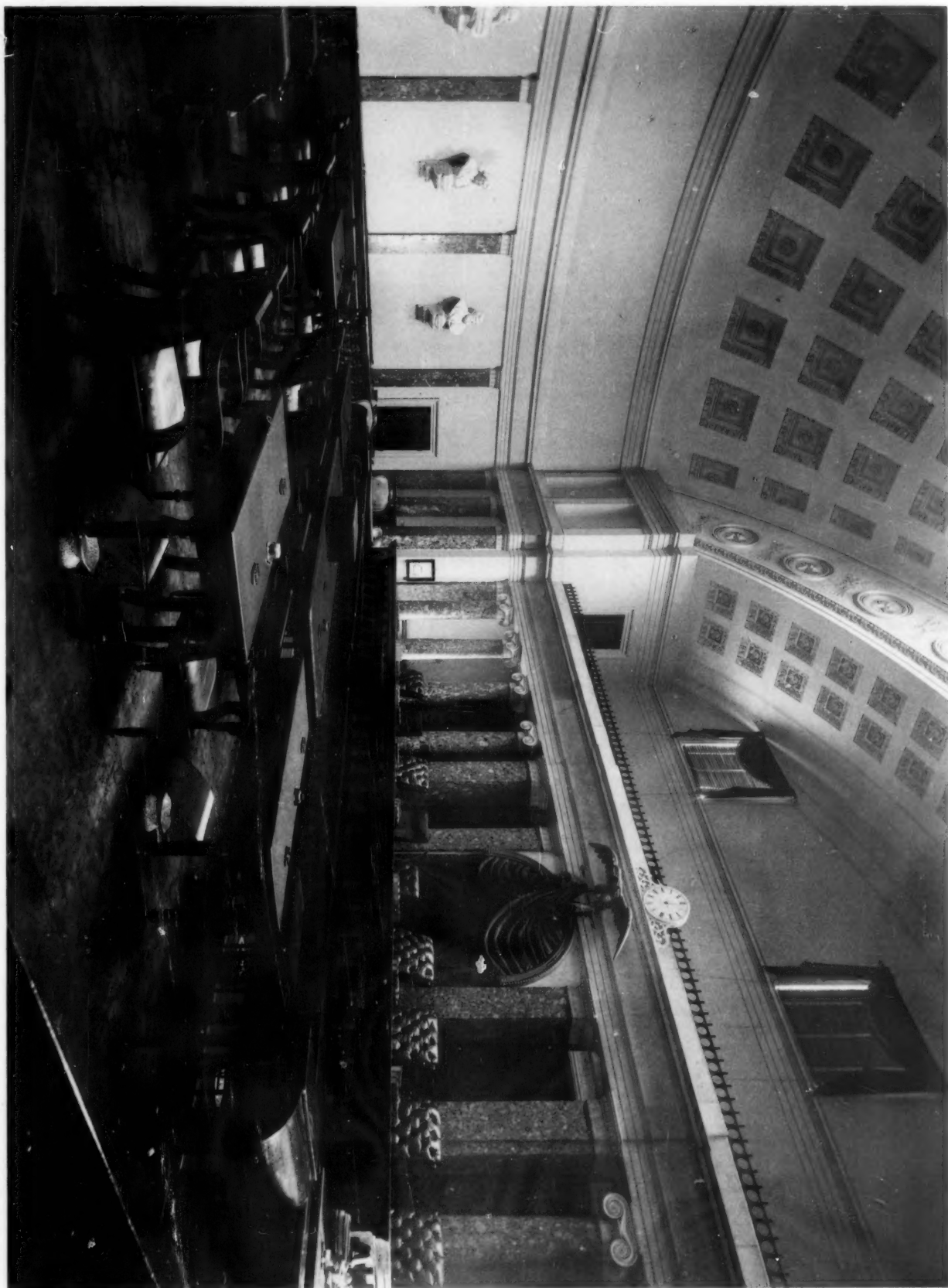
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THE HELIOTYPE PRINTING CO., BOSTON

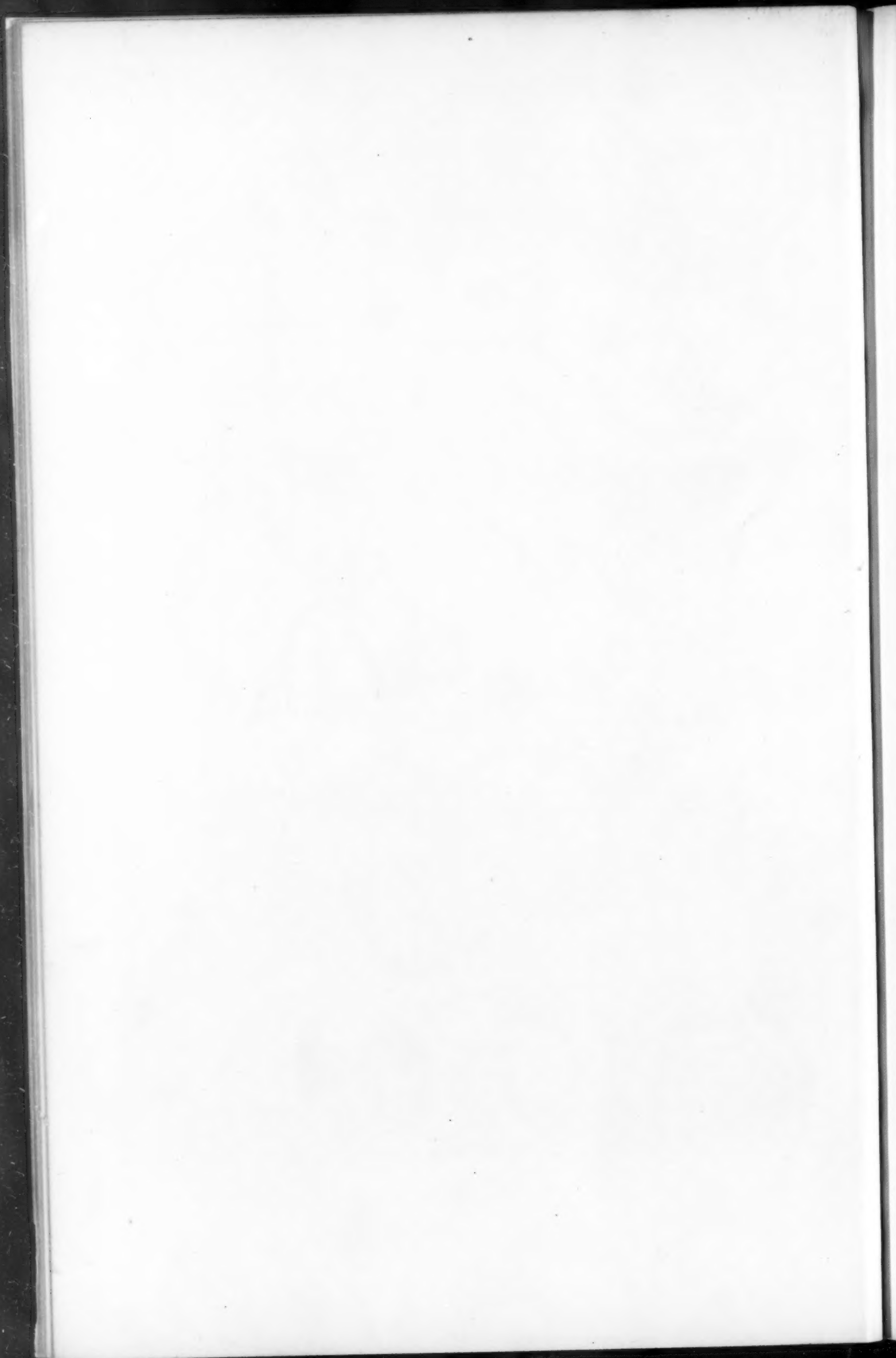
DETAIL OF THE FRONT OF THE MANHATTAN LIFE BUILDING, BROADWAY, NEW YORK, N. Y.

KIMBALL & THOMPSON, Architects.





THE OLD SENATE CHAMBER, NOW THE SUPREME COURT ROOM, WASHINGTON, D. C.





Blätter für Architektur

Neumann & Co., Berlin.

ST. AEGIDIENKIRCHE, NÜREMBERG, BAVARIA.
JOHANN AND GOTTLIEB TROST, ARCHITECTS.



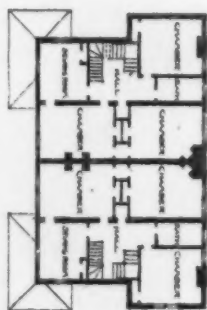
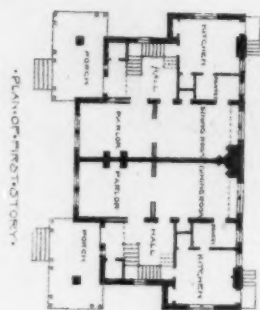
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INTERIOR OF ST. AEGIDIENKIRCHE, NÜRNBERG, BAVARIA.

JOHANN AND GOTTLIEB TROST, ARCHITECTS.

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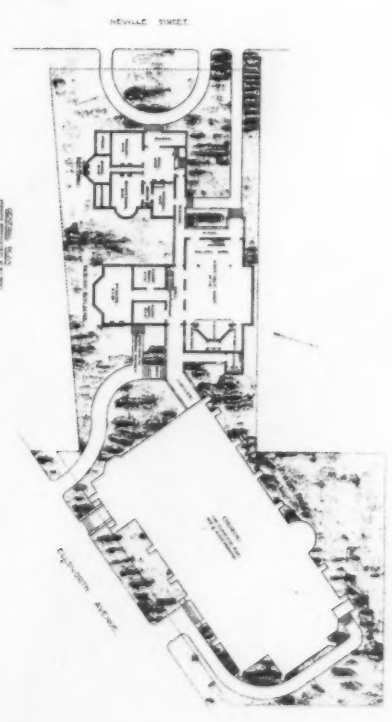


SEMI-DETACHED HOUSES FOR OFFICERS
IN THE ARMY OF THE U.S. NAVAL OBSERVATORY.
W. J. MASON ARCHTCT. WASHINGTON D.C.

W. J. MASON
ARCHTCT.



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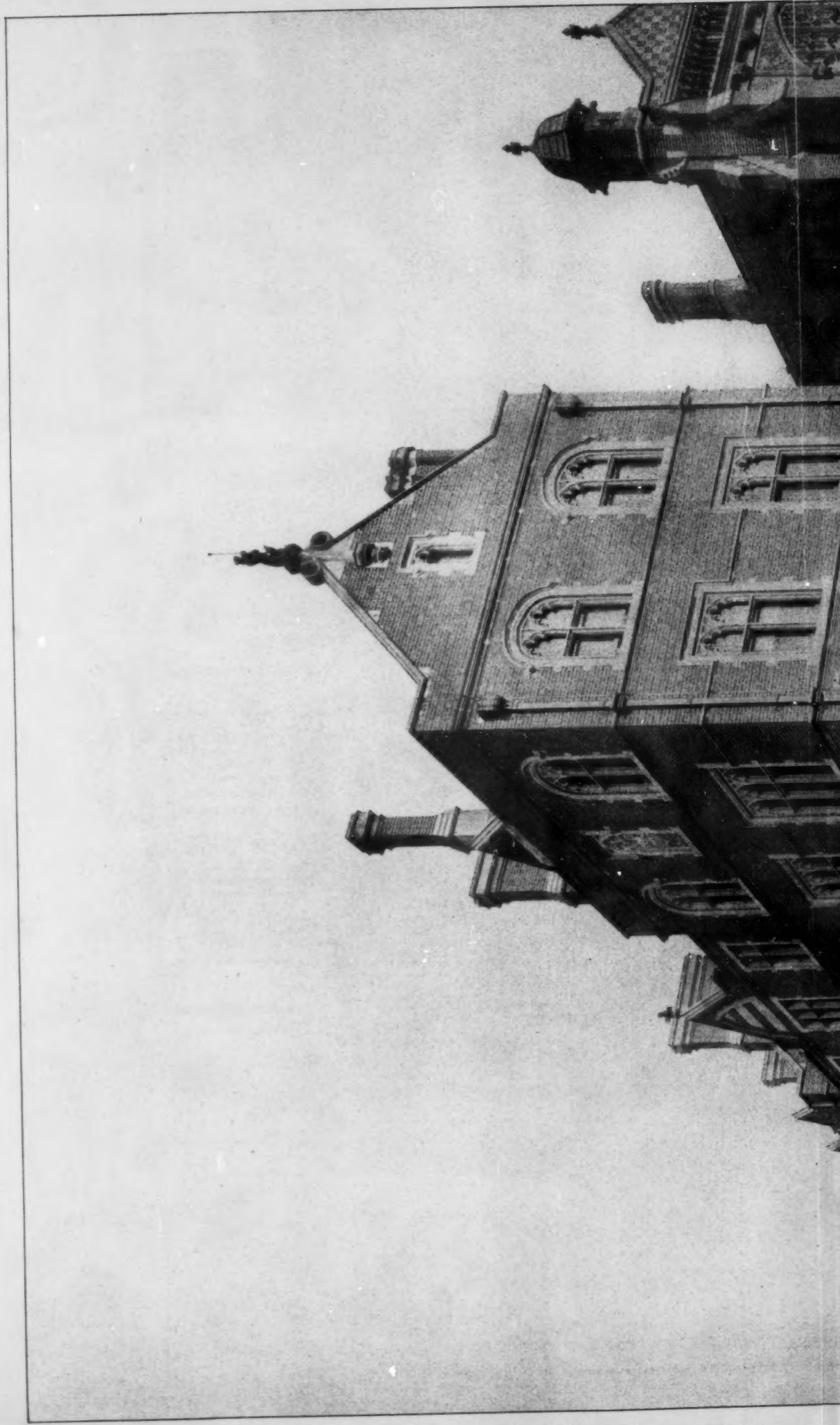


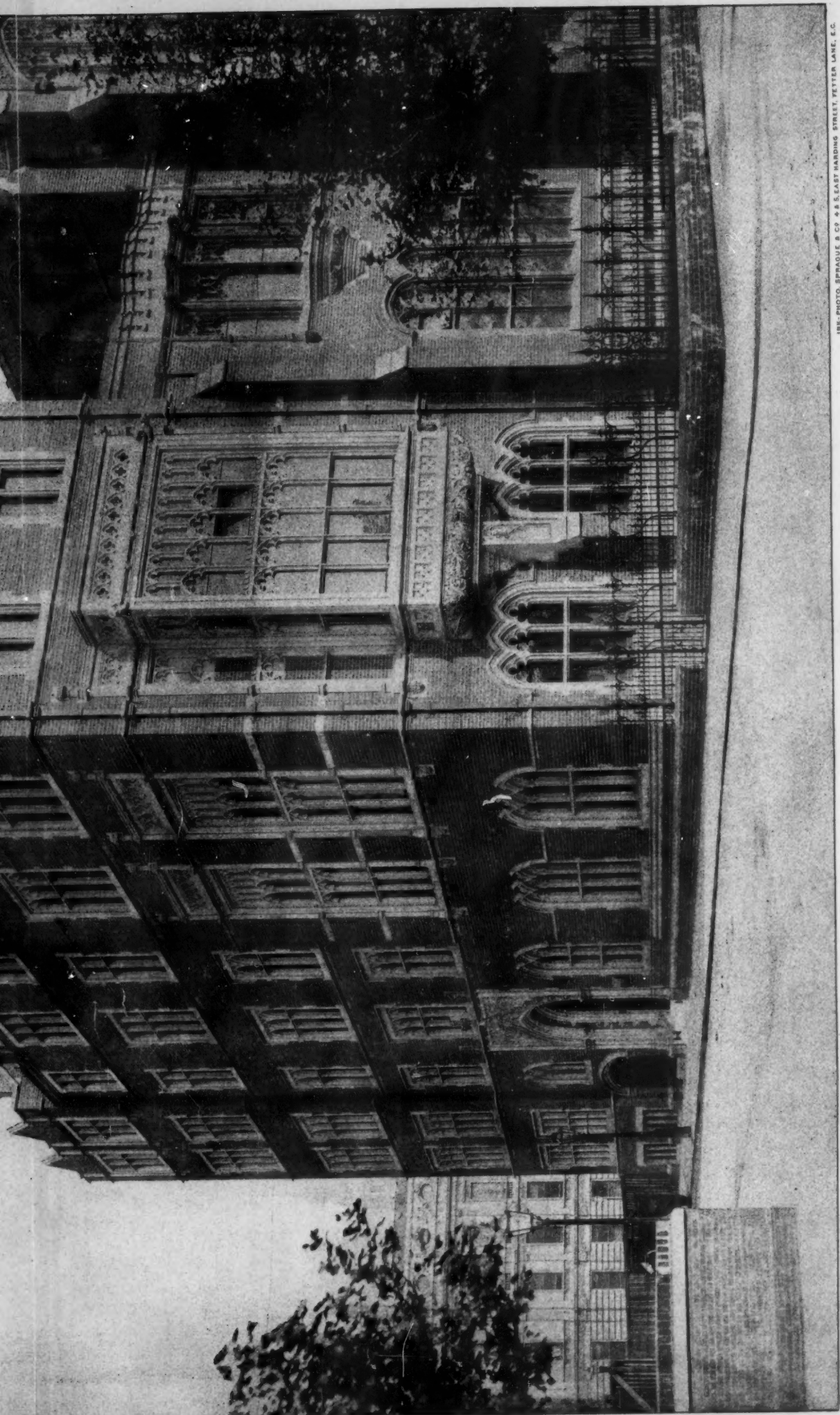
STUDY
GROUPING
OF BUILDINGS.

CHURCH OF THE ASCENSION, PITTSBURGH, PA.

HOBART A. WALKER AND ALGERNON S. BELL, ARCHITECTS.

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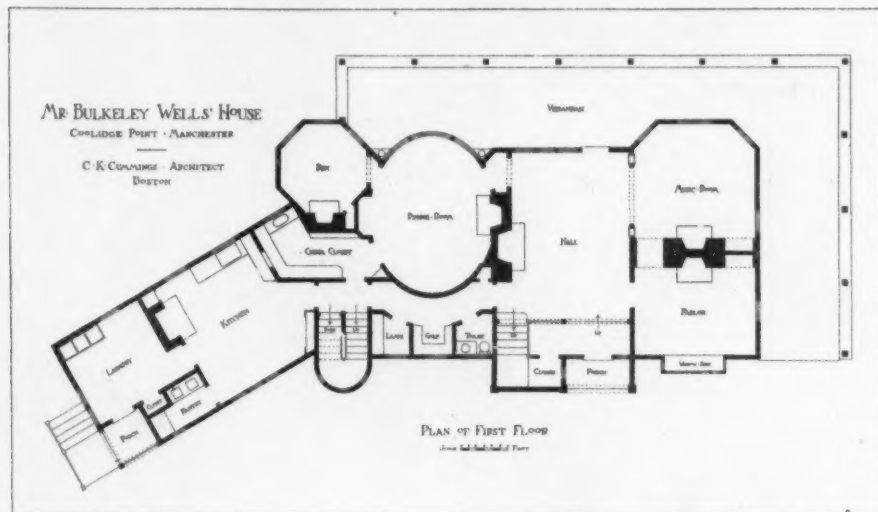


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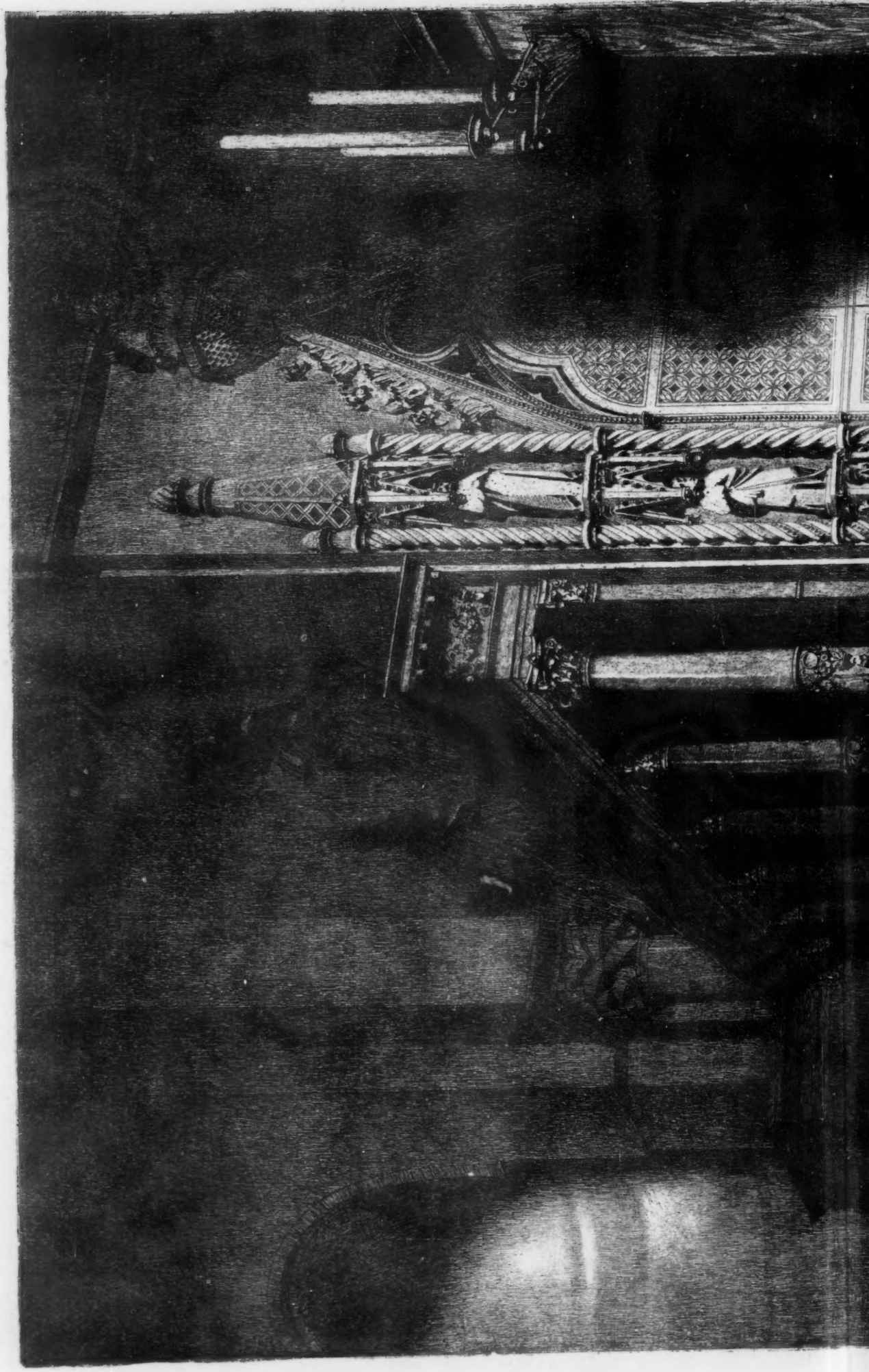
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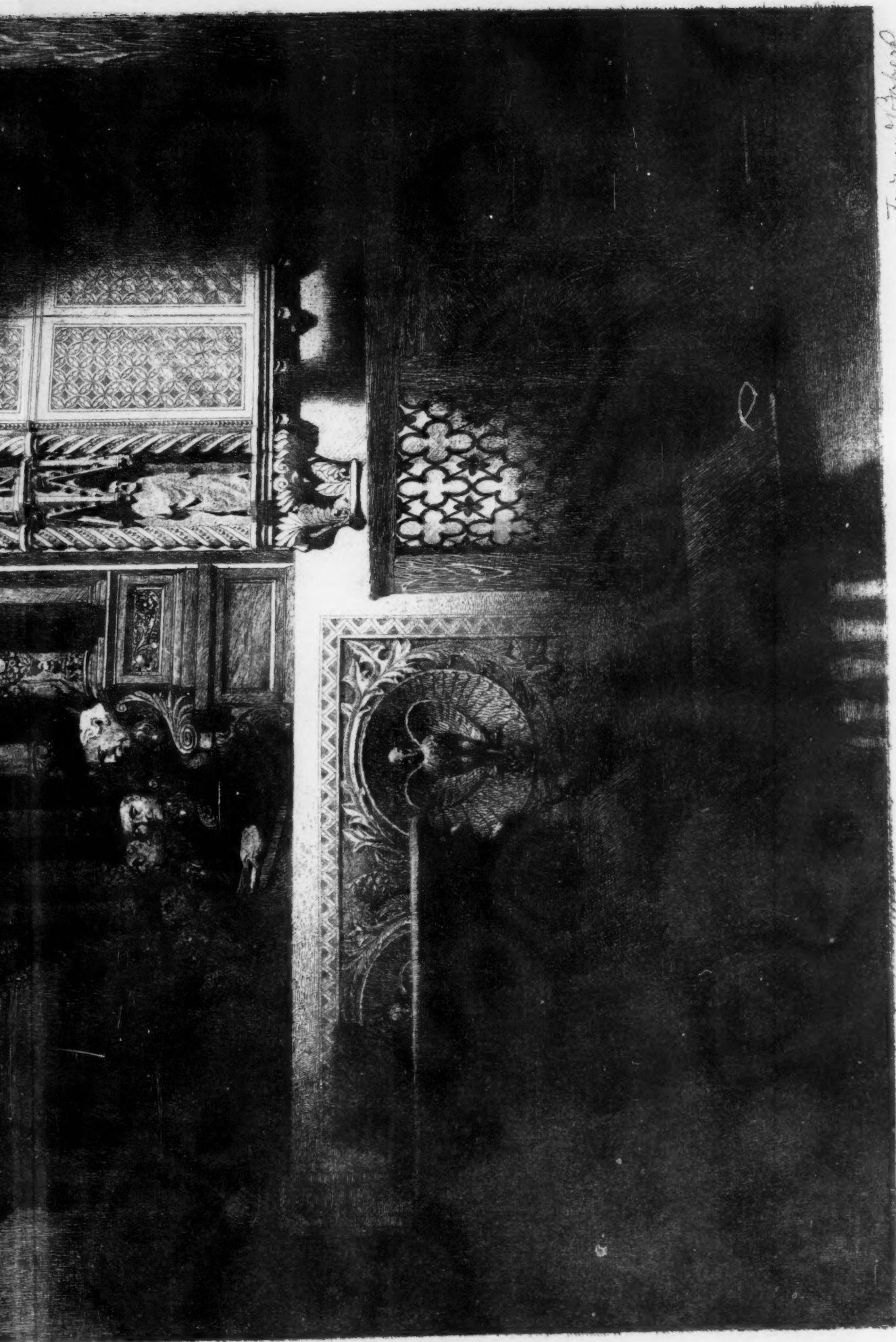
RIEL, Architect.





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THE CHOIR OF ST. MARK'S, VENICE.
AFTER AN ETCHING BY FERDINAND BOBERG.

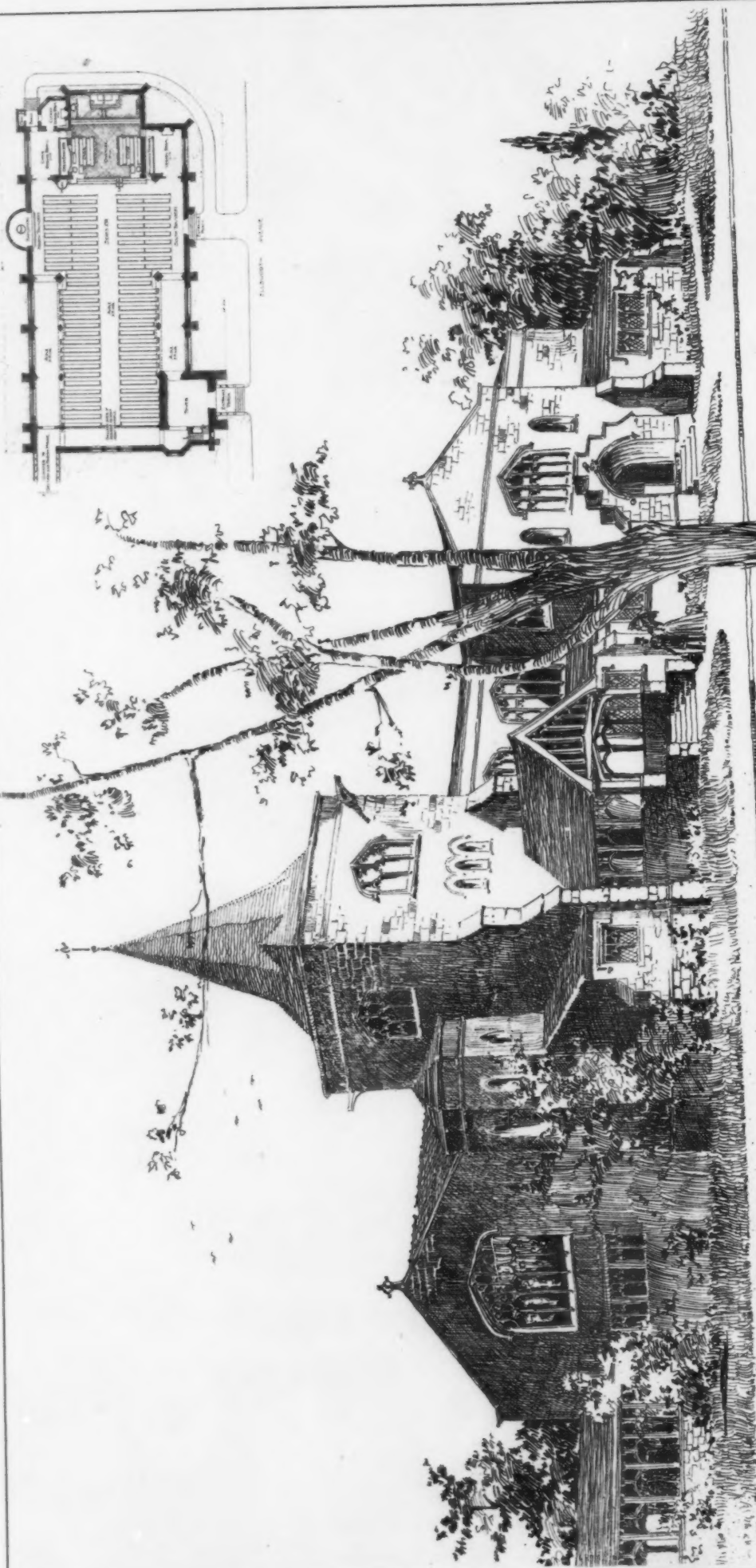
Ferdinand Boberg

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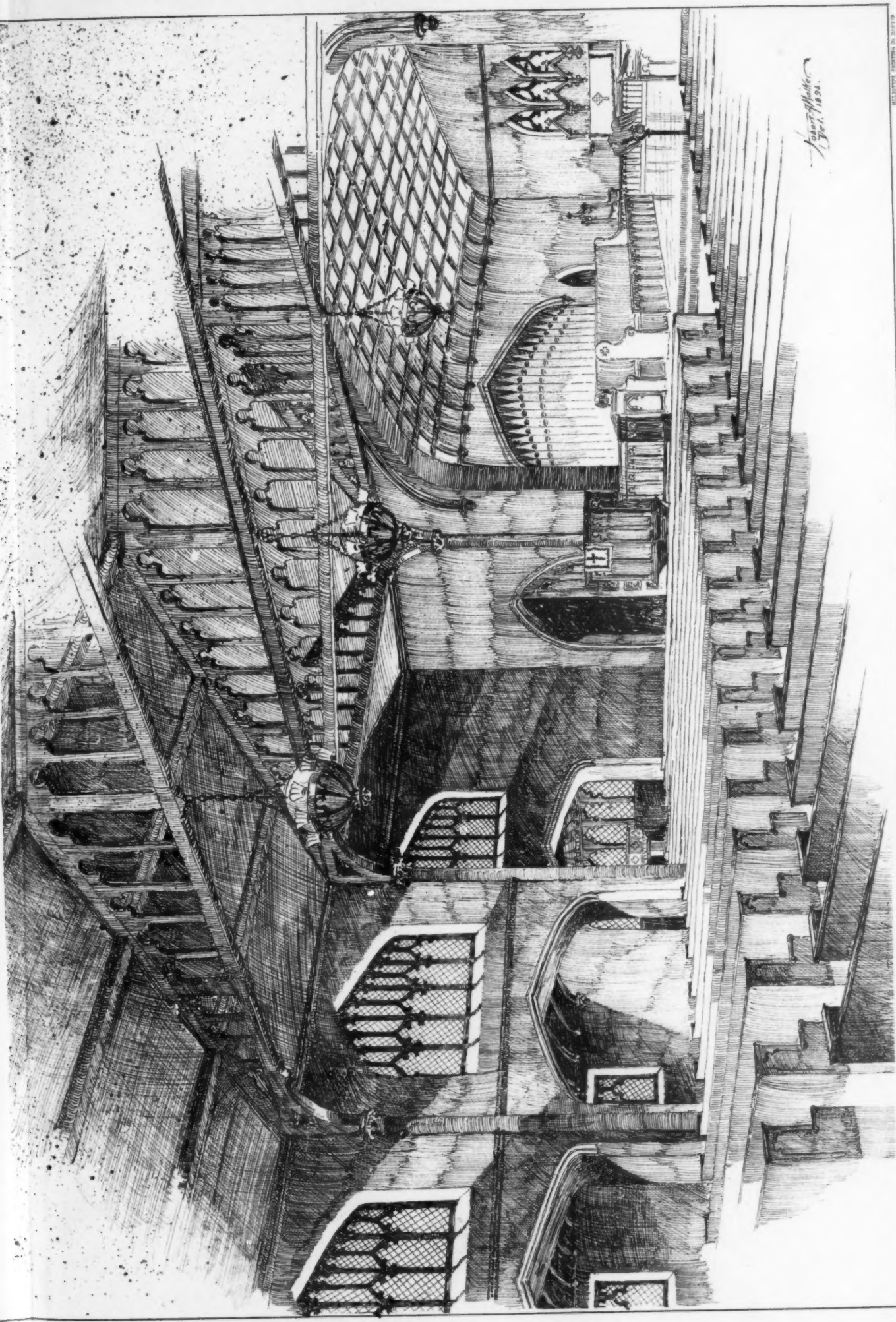
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AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 2, 1897.

DESIGNED BY H. H. H. AMERICAN ARCHITECT AND BUILDING NEWS CO.



August F. H. H.
Dec. 1, 1896



CHURCH OF THE ASCENSION, PITTSBURGH, PA.
HOBART A. WALKER AND ALGERNON S. BELL, ARCHITECTS.

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