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SUMMARY:—

Report of the New York Tariff Association on the recent Fire at Pittsburgh.—The Soldiers' and Sailors' Monument for New York City.—The Troubles of the New York Plasterers.—The House of Lords decides a Case of Labor Intimidation by the Boiler-makers' Union.—Death of Samuel A. Warner, Architect.—"Bacchante" and "Pan" in New York.—The Debs Colonization Scheme.—Blackwall Tunnel, London.	1
MOLE ANTONELLIANA: AN EXAMPLE OF LIGHT CONSTRUCTION IN BRICKWORK.	3
LETTER FROM LONDON.	8
THE MISSION INDIANS.	10
SOCIETIES.	11
ILLUSTRATIONS:—	
Details of House for Giraud Foster, Esq., Lenox, Mass.—House of Giraud Foster, Esq., Lenox, Mass.—Detail of the Same.—Pritchett's House, West Chester Pike, Llanark, Pa.—Design for a House.—House at St. Louis, Mo.	
Monument to Dante Alighieri, Trent, Austria.—Monument aux Enfants de la Loire-Inférieure, Nantes, France.—Doors and Doorways, No. 7: Staircase Entrance, Maison Dupré-Latour, Valence (Drôme), France.—Great Hall, Palazzo della Ragione, Padua, Italy.—Nave of San Antonio, Padua, Italy.—A New Church.	
Additional: West Corridor, Mezzanine Floor: Library of Congress, Washington, D. C.—House at Philadelphia, Pa.—Mayor's Seat in Council-Chamber: Municipal Building, Sheffield, Eng.—Two Room Decorations.	11
COMMUNICATIONS:—	
The Annual Fire-loss.—"Colonial Clapboarding."	12

hollow tiles, well fitted, without cutting, it would be difficult to imagine, but we presume that architects generally will say that the latter sort is exceptional in so-called fireproof construction. Where it can be secured, it is likely to fulfil its duty in the way of which Mr. Reed speaks, and it is possible that the next improvement in fireproof construction may take the form of the invention of a model for floor-arch materials which will fit any spacing of beams without cutting.

ABOUT two years ago, the New York Federation of Fine Arts thought it necessary to oppose the selection made by the Commission of the Soldiers' and Sailors' Monument, of a site at the entrance to the Central Park at Fifth Avenue and Fifty-ninth Street, on the ground that the enormous "skyscraper" hotels which surround this locality would dwarf the monument, which may consist only of a statue, and greatly injure its effect. The Recorder, who is a member of the Commission, agreed with the Federation, but was outvoted. The matter was dropped for a time, but has just come up again, and, at a meeting of the Commission held a few days ago, the Recorder again represented the advantages of the site proposed by the Federation, on the Riverside Drive, but was again outvoted, and it may be considered settled that the Fifty-ninth Street site will be adopted. So much having been decided, each member of the Commission was instructed to present, at the next meeting, the name of an architect to be invited to submit a competitive design for the memorial. Whether any of the architects so selected will be able to make a design in which the disadvantages of situation will be overcome we shall know later; but the Federation is certainly right in thinking that the task will be extremely difficult, if not impossible.

THE Manager of the New York Tariff Association, Mr. Reed, an expert in matters relating to insurance, has made an interesting report on the great Pittsburgh fire. Practically, as he says, the four buildings affected, burning together, made it impossible to approach them with extinguishing apparatus, and, the only defence that they had against annihilation was that afforded by their own construction. Under these circumstances, the fact that, in the Horne Department Store—the one in which the fire was the fiercest, and the contents of which were utterly swept away—only about five per cent of the total value of the skeleton of the building is, as he estimates, absolutely lost, bears signal testimony to the excellence of the system of fireproof construction which our architects are developing. "No beams, girders or columns," as he says, "are warped by heat"; and he observes that the injured portions of the skeleton are in all cases those which had been imperfectly protected, or those carried away by the shock of wreckage from above, brought down by the fall of the great tank. If the general system of protection had been so thoroughly carried out as to leave no iron without its covering, and if the fall of the tank had been prevented by securing and supporting it properly, he thinks that the skeleton of the building would have passed through the trial intact.

IN regard to floor-arches, Mr. Reed finds, as many architects have done, that they are rather unaccountable in their behavior. One set of floor-arches, as he says, will soon fall out completely, while another, apparently similar, will resist a fierce and protracted conflagration without losing anything of its strength. He does not pretend to account for this diversity of behavior, except by supposing that the flanges of the arches may be more disposed to crack off in some cases than in others; but architects, who have more opportunities for seeing such arches put in, will surmise that the difference relates, in many cases, to the original construction. Every architect has seen hollow floor-tiles so mangled by the workmen in the attempt to fit them into their places that when they are finally left, they hang almost by a thread, bearing against each other, in many cases, only at a few points, while the intervening spaces are filled up with broken chips and mortar. We have seen floors of this sort, which, a week or more after their completion, shook so under our feet that we did not dare to walk on them, confining our promenade to the flanges of the beams. Anything less like the firmness and solidity of a floor-arch of

THE Plasterers' Union, which has for many years been one of the most feared, because the most arbitrary and closely organized, of all the New York labor organizations, seems to have exhausted the patience of employers and the public, and to have brought on a serious conflict, by its last demand, which was nothing less than that the men, and not their employers, should elect the foreman under whose direction they were to work. This preposterous arrangement has been actually put in force, with what result may be imagined. In one case, a master-plasterer discharged his foreman, for sufficient reason. No sooner had he taken his departure than the men elected him foreman, and brought him back in triumph to the master who had just discharged him. At the end of the day, the latter had occasion to find some fault with the foreman; whereupon the latter loftily replied that he was employed by the Plasterers' Society, not by the unfortunate master, and that the latter's part in the arrangement was simply to pay him his wages. Some of the master-plasterers refused to sign an acceptance of the new rule, and their shops were struck accordingly, and those who had submitted seem to have repented speedily, so that, to all appearance, the trade is practically unanimous in its determination to resist the imposition. Non-union plasterers were put at work, as a beginning, in Mr. Astor's new building on Thirty-fourth Street, and the Board of Walking Delegates promptly gave notice of a sympathetic strike; but certain unions represented in the Board had the courage to vote that they would not obey the order to strike, if it should be issued; so that the Board is in a dilemma, out of which it seems, as yet, to have found no way. Meanwhile, the master-plasterers began to engage non-union men, and very shortly would have secured enough of them to fill all the shops where strikes had been, or were likely to be, ordered. At this point, perceiving the weakness of their position, the workmen withdrew their electoral claim and the strike is now off, the master-plasterers on their part granting the wage-scale and working-hours desired by the men.

AN interesting point in regard to trades-union practices was settled in England a few weeks ago. Two shipwrights, named Flood and Taylor, were employed to do some repairing on an iron ship. The Boiler-makers' Union claimed that shipwrights should not be allowed to work on iron ships, and their delegate, Allen, went to the contractors for the repairing, and threatened that the boiler-makers would strike unless Flood and Taylor were discharged. The contractors,

in consequence of this threat, discharged the two men, and the latter brought an action against Allen for having "wrongfully and maliciously" obtained their discharge, and obtained a verdict in their favor, with damages to the amount of forty pounds. Allen appealed to the House of Lords, and his appeal has just been heard, although the events with which the action was concerned took place thirteen years ago. Allen claimed that the evidence did not show malice on his part, and that what he had said in relation to a probable strike of the boiler-makers was simply legitimate expostulation, and not such threatening or intimidation as to do any wrong to Flood and Taylor. Eight judges of the High Court of Justice were summoned to consider the question of law, whether the evidence showed ground for the action of Flood and Taylor against Allen, and six of them united in an opinion, to the effect that such ground was shown, inasmuch as any language which attempted to destroy the freedom of will of another amounted to intimidation, and that, as this was the effect of Allen's representations to the contractors, sufficient intimidation, to the injury of the plaintiff, was shown to justify the action. Two of the judges, Sir James Charles Mathew and Sir Robert Samuel Wright, did not concur, thinking that the evidence did not show such intimidation as would give a right of action. The matter will probably be discussed again, before the formal decision is rendered, but it cannot be doubted that the law of England has been settled by the majority opinion.

MR. SAMUEL A. WARNER, of New York, one of the best-known architects of the generation which is passing away, died a few days ago, in his seventy-fifth year. Mr. Warner was born in Geneseo, in the interior of New York State. He received his professional training in New York, in the office of his father, Cyrus L. Warner, and succeeded to his business. For many years he carried on an extensive practice. In the busy time, succeeding the War, he designed a large number of mercantile buildings, but he had also commissions of other sorts, and several important public buildings in the South, as well as the quiet and elegant Reformed Church on Fifth Avenue and Twenty-ninth Street, are from his plans. He was known as a careful and sensible architect, and his clients were faithful to him, so that, although he had acquired a large fortune, it was his pleasure to continue his active practice, which he only resigned last year, on the appearance of serious malady, to his brother and nephew.

THE statue called the "Bacchante" — which might, however, just as well be called "May," or "Mamma and Baby," or almost anything else which could be represented by two figures, — after being rejected by the Trustees of the Boston Public Library, has been thankfully accepted by those of the Metropolitan Museum, and will, presumably, form an important part of its collection of modern works. The huge reclining figure of "Pan," which was declined by the New York Park Commission, on the ground that the Central Park offered no suitable place for it, has also been accepted by the Commissioner of Public Works, and will, it is said, be placed on the Boulevard. Thus two members of the unhappy family of statues have found rest from wandering and repulse, and will, we hope, for many years adorn the abiding-places now opened to them. After the experiences of the past few years, it is not very surprising to learn that the New York Park Commissioners have found "great relief" in the fact that few or no offers of statues are now made to the city. Whether the professional sculptors are also "relieved" to find the demand for their work falling off is an interesting question; and time will show whether the discouragements which have nearly put an end to the adornment of public places by sculpture are advantageous to art. Of course, there is a great deal to be said in favor of the strictest æsthetic censorship in the acceptance of works of art of the kind, but we are inclined to think that strictness may be overdone, and that, where there is really room enough to put statues, a willingness to accept works showing some artistic idea, even though inferior in execution, provided the acceptance is made upon the condition that their position shall be subject at all times to the discretion of the proper expert Commission, and may be changed at the pleasure of the Commission, to make room for better ones, is better for the development and encouragement of art in this country than an

attitude which artists, who are, it must be remembered, sensitive nearly in proportion to their talent, take for supercilious prejudice.

MR. DEBS seems to be in earnest in his scheme of colonizing discontented persons in the far West, probably in the State of Washington, and he is possibly energetic enough to carry it out, although he is hardly likely to take with him more than a very small fraction of the hundred thousand followers for whom he wishes to provide. To all appearance, the new colony is to be administered on the most advanced Socialist principles. A few days ago according to the newspapers, Mr. Debs lectured in Chicago, and took occasion to make the very reckless assertion that "In Chicago there are fifty thousand starving people, starving in full view of food," and asked why these people do not help themselves to the "mountains" of food which are stored around them. It is hardly necessary to say that this starving multitude exists only in Mr. Debs's imagination, and that if he would furnish the Associated Charities of Chicago with the names of any persons whom he knew to be suffering from hunger, or, as he says, "going insane from starvation," their wants would be relieved before the day was over; but the important point of his discourse lies in the fact that he advocates the seizure of things that people want, by those that want them, without asking the consent of those who have bought them for their own use. As he says, "Man is the only animal that has not sense enough to feed himself." A more succinct exposition of Socialism as the negation of everything that distinguishes men from beasts has, so far as we know, never been made. Meanwhile, it is interesting to learn that, after the meeting at which this doctrine was preached, a meeting of the directors of the "Social Democracy" was held, at which Mr. Debs was elected Chairman, Mr. Keliher, his old associate, Secretary, Mr. Hogan Vice-President, and Mr. Burns "General Organizer." After the election was over, the directors proceeded to vote themselves salaries of one hundred dollars a month each. Like Mr. Debs, who "hates riches, but not the rich," we have no objection to his drawing a salary of a hundred dollars a month from his "starving" constituents, but it is interesting to speculate on the probable result of an effort, on the part of one of the latter, to "feed himself," on his arrival at the new colony, at the expense of Mr. Debs's pocket. Mr. Debs is not a very large man, and, even if he were, he, with his salaried associates, would have a hard time in defending themselves against a hundred thousand colonists, bent on "helping themselves" to the contents of the only pockets in the community which had anything in them. Fortunately, Mr. Debs does not teach Ravachol's improved method of Socialism, which was, as he described it, to kill the person possessing the coveted article before appropriating it; but, in practice, one system is very apt to develop into the other.

THE problem which has so long occupied engineers, of providing communication between the two banks of the Thames at the very eastern end of London, where anything like a bridge would be an intolerable obstruction to navigation, has been solved by the construction of a huge tunnel, twenty-seven feet in diameter, lined with iron, and containing a roadway and two foot-walks, besides a subway for water and gas pipes. The cost of the tunnel, which is a little over a mile long, has been seven million and one-half dollars. This seems an immense sum for so short a piece of construction, but it was necessary to get the two footways and the roadway, in place of the single or double track of a railway tunnel, and the difficulty of such work increases very rapidly with the size of the opening. Meanwhile, if the municipality of London finds it a profitable operation to spend so much money to connect two districts of London, it is strange that there should be so much difficulty in raising money to finish the tunnel under the Hudson River, which is already nearly complete, and would furnish the only land-communication between the city of New York and nearly all the rest of the continent which could be had without a détour of nearly sixty miles. It is true that the huge North River bridge will, when it is built, furnish such communication, but the tunnel could be completed long before the bridge is ready, and, if it had been carried out years ago, the bridge would have been unnecessary.

MOLE ANTONELLIANA: AN EXAMPLE OF LIGHT CONSTRUCTION IN BRICKWORK.¹

THE city of Turin, Italy, possesses a structure which is without doubt the loftiest building in Europe and the most venturesome piece of construction in the world.

This is the "Mole Antonelliana," so called by general consent in honor of the venerable and skilful architect who conceived the project and personally superintended every part of the construction, with the greatest care and watchfulness.

The peculiarity of this remarkable work consists, principally, in its light skeleton construction with common bricks and lime mortar,² whereby a small quantity of material, and that of the most common kind, is employed to enclose a large building and carry it, with safety and stability, to the unprecedented height of 538 feet above the ground.

The method of construction, and the novel application of brick masonry in structural forms adapted to metal or fibrous material, make this building a unique structure in differing radically from all former monuments of masonry.

A brief history of the origin, progress and changing uses of the building is as follows:

In 1862 the Israelitish University Society of Turin, in view of that city being the capital of United Italy, determined upon building an imposing structure which should serve at once as a grand synagogue, college and administration building.

A competition was instituted during that year among the architects of Italy to produce plans of a building that should satisfy their various requirements.

Many plans were submitted, but none were considered satisfactory for the purpose, and after much discussion Professor Antonelli, of Novara (a master of architecture and engineering, who was then over sixty-five years of age, and who had erected the lofty and notable dome over the cathedral at Novara), was employed in 1864 to plan and construct such a building as they required.

Under his advice and management the present structure was commenced and carried by the Jewish Society to a height of 240 feet from the ground, or about three-quarters of the height of the great square dome.

The plan as devised for the society consisted of a building 130 feet square, with a projection 18 feet by 36 feet on each flank, containing stairways to all the main floors, and a front portico, 16 feet by 90 feet, with steps to the principal floor.

A lofty basement, all above ground, was divided into two stories to accommodate the college and administrative department, while the grand synagogue was above.

This consisted of a clear lofty room, about 90 feet square, surrounded with columns—six on each side (counting corner columns each time); outside of these columns are the walls, distant about 15 feet, thus making an aisle or ambulatory all around. Above this ambulatory, at a height of 17 feet 6 inches, is a gallery designed for women (now changed to a grand loggia).

At a still greater height, just above the first offset, was designed a beautiful exterior gallery extending all around the base of the dome, with a colonnade of graceful granite columns.

As will appear later in this paper, the omission of this granite colonnade on economical grounds greatly added to the difficulties of construction of the dome.

There were also three interior galleries, the highest being 80 feet above the floor of the synagogue.

The dome itself was originally designed to be surmounted by a cupola about 100 feet in height, divided into three stories, as shown in Figure 1, taken from the *American Architect and Building News*.

As before stated, the building was commenced in 1864, and proceeded rapidly to the height indicated at X, Figure 1. Before the base of the dome was reached the need of retrenchment in cost was apparent, and the architect was directed to omit the granite colonnade forming the exterior gallery below the springing of the dome. Notwithstanding this was designed to produce equilibrium on the arches below, Antonelli ingeniously overcame the difficulty and proceeded with the work.

When, in 1869, the structure had reached the height shown in Figure 1, the funds being exhausted and the Jews frightened at the greatness and unusual boldness of the project, together with the discouraging fact that Rome and not Turin was to be the capital of Italy, work was abandoned, and the unfinished and unprotected structure was left exposed both outside and inside to the elements.

No sooner had the work ceased than reports were spread that the structure was defective and would soon crumble to dust.

The Municipality, which at the beginning had accorded a subsidy to the Jews towards its erection in proportion to that granted the Roman churches, now called a council of men expert in art and science to deliberate on the subject.

These, after carefully examining the work, reported in writing, in

March, 1871, that the building was safe and sound, and needed only a "hat and shirt" to protect it from wind and rain; that it needed the termination and covering of the dome and the adornment of the drum with an exterior gallery, since "without that the edifice would appear a disproportionate heap and an intolerably ugly deformity."

The cost up to this time had been about \$120,000, and the architect estimated that \$12,000 more would finish it as designed.

For some months nothing was done. The destruction of the cupola was suggested, but protested against. In 1872 the president of the Jewish Society proposed ceding it to the city, but a few days after, the Jews held a meeting, at which they resolved on the finishing of the temple, provided the cupola was demolished. This the Municipality refused to permit, and after prolonged discussion the building was allowed to remain as it was for several years.

In 1877, the Jews sold the building to the city of Turin for \$30,000—one quarter of its cost—to be converted into a museum and dedicated to Victor Emmanuel II, and Antonelli was authorized to prepare for its transformation and completion. In the following year work was commenced on the great dome and the granite gallery at its base.

In the meantime Antonelli, with increasing confidence and assurance in his work, had projected a loftier design, which instead of 100 feet should place 268 feet of cupola and spire above the great dome, and make it the highest building in Europe.

The perfect stability of the work up to this point, and the assurance of the architect that this great height could be erected with safety, led those in charge to yield to his ambition, and under Antonelli's personal supervision the structure was carried up to the base of the crowning statue, when, on October 18, 1888, Antonelli died at the ripe old age of ninety years. His son, who had assisted him in the supervision of the entire work, was placed in charge of the building.

The crowning statue was erected in 1889, holding a glistening star, 538 feet above the pavement—the greatest height reached by any structure of masonry in Europe, and only exceeded by the Washington Monument in this country. (The tower of the Philadelphia City-hall is ten feet higher, but the upper 200 feet are of iron construction.)

The interior has hardly received its finishing touches. It will probably be dedicated for a museum in memory of Victor Emmanuel II, in 1898, at the time of the Turin Exhibition.

With this brief history of the structure, we will now attempt to analyze its parts and describe some of the peculiarities of its construction.

The building consists essentially of a square, 130 feet each way, with piers 17 feet 8½ inches on centres, showing eight piers on each side, or twenty-eight in all; at a distance of 17 feet 8½ inches inside of these are the centres of an inner range of piers, with six on each side, or twenty in all.

These forty-eight piers perform all the work of supporting the walls of the building, the great dome, and lofty cupola and spire.

There are on each flank of the structure three piers supporting projecting wings enclosing stairways, and on the main front six more piers supporting the massive granite columns of a great portico. Also, in the basement and sub-basement stories, there are eight interior piers which support the floor-arches up to the great square room.

Thus there are in all, sixty-eight piers supporting all parts of this interesting structure. The foundations for these piers are laid in sand forty-five feet below the surface of the ground.

There is a sub-basement, 17 feet 8 inches deep, below the basement floor or pavement level, and at this point we see the commencement of light arched construction which is to form the principal characteristic of the building throughout. At this level the interior piers are about 4 feet by 4 feet, and the exterior piers about 4 feet by 6 feet.

Instead of massive walls to resist the earth pressure and support the exterior walls, thin segment arched walls are sprung from pier to pier, with convex side outward; these, in turn, are buttressed and strengthened by horizontal arches at mid-height of the sub-basement.

From the level of the pavement the outside walls are carried on flat arches from pier to pier, thus throwing all weights of walls, floor and contents on the piers. The three floors that intervene between the sub-basement and great temple are carried on remarkably light arches, some of them over thirty feet span and less than three feet rise.

The loggia and gallery floors are also carried on very thin and light brick arches employed with the greatest freedom in every part of the work.

The external architectural features of the building consist, first, of a basement story treated as pedestals for the pilasters and columns above; then two orders of architecture consisting of brick pilasters over the main piers, with granite Corinthian capitals. The walls between the lower pilasters are ornamented with small granite columns in two stories, with windows in the central spaces. The second order has a high brick screen wall with small granite columns, all open to the loggias before mentioned.

Above the cornice of the second order is the roof of the side projections and the front portico, and an offset of about five feet all around to the base of the great external gallery, with its fine granite colonnade around the base of the dome. Over this gallery is another sloping offset of about five feet, to the base of the great square dome.

¹ A paper by G. W. Percy, read before the Technical Society of the Pacific Coast, February 5, 1897, and published in the *Journal of the Association of Engineers*.

² The bricks used throughout this building are the common bricks of Northern Italy, measuring 2½" x 5½" x 9½" with a crushing strength of about 100 tons to the square foot. The mortar is made from lime slaked and buried in pits for a year or more, and used with a proper admixture of sharp sand; no cement whatever is used in the work. The actual load on most of the supporting members is about 15 tons per square foot, which must be largely increased at times by wind-pressure.

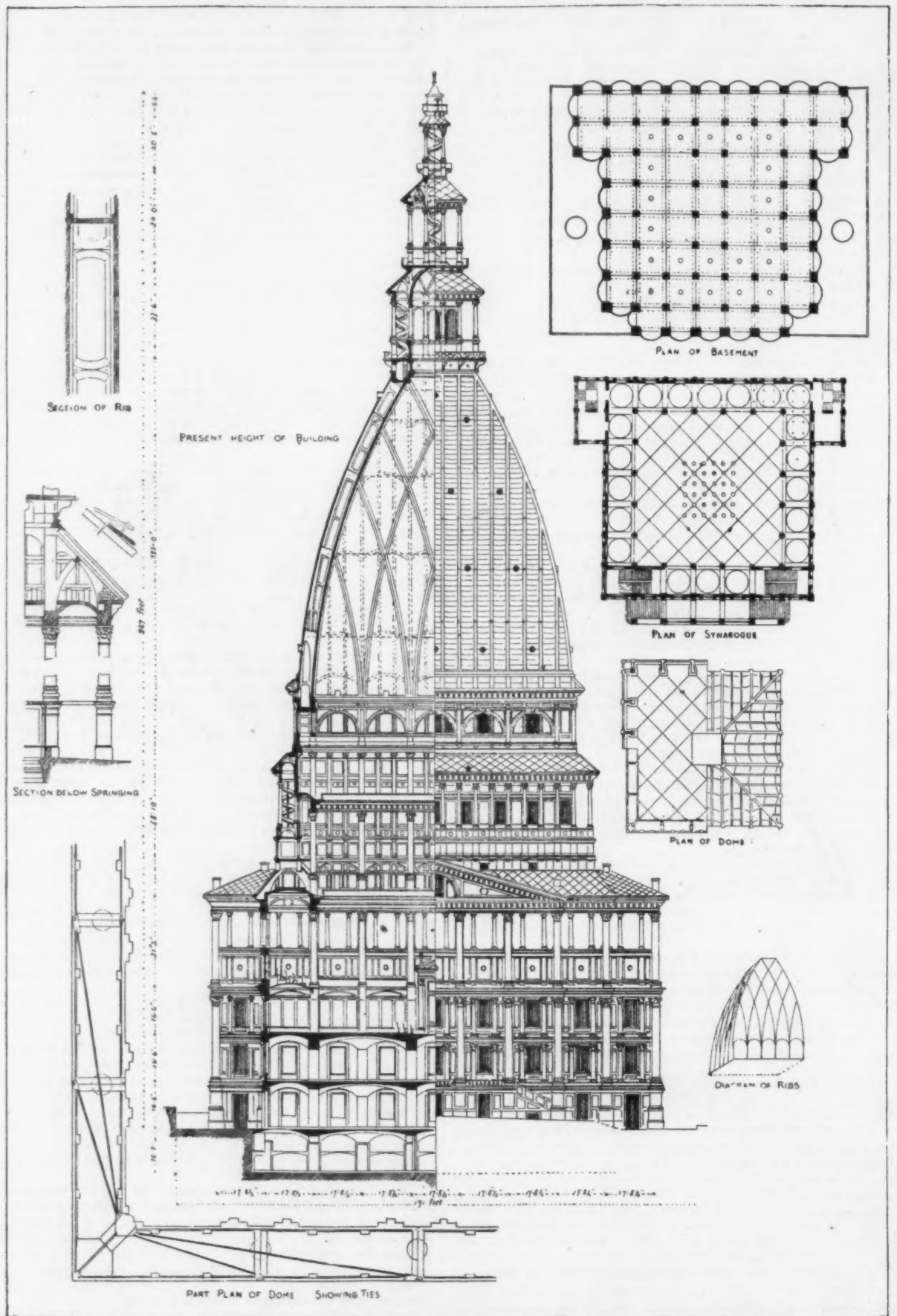


Fig. 1.

This portion presents five large arches on each side, with ornamental pilasters and entablature, which forms the springing line of the great dome, about 150 feet above the ground.

The great dome itself, 100 feet square on the outside and 120 feet high, has its sides falling inward about 35 feet, forming a square at the top of about 30 feet; on this is erected a combination of cupolas and spire, with granite columns and brick piers, crowned with a statue 268 feet above the dome, or 538 feet above the pavement, as shown on Figure 4.¹

The architectural effect, grace, or proportions of this building we do not wish to criticise or praise, but only call attention to the difficult problem presented and the skill with which it was solved.

The problem before the architect was to poise on this inner and outer square of slender supports a great square dome which should have its thrusts self-contained, be of such light construction that it should not crush the supporting columns, and of sufficient strength to carry a lofty cupola and spire, and to support itself through the various stages of construction without interior centering.

Antonelli found by experiments that bricks would lie in equilibrium on a bed of mortar at an inclination of thirty degrees with the horizontal. He therefore arranged the pitch of the dome so that the greatest inclination of the radius should not exceed thirty degrees. He allowed six feet for the entire thickness of the dome,

outer to inner columns, with metal tie-rods and flat groined arches to form the ceiling of the loggia.

On these transverse parabolic arches, which it will be remembered are only the width of the columns and 17 feet 8½ inches apart on centres, are sprung two elliptical, longitudinal arches, dividing the space between columns into thirds, the inner line of these arches destined to carry the outer shell of the dome and the outer arches to support the granite exterior gallery, which we now see was designed to load the parabolic arches symmetrically quite as much as for other use or ornament.

It was after these arches were turned and the base of the gallery built that the architect was required to abandon the granite gallery to save expense.

Probably no one realized, as did Antonelli, the importance of this gallery as a counterpoise to the weight thrown on the inner side of the arches, or the skill and care it would require to prevent the parabolic arches from being very unsymmetrically loaded, with resulting displacement.

We shall see, however, how ingeniously Antonelli overcame the difficulty and moved on to the construction of the great dome.

Considering these arches capable of carrying a portion of the load unequally distributed, he proceeded with the vertical supports of the dome, consisting of two orders of columns inside and square brick

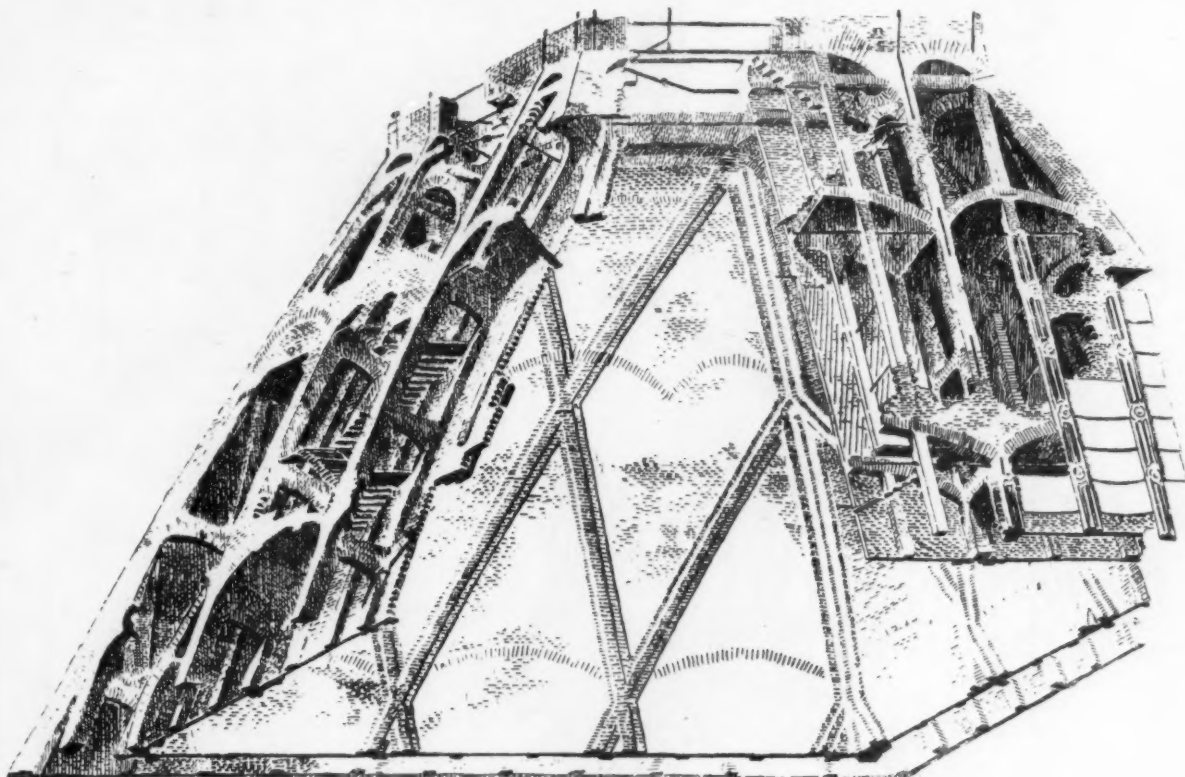


Fig. 2. Isometric View of Dome Construction.

and placed the inner line, or shell, directly over the inside line of columns.

The elements of the dome then become established as follows:

Interior side.....	88 feet.
Thickness.....	6 "
Exterior side.....	100 "
Interior radius.....	246 "
Exterior radius.....	252 "
Height of dome.....	120 "
Base of cupola at top of dome, inside.....	16 "
Base of cupola at top of dome, outside.....	30 "

(Small fractions of a foot omitted.)

With the inside shell of the dome over the inner line of columns, and the thickness six feet, with the columns 17 feet 8½ inches on centres, it is evident that the outer shell would be about one-third of the distance to the outer line of columns, and to properly support this and place the dome in equilibrium on the two ranges of columns was the first great difficulty encountered. This might be easily accomplished with strong metal beams extending from column to column, capable of supporting the load at any point, but it was Antonelli's purpose to use brick arches everywhere to support loads, using metal very sparingly and only as ties and keys, and thus we find him preparing for this great load in the following manner:

Over the granite capitals of the second story of columns and at a height of 75 feet above the ground, parabolic arches are sprung from

piers outside, with a blank wall to receive the roof of the gallery when it should be built (as seen in Fig. 1), and over what should be the roof of the exterior gallery he turned five great semicircular arches on each side, which were to form large clerestory windows to light the interior and form architecturally the drum or base of the dome.

We have now arrived at a height of 150 feet above the ground and at the springing line of the great dome, and here a peculiar construction commences, such as one might design in iron, but which few would think of executing in brick and lime-mortar.

It was necessary that in order to place such a lofty structure as was designed on such slender supports it should be as light as possible, elastic and strong. In metal or timber this would not be a difficult thing to do, but in masonry it required a departure from all former efforts, and to accomplish which, consummate skill in design, exactness in calculations of forces and stress, and the greatest care in workmanship and selection of materials were required.

It will be remembered that the entire thickness allowed for the dome was six feet; an inner shell was necessary to form a ceiling surface, and an outer shell on which to lay the roof covering. These the architect made as thin as possible — only one-half a brick, or about five inches each. The real supporting members consist of vertical ribs placed directly over the main supporting columns, 17 feet 8½ inches on centres. These ribs consist of an outer and inner member, about 10 inches by 15 inches each, connected at intervals of about 12 feet with cross arches, upright and inverted, with an iron tie-rod through each connection.

¹ Figure 4 is taken from an Italian publication, and represents the parts of the building. The figures are in metres.

At each of the four corners are somewhat larger ribs or spines placed diagonally on the plan, constructed in a similar manner to the vertical ribs, and destined to carry the entire weight of the cupola and spire.

It will be seen by the sketches that the vertical ribs all join the corner spines in pairs, and their principal duty is to support the square dome, the two middle ribs on each side joining the angle spine at the top, where the base of the cupola rests.

The distance between the vertical ribs is divided into three parts by smaller ribs one brick square, through which iron rods pass about five feet apart, to secure the granite ribs on the outside of the stone covering.

The inside shell is also strengthened by similar small ribs projecting into the space between the shells, and further supported, while the entire structure is braced by curved ribs projecting with two offsets about ten inches on the inside of the dome. These curved ribs are struck with the same radius as the inside shell of the dome, and branch each way over every one of the interior columns, intersecting each other at acute angles and abutting, two by two, at the corners, thus dividing the interior surface of the dome into symmetrical panels with curved lines, and serving to distribute any weight or force acting on any of the spines to the several columns.

arches before described. This was accomplished, as is shown in Figure 3, by carrying the inner member of the principal ribs in a vertical line to the point M, and there inserting granite blocks extending entirely through the dome, and by vertical piers above the granite, throwing the weight of the outer shell to the inside line.

This device proved successful, and no movement was apparent in the unequally loaded arches below.

Stone stairs are built into the space between the two shells of the dome, thus giving easy access to the cupola above.

This stage of the work was reached in 1880, and before proceeding farther the granite gallery so often referred to, and so much needed both to give symmetry to the building and equilibrium to the parabolic arches, was constructed; also the covering tiles were placed on the great dome. These consist of slabs of dense flagstone, about 2 inches thick and nearly 6 feet long, extending from centre to centre of the small brick ribs, while the vertical joints were covered and the whole secured with granite ribs carefully fitted to the slabs and held in place with iron bolts extending through granite and brickwork and keyed-up on the inside.

A notable feature in all the iron connections throughout is that they are made in the old method of keys and wedges, instead of the more modern thread and nut. These bolts, placed at regular inter-

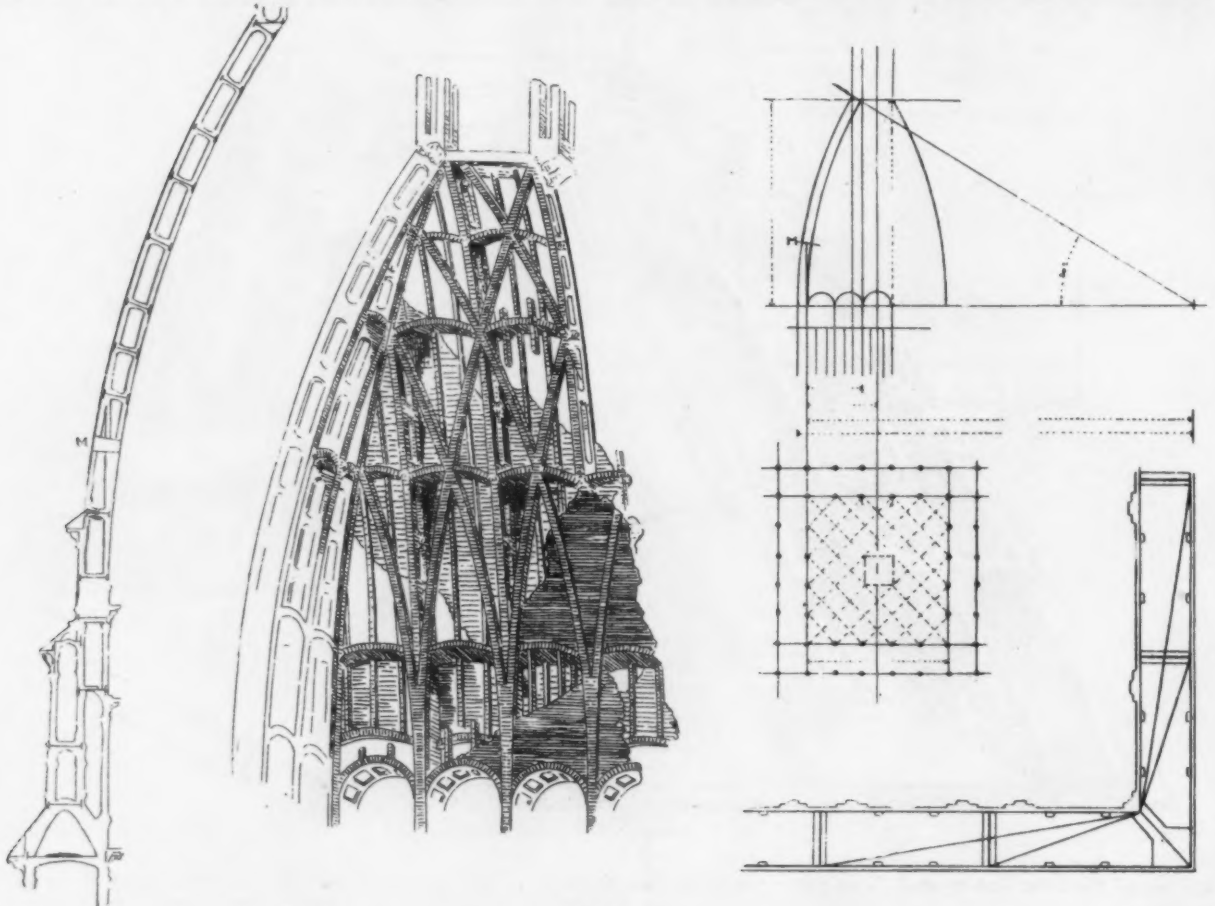


Fig. 3.

In building these curved ribs, some interior support may have been obtained by struts and braces from the timber scaffold which was erected inside the dome, but no complete system of centering was employed.

The large panels between these curved ribs, only half a brick thick, are built slightly concave or sail-like, to prevent their falling inward while the mortar was still fresh. This concavity, however, is so slight it cannot be perceived from below.

At five different stages in the height of the dome horizontal arches are sprung from rib to rib, with thin arched floors spanning the space between shells and forming so many ambulatories around the entire dome, and making rigid connections of the various parts.

At the same time, wrought-iron ties are placed near these floors to resist any possible tensile strain that might come from the outward thrust or from the tendency to fall inward during construction.

Thus it will be seen the entire composition of this dome is a complicated piece of framing and trussing, with all the members in brick carefully proportioned to the work they have to perform, while iron ties are inserted only where tensile strain may be encountered.

As if the difficulties of carrying out this design were not sufficient, the necessity of omitting the external gallery required some device to throw more of the weight of the external shell on the inner columns than was first proposed, and thereby relieve the parabolic

vals and in horizontal rows about five feet apart, are formed with eyes on the outside, by which scaffolding may be secured.

One would suppose that when the top of the dome was reached, 275 feet from the ground, most architects would consider it desirable to finish the work with a cupola or lantern of moderate height; but not so with Antonelli. Not satisfied even with a three-story cupola, 100 feet high, which was first designed, he proposed the astonishing combination of cupolas and spire shown on the views of the finished building, and which required a further height of 268 feet and a superimposed weight of about 550 tons.

By this time we should be prepared for any venture the bold architect might make, and while we may be amazed at the slender construction placed at this great height and poised on such delicate supports, we shall find nothing more surprising than that we have examined.

As before stated, the converging ribs and spines meet at the top of the dome in such a manner that when connected with strong arches and iron ties they form a platform 30 feet square on the outside, with an opening 16 feet square in the centre, and the arches so constructed that all weight placed on this platform will be conveyed to the angle spines and distributed by the straight and curved ribs to all the columns below.

The base of the cupola, about ten feet high, is formed with six

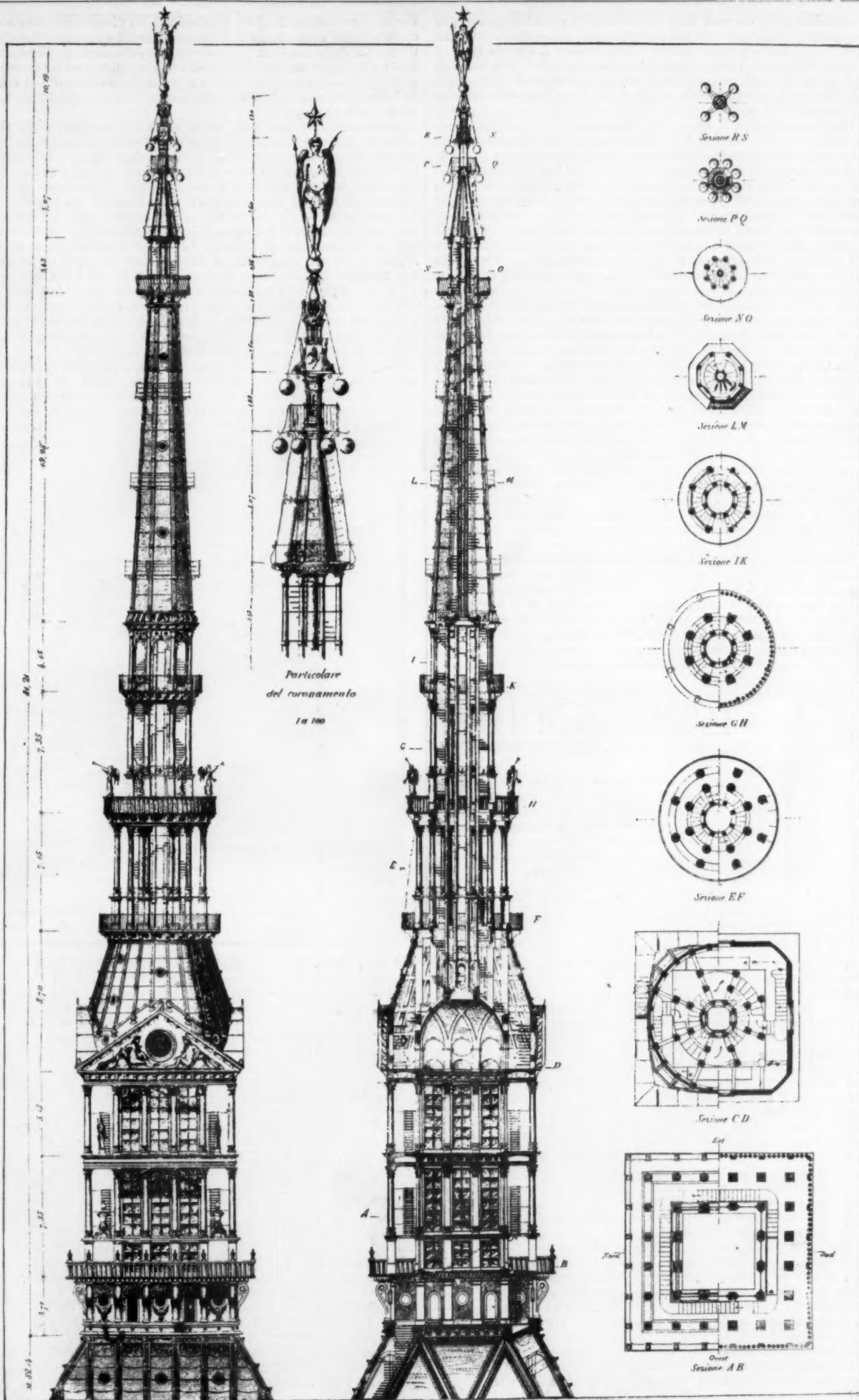


Fig. 4.

bracket-like piers on each side placed over the outside arches, and four piers on each side over the inside arches. The brackets on the outside support a granite balcony, from which a superb view of the city and surrounding country is obtained. Above this base are high pedestals, and two stories of granite columns on the outside line, and brick pilasters with windows on the inside, with all connecting arches of brick.

This lower section of the cupola terminates with stone pediments on each of the four sides and a conical-shaped roof above falling in about five feet, and consisting of a thin shell, one half-brick in thickness, stiffened with ribs and girts of a whole brick on the inside.

The top of this conical roof carries us 75 feet above the dome, and here the structure assumes a circular plan, with an outer and inner row of small granite columns, and inside of these another circle of very small brick columns, between which and the inner circle of stone columns are double flights of winding stairs of stone.

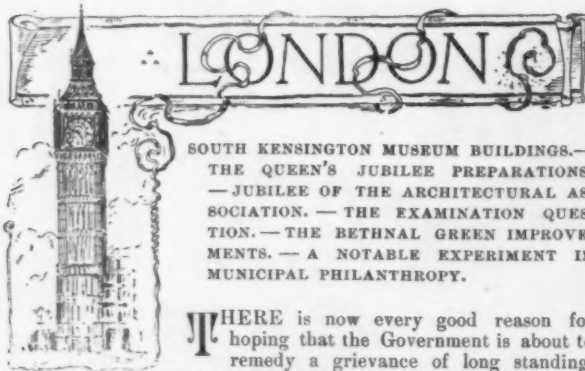
The outer circle of columns is but one story high, and supports another outside balcony, crowned in the design with eight angels, presumably blowing the last trump.

The stone columns of the inner circle now become the outer ones, and extend two stories higher, with the stairs and inner columns as before described. And now, at a height of 135 feet above the dome, a slender spire is built for a height of 65 feet, consisting of eight brick piers, about 10 inches by 10 inches, forming the angles and connected with the stone roofing slabs, held with stone ribs on the outside, bolted through the angle piers, and braced on the inside by the stone stairs. The inner circle of brick columns has now become very small, with only about sixteen inches of a well-hole in the centre. The stone stairs, now reduced to a single flight, continue to wind around the central shaft of brick-work, and reach another stone balcony 205 feet above the top of the dome, or 475 feet above the pavement, the highest point to which the public is admitted.

Again we are treated to a story of stone columns, tied together with iron bands, the central hollow shaft of brick, and the stone winding stairs to the last open balcony that may be reached by stairs.

As the exterior diameter is here reduced to six feet, the stairs are no longer practicable, and those who would reach the higher balcony must ascend an iron ladder on the outside of the slender spire.

The final and crowning statue is still elongated, as if determined to get as far as possible from the earth, and the whole is very appropriately surmounted with a star, which we hope will remain a fixed star for many years.



WHERE is now every good reason for hoping that the Government is about to remedy a grievance of long standing. The permanent buildings of the National Museum at South Kensington are about to be proceeded with. The Powers, which neither petitions nor the mute appeals of forlorn sheds and blind walls could move, have at last responded to the alarm and cry of "Fire!" A Select Committee of the House of Commons was appointed some time ago to report upon the subject of the Museums of the Science and Art Department, and the result of their deliberations and inquiries as contained in their interim report amounts to a strong recommendation that the premises be put into a permanent and satisfactory condition forthwith. The Committee's views are patent enough and delivered without hesitation: "Your Committee regard it as their immediate duty to lay before the House of Commons by means of an interim report their very strong opinion that the permanent buildings for the adequate accommodation of the collections at South Kensington Museum should be proceeded with without delay. They are of opinion that it will be a source of grave discredit to the country if the settlement of this matter, which has been the subject of consideration by Government for many years and of endless correspondence between the departments concerned, is any longer delayed."

For many years now, no permanent addition has been made in connection with the fabric of the Museum, which remains an extraordinary and melancholy instance of official procrastination. But while the buildings have thus remained in a neglected and unfinished condition, the collections have steadily increased and are now greatly in excess of the accommodation available in the building proper. And since Government after Government has steadily refused to vote amounts of money adequate to the requirements of increased accommodation, it has been necessary to makeshift with temporary erections of wood and iron. It needs no elaborate effort of imagination

tion to conceive the dangers threatening such flimsy structures when crowded with a miscellany of inflammable articles such as antique furniture, woodwork and textile fabrics of every description. The priceless collection of works of art and *vertu* which the nation possesses at South Kensington is without an equal in the capitals of the world, and the surprising fact is that the danger from fire should not have been urged long ago.

Statements have been made in Parliament, in the name of the Government, that the temporary erections shall be removed and the objects stored there deposited for the time being at other of the Crown Museums. This is to be done at once and there is little likelihood that the matter will rest at that. Those who have so patiently impressed upon successive Governments the urgency for the completion of the fabric will now take care that the question shall not rest until a satisfactory issue is arrived at. Some years ago the Government of the time instituted a competition among architects for the completion of the building and the first premium was awarded to Mr. Aston Webb, F. R. I. B. A., for a design of vigor and dignity. The matter was, however, proceeded with no further. The existing Government is formed from the same party in politics as set the competition on foot, so that it is the more probable that the new buildings will be carried out according to the designs already prepared by Mr. Webb.

For the immediate present this, with the majority of questions of general interest, has been dismissed from the public mind in favor of the Jubilee festivities, on the eve of which we now stand. Much might be written of the scenes and impressions created by the preparations for the extraordinary day of jubilation, of the ingenuity



and labor expended on the pavilions and stands lining the route, the enterprise which removes the front wall of a house for the better accommodation of spectators, the preparations for illumination and the precautions for safety to life and limb. The most famous speculation in connection with the procession is that which is undertaken by Mr. Maskelyne, of the Egyptian Hall of Mystery fame. He has erected an enormous pavilion in St. Paul's churchyard in full view of the great service to be held before the western doors of the Cathedral. In order to do this it was necessary for Mr. Maskelyne to demolish large business premises occupying the site; and he has agreed with the owners to erect with all possible dispatch after the Jubilee, new and approved premises at a cost of some £10,000. A large margin of profit is confidently expected by the speculator upon the venture. But it is perhaps the wiser part to confide the facts and features of the celebrations to the hands of the modern journalist.

The Jubilee of the Architectural Association has just been celebrated in a manner, let it be hoped, satisfactory to every class of members: the celebrations, however, even to the most patriotic and enthusiastic supporters of the Association will not come into the likelihood of anti-climax to those other and greater commemorations now so imminent. For the young party the festivities culminated in the Annual Soirée, sealed to the importance of the occasion and including an original and highly topical farce. The seniors were more attracted by the banquet, which was marked by the presence of many distinguished laymen, including Lord Halifax, the Bishop of London and others.

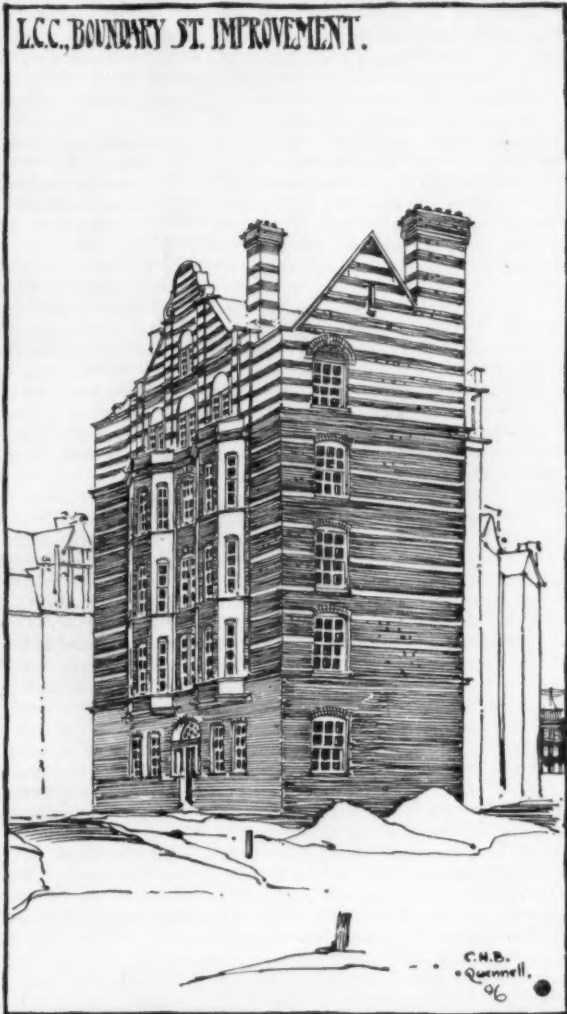
Following upon this was a Conference, convened with the desire to elicit the views of members upon the work of the Association generally. To facilitate discussion, short ten-minute papers were

read on various subjects, each followed by a short debate. The real work of the Association is an educational one, and it was chiefly to questions of education that the discussions had reference. The question of technical education and handicraft was entered into and the Conference drifted at last on to the subject of the conduct or

to have been followed with sustained interest and has evoked highly interesting and original effort. The general meetings have been well attended and especially in this category must be mentioned the instructive visits which are paid from time to time in the spring and summer to buildings in process of construction.

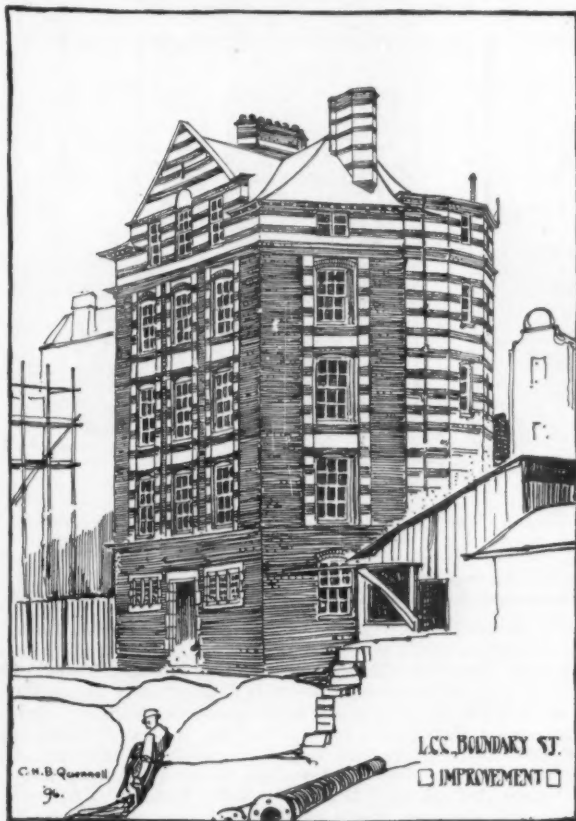
Perhaps the most important and interesting of these visits was that paid by the courteous invitation of Mr. Thomas Blashill, F. R. I. B. A., Chief Architect to the London County Council, to the extensive improvements now being carried out for the Municipality at Bethnal Green, Shoreditch, E. This embodies a remarkable attempt to solve the problem of the housing of the working-classes and the abolition of the insanitary area. Until about five years ago there existed behind Shoreditch Church, within a mile of the centre of the city, a locality of some 15 acres' area occupied by slums of the very worst character, narrow streets, filthy courts, ramshackle, tumble-down houses. The area comprised twenty streets, of which the widest was but 28 feet across, while the houses, for the most part, according to our present lights, totally unfit for human habitation, were small, dilapidated and very over-crowded. The average population per room was about two persons, while 107 rooms were given up to five or more inhabitants each. The total number of dwellers was 373 per acre as against 168 for the neighboring district, or proportionate to a population of considerably over a quarter of a million to the square mile. Nor did the area appear more desirable if considered in view of the mortality statistics. While the total death rate per annum per thousand for the whole of London was 18.2 and for the Bethnal Green District 22.8, the rate of mortality in the congested locality in question stood as high as 40 per thousand per annum.

On the representation of these facts by the Medical Officer of Health, the County Council, acting under the powers of the Housing of the Working-classes Acts, caused the whole site of 15 acres to be condemned and cleared. This was but following up the policy of the old Metropolitan Board of Works, the forerunners of the County Council. It was the practice of that body upon an insanitary area being cleared to sell the land in the open market to private individuals. This policy was, however, so expensive, that the County Council determined themselves to embark upon a scheme of reconstruction for the whole area. They were perhaps induced also to take this step owing to the urgent need existing in the district for accommodating those occupiers whom the clearance had unhoused. A complete scheme was therefore worked out by the Architect to the Council, and this has been steadily proceeding towards completion for the past four years. Much yet remains to be done before the entire scheme will be finished, but it is estimated that by the end of



utility of the R. I. B. A. examinations as affecting the architectural education. This is a matter of such long-standing controversy that it has been long ago abandoned by members in general to the charge of the few specialists on either side who are still content to thresh. The President of the Association, who presided, was in favor of the foundation of an "honors' course," to act as an inducement to men to continue their studies past the point necessary to passing the R. I. B. A.'s qualifying examinations. The discussion on this and many other points was protracted and somewhat desultory, and no markedly harmonious conclusion was reached. The President closed the discussion and said that the examinations were satisfactory so far as construction went, but not so far as art was concerned. "The whole profession would suffer a shock if the designs submitted in the examinations were exhibited, and if examining-boards were to show all that were sent in, the whole scheme of examinations would be damned." A matter of wider importance and more general interest was that dealing with the question of new premises in place of the cramped and inconvenient rooms which the Architectural Association at present occupies. A feeling is prevalent among the whole of the members that the existing arrangements are altogether inadequate to the social and general needs of the Association; while educational work is badly handicapped by the lack of accommodation, studios, lecture-rooms, workshops, etc. If, as seems likely, the Jubilee of the Association is marked by a determined and successful effort to better the position in this respect, the occasion will have been commemorated in a manner which to those who have the best interests of the Association at heart, will be at once most suitable and generally beneficial.

It may be noticed that the work of the Association for the past session has been fully up to the standard. The Class of Design and Handicraft, which was so successful last year, has again been highly popular. This year the subject chosen was "A Hillside Church in Westmoreland," and the various meetings have been devoted to the criticism first of the sketch designs to a small scale, the various parts in detail and, at the final meeting, the finished small-scale working-drawings, the complete design. The subject is one which appears

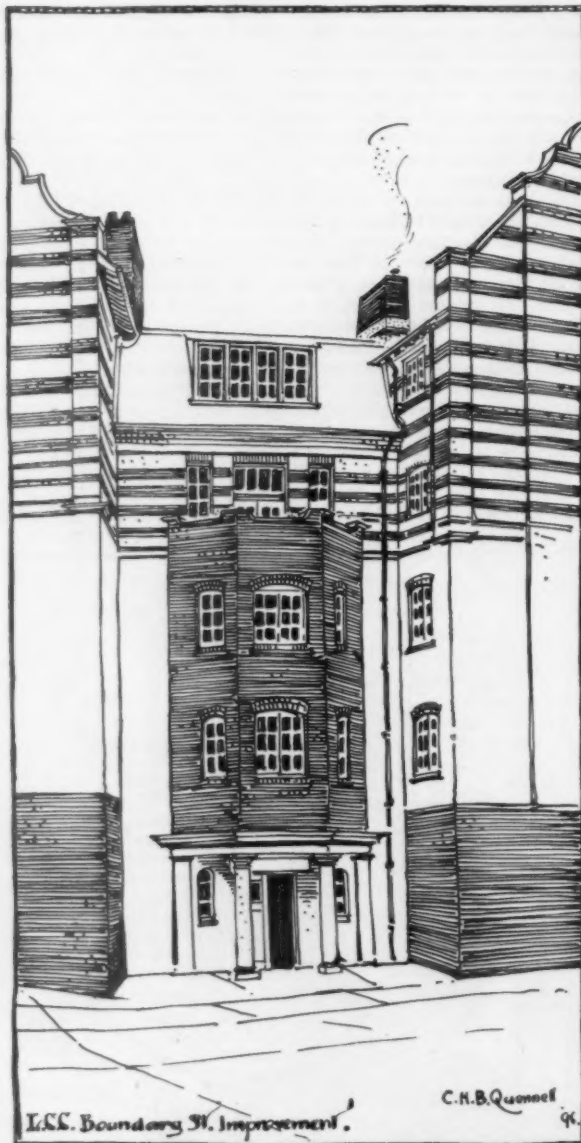


1898 the works will be complete. There will then be extant one of the most remarkable examples of municipal enterprise in modern times. The general plan that has been pursued is not intricate. It consists in the formation in the centre of the site of an open circus, some 300 feet in diameter, from which seven streets radiate to the

thoroughfares on the borders of the area. Of these the main road is 60 feet in width, while those subsidiary to it are 50 feet wide. It may be mentioned that the central space of this circus is occupied by a terraced mound, on the top of which is to be placed a bandstand, with gravelled walks and seating space around; the slopes between the terraces will be laid out with flowers and creepers and this, together with the planting of trees along the streets, will come under the care of the County Council Parks Committee. The earth of which the central mound is formed is that obtained in sinking the foundations to the various blocks of buildings. It is estimated that a sum of £1,250 has thus been saved in shooting the excavations directly on the site instead of removing it elsewhere.

The blocks of buildings are in various stages of progress. Many are already occupied, while others are but now rising from the ground. Sufficient, however, has been done to permit of the formation of an idea of the aspect the whole scheme will present on completion.

The blocks in themselves vary in detail and treatment. There is no sacrifice of harmony, the connection between the blocks being



admirably maintained. On the other hand, there is no evidence of restless effort after the avoidance of monotony. The rough sketches which are included in this letter will perhaps afford an indication of the character of the various blocks, and though it is impossible in these sketches to suggest the color-treatment which is a feature to be noticed throughout: at least they may serve to show that the designers of the present buildings have obtained something more than that grim character of stint which has set its mark on most of the "artisan's dwellings" hitherto erected in London.

The tenements are of various sizes and descriptions, containing from two to five rooms, with offices, etc., and the rent is approximately 2s. 6d. per week per room. This is governed generally by the rents ruling in the neighborhood, for the rents of the new tenements must not, by the resolution of the Council, exceed these. Two persons are allowed as a maximum to each room, and this rule is strictly enforced by the superintendent and his seven subordinates, whose constant duty it is to supervise the cleanliness and orderliness

of the whole establishment. One feature in the planning is noticeable: there is no provision made in any of the tenements for the washing of clothes. Instead, the money which must have been expended in providing coppers and other appliances throughout, has been applied to the provision of a large and well-fitted steam-laundry. This with baths, club-rooms, etc., forms a block by itself, and enables the inhabitants of the dwellings to carry out their washing at a trifling expenditure and with the minimum of labor and discomfort. Not the least advantage of this consists in the fact that passages and yards are thus kept free from the untidiness and inconvenience of drying clothes, and the unhealthy discomforts of washing-day are entirely removed from the tenements.

Work-shops and store-places have also been erected in convenient positions on the site and these are in great demand. The staple industry of the district is cabinet-making, and it is chiefly on behalf of those employed in this craft that this accommodation is afforded.

The scheme is interesting also, viewed from the financial side. The total cost of the site, including the purchase of the land and the acquisition of the whole of the old properties, amounted to about £250,000, a capital sum which must in accordance with the conditions of the Local Government Board be paid off within the next fifty-six years; 3 per cent interest must meanwhile be paid upon such part of the capital sum as remains from time to time unpaid. The erection of the new buildings and the formation of streets, etc., will at completion have cost about £270,000. This is practically the sum which the municipality has laid down for the removal of a plague spot and the substitution of a healthy and desirable neighborhood. Nor is this exchange the only recoupment which will follow. The tenements are estimated to produce a revenue of 4 per cent net upon the £270,000 expended, and while nearly three-quarters of this profit must be devoted to the payment of the 3 per cent interest on the £250,000 originally borrowed for acquiring the site, the remaining 1 per cent odd will be placed in a sinking-fund. This, at compound interest, will at the end of fifty-six years amount to a sum of sufficient magnitude to pay off the debt completely. After that time the site and the buildings will be the freehold property of the municipality, yielding a valuable revenue to the relief of the general rates. The immediate beneficial effect of the movement as touching the health and well-being of London generally, is one which cannot perhaps be reduced to figures in the same way. It would soon become manifest, however, if this policy of the County Council should be maintained: and in any case we have before us now a definite scheme carried through under great difficulties, to a very satisfactory conclusion. It is, perhaps, not too much to say that it forms the only adequate and comprehensive solution as yet applied to the difficult problem of the housing of the poor.

It may be noted that this work in Bethnal Green forms about one-half of the total works of the kind as yet undertaken by the County Council. The next important scheme of the kind is that proposed for the site of the old Millbank Prison on the banks of the Thames, near the Houses of Parliament. About one-half of the extensive piece of ground has been placed at the disposal of the County Council, and the rest is devoted in part to Mr. Tate's new Gallery of British Art, to be opened next month, and in part to regimental barracks and parade-grounds. The County Council's housing scheme, however, would not be an exact parallel to that at Bethnal Green, which I have described, in that the ground is already cleared. But the poorer districts of Westminster are very crowded and in bad condition, and to few parts of London could the municipal enterprise be more suitably directed.

THE MISSION INDIANS.

THE paper on the "Spanish Missions of the Pacific Coast," which we published a few weeks ago, finds its mournful — if natural — sequel in the following account, published in the *New York Evening Post*.

"A pitiful case has just been brought to the attention of the Department of the Interior. The Mission Indians of Warner's Ranch, in Southern California — who may be more generally recognized as the Agua Caliente Indians — are threatened with the loss of their homes by legal ejectment, although they have what appears to be a perfectly clear title, and can cite at least one precedent in their favor, a decision of the California Supreme Court rendered on precisely the same issues of law and fact. The heirs of ex-Gov. Downey, who claim the land on which the Indian settlement stands, have won their suit in the Superior Court of San Diego County, but by rulings which the counsel for the Indians are perfectly satisfied would be set aside on appeal. The trouble is that the court has fixed \$6,100 as the amount of the indemnity bond which must be filed by June 27, as preliminary to an appeal. In case the bond is not forthcoming by the date named, execution will issue, and the Indians, who are now as a rule worthy people, will be turned adrift to become vagabonds, or worse. There is no law authorizing the Government to give bond in behalf of Indians appealing a lawsuit. Various philanthropic societies in the East have tried to raise the bond; but the interval has been so short, and the hard times of the last few years have so depressed their finances, that they have been unable to get authority to risk so large an amount, in spite of the probability that not a dollar of it will even have to be paid out.

"The present ejectment suits turn upon the same questions as the Saboba case — another affecting the Mission Indians — did some

years ago. The present plaintiff, like the plaintiff in the other instance, claims under an old Spanish grant. In the Saboba case the Supreme Court held that the Mission Indians were entitled to the occupation and possession of all lands which they held at the date of the treaty of Guadalupe Hidalgo, for cultivation, habitation or pasturage. In the cases now pending, counsel for the defence have produced evidence—which to-day stands uncontradicted—that these Indians have been in possession of the lands in controversy for a period of more than sixty years. The lower court, however, appears to have refused to regard this evidence as relevant and material, in spite of the Saboba precedent.

"The Indians have been ably defended by Frank D. Lewis, a special attorney in the employ of the Indian Bureau, and by Shirley C. Ward, who has a retainer from one of the philanthropic societies of the East. Besides these, Attorney-General McKenna, as soon as the matter was laid before him by the Indian Rights Association, ordered the United States Attorney for the Southern District of California, Frank P. Flint, to appear in the case in behalf of the Indians and of the Government as their guardian. So the fate of the Indians is not due to any lack of legal talent, learning, or energy, but only of the financial means to carry their fight for their homes one step further.

"As the suits lie in the State courts, a bond is required from some person or corporation within the jurisdiction. One of the great guaranty companies of California is willing to go on the Indians' bond for a commission of one per cent, or the small sum of \$61 cash, but requires that some party or parties of unquestionable responsibility shall execute a bond, in turn, to indemnify the company in case it should be obliged to pay.

"This is what makes the situation so pitiful—that these Indians should be made outcasts by the operation of law, yet in defiance of law, and all because they are too poor to carry on their struggle to the point, a little farther ahead, where victory seems all ready to reward their perseverance. What will become of them? There are other Indian reservations in the neighborhood, small affairs, many of them barely equal to supporting the people now on them, or containing no land fit for the only sort of agriculture the Warner's Ranch Indians have learned. But there will be about four hundred men, women and children to provide for. Nobody yet knows where they will go for shelter. The Commissioner of Indian Affairs, on his journey to the Pacific Coast to open bids for supplies at the San Francisco warehouse, will make an effort to study the condition of these and other Mission Indians; but he cannot, unassisted, bridge over their troubles. The right of the successful suitor to eject the Indians from their land will be perfected in eight days more. The Government moves slowly at best. What these poor creatures will do between the day they are turned out of their homes and the day that new homes are found for them—if any can be found—nobody knows. It is an incident of Romona in real life."



BROOKLYN CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

THE regular monthly meeting of the Brooklyn Chapter of the American Institute of Architects took place on Saturday evening, June 19, 1897. This being its last meeting before the summer holidays, the members of the Chapter were invited guests of Mr. Louis DeCoppet Berg, past President, at the Hamilton Club, Remsen and Clinton Streets, Brooklyn, N. Y.

There was a good attendance, and the meeting was called to order by our Vice-President, Mr. I. E. Ditmars.

Mr. Berg introduced a paper as the sense of the Chapter, expressing its thanks to Mr. J. R. Maxwell for the privilege he had extended the members in allowing them to examine the Atlas Cement Works, and the experts he had provided to explain the manufacture of this cement.

The subject for the evening's discussion was, "Cements and Cement Mortars." Nearly every one present took part in the discussion, but the subject is so extensive and inexhaustible, that when the time for adjourning had arrived the discussion was only well under way; it was, therefore, proposed to continue the discussion of the same subject at our next meeting.

When the meeting adjourned, the members were invited to partake of a very sumptuous supper, artistically arranged in an adjoining room.

When coffee and cigars were being served, our host was much taken by surprise, when the President, Mr. Morse, began to eulogize our former President (Mr. Berg), speaking particularly of the work and labor he had performed in organizing our Chapter and putting it on a working and successful basis. At the close of his remarks, which were much to the point, he presented Mr. Berg, on behalf of the members of the Chapter, with a sterling silver salver, engraved as follows:

"Presented by the Members of the Brooklyn Chapter of the A. I. A. to Mr. Louis DeCoppet Berg, their first President, June 19th, 1897."

Mr. Berg, who had not the slightest idea of this pleasant expression of the members of their appreciation of his work, replied in very touching terms, after which the members adjourned to look at the pictures and other art treasures throughout the building.

Next meeting will be in September, after the holidays.

A. G. THOMSON, Secretary.



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

DETAILS OF HOUSE FOR GIRAUD FOSTER, ESQ., LENOX, MASS. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Issued with the International and Imperial Editions only.]

HOUSE OF GIRAUD FOSTER, ESQ., LENOX, MASS. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

DETAIL OF THE SAME.

PRITCHETT'S HOUSE, WEST CHESTER PIKE, LLANARK, PA. SKETCHED BY MR. FRANK A. HAYS, ARCHITECT, PHILADELPHIA, PA.

DESIGN FOR A HOUSE. MR. W. G. RANTOUL, ARCHITECT, BOSTON, MASS.

HOUSE FOR G. W. BROWN, ESQ., PORTLAND PL., ST. LOUIS, MO. MR. F. C. BONSACK, ARCHITECT, ST. LOUIS, MO.

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

MONUMENT TO DANTE ALIGHIERI, TRENT, AUSTRIA.

THE city of Trent, on the left bank of the Adige in the Tyrol, has recently, with the aid of the province of the same name, erected a monument to Dante Alighieri, the great Italian poet, whose works have long since become the common property of all civilized nations. The monument, which by general consensus is pronounced to be the finest of the many memorials erected to Dante up to date, breathes the spirit of the "trecento" embodied in the great Florentine. It stands upon the Piazza Stazione, now named after the monument, and is surrounded by flower-beds and shrubbery. It is of imposing height, measuring almost sixty feet.

The pedestal is of rose-colored granite from Pedrazzo, in the Fleimser valley, while the bronze statuary was cast at Rome. The inscription, encircling the base, reads: "A Dante. Al Padre il Trentino col Plauso e l' Ajuto della Nazione." (To Dante. To the "Father" the Province of Trent, with the applause and the aid of the Nation.) Upon the rear is an escutcheon bearing the arms of the old episcopal city of Trent, while on the scrolls are seen the letters "S. P. Q. T." (Senatus Populusque Tridentinus) and the year 1896, in Roman characters.

The groups surrounding the pedestal represent characters taken from Dante's most celebrated work, the "Divina Commedia." On the topmost of the steps leading to the base, sits upon the dragon the expressive figure of Minos, the "Judge of the Dead," as pictured in the fifth canto of "Inferno." Above him, in the middle of the figures and scenes from "Purgatorio," encircling the pedestal, we observe Sordello, the troubadour, throwing himself at the feet of Virgil, with Dante gazing intently at the pair. Figures of the "Damned" crowd around this effective group. Still higher up, the alto-relief represents an allegory of Paradise, with Beatrice gazing down upon the poet descended into purgatory. The lifelike statue of the poet, surmounting the whole composition, is sixteen and one-half feet in height. It shows Dante attired in the familiar traditional flowing robe, crowned with the laurel-wreath, gazing with prophetic glance into the distance, holding a book in his left, his right hand stretched out, as if the poet were speaking impressively to the people.

The monument is the work of the talented sculptor, Cäsar Emilio Zocchi, born 1851, at Florence, Italy. Including the time required for making the preliminary designs, it has taken five years to complete the work.

MONUMENT AUX ENFANTS DE LA LOIRE-INFÉRIEURE, NANTES, FRANCE. M. ED. CORROYER, ARCHITECT; M. L. BAREAU, SCULPTOR.

THIS monument, dedicated April 21 last, cost about \$12,000; the State providing about half the amount to balance that provided by

private subscriptions. The pedestal is of granite, the figures of bronze. The sculptors of the supporting figures about the die are MM. Allouard, Baralis and Le Bourg.

DOORS AND DOORWAYS, NO. 7: STAIRCASE ENTRANCE, MAISON DUPRÉ-LATOURE, VALENCE (DRÔME), FRANCE.

GREAT HALL, PALAZZO DELLA RAGIONE, PADUA, ITALY.—NAVE OF SAN ANTONIO, PADUA, ITALY.

A NEW CHURCH. BASIL CHAMPNEYS, ARCHITECT.

[Additional Illustrations in the International Edition.]

WEST CORRIDOR, MEZZANINE FLOOR: LIBRARY OF CONGRESS, WASHINGTON, D. C. ARCHITECTS, MESSRS. SMITHMEYER & PELZ; P. J. PELZ; E. P. CASEY.

[Gelatine Print.]



Foot of Main Staircase: Library of Congress, Washington, D. C.

HOUSE OF DR. LEIDY, NO. 1319 LOCUST ST., PHILADELPHIA, PA. MR. W. EYRE, JR., ARCHITECT, PHILADELPHIA, PA.

[Gelatine Print.]

MAYOR'S SEAT IN COUNCIL-CHAMBER: MUNICIPAL BUILDING, SHEFFIELD, ENG. MR. E. W. MOUNTFORD, ARCHITECT.

TWO ROOM DECORATIONS BY MR. C. T. G. FORMILLI.



[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.]

THE ANNUAL FIRE-LOSS.

BOSTON, June 24, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The review of the fire-waste of the United States, published in the *Chronicle* volume of "Fire Tables," presents some points of general interest. The volume begins with a statement in the following terms:

"The *Chronicle* Fire Tables for 1897 demonstrate the fact that there is nothing so uncertain as the yearly fire-loss. It is impossible to tell why, when the number of fires and the number of risks burned

increased by thousands, the fire and insurance loss fell below the loss of 1895 by millions. True, there were only three great fires during 1896, but neither were there more than three great fires during 1893, when the loss was the greatest on record. Scarcity of insurable property, improvement in fire-apparatus, better preventive measures—all of these may have had something to do with the falling off in monetary loss last year, but a study of the figures published in this work for twenty-two years demonstrates clearly, as we have said, the fact that the reasons why the fluctuation in the yearly fire-loss is so marked are very vague."

The maximum ash-heap in the present decade is to be found in the year 1893, when the total property-loss exceeded one hundred and sixty-seven million dollars (\$167,000,000). In 1896 it had been reduced to a little under one hundred and twenty million dollars (\$120,000,000). The average of the last eleven years is one hundred and forty-three million dollars (\$143,000,000). While this average is uncertain year by year, it may yet be remarked that the amount of property subject to insurance by fire has increased enormously during the present generation, and especially during the last decade. One table given by the *Chronicle* indicates this great change.

It appears that in the year 1886 the average property-loss in each fire was six thousand eight hundred and ninety-three dollars (\$6,893). The average insurance-loss was three thousand nine hundred and seventy-five dollars (\$3,975). In that year the total loss was one hundred and five million dollars (\$105,000,000).

In 1896 the total losses were a little under one hundred and nineteen million dollars (\$119,000,000). The average property-loss was two thousand seven hundred and ninety-one dollars (\$2,791); the average insurance-loss, one thousand seven hundred and thirty-seven dollars (\$1,737). Our fire tax does not, therefore, bear anything like the same proportion to property insured that it has in previous years. We may take some comfort in that, huge as it still is.

There is one point to which I wish to draw the special attention of your readers. The masters of combustible architecture dealing with certain classes of buildings, where they have met with the greatest success, are still achieving a more complete destruction of the property than ever before. The figures of certain classes will prove this. The numbers burned in each year are given below.

CLASSES.	Number Burned.			Percent of Whole.		
	1894.	1895.	1896.	1894.	1895.	1896.
1. Churches.....	266	340	367	.51	.63	.60
2. Colleges, School-houses, Convents, etc.	251	302	413	.48	.56	.68
3. Public Buildings, Court-houses, Jails, etc.	210	145	109	.40	.27	.18
4. Hospitals, Asylums, etc.	52	70	94	.10	.13	.10
5. Theatres, Public and Private Halls, etc.	494	503	653	.94	.93	1.07

It may be remembered by the readers of the *Architect* that I have from time to time called attention to the complete success which ensues from the cellular construction of these particular classes of buildings warranting the maximum of destruction from the minimum of fire. This was the fact of which I took note when I began to analyze these figures about twenty years ago. From that date to the present there has been a progressive increase in the destruction by fire in these classes of buildings, with a progressive increase in the number of lives lost year by year.

All of which is respectfully submitted, EDWARD ATKINSON.

"COLONIAL CLAPBOARDING."

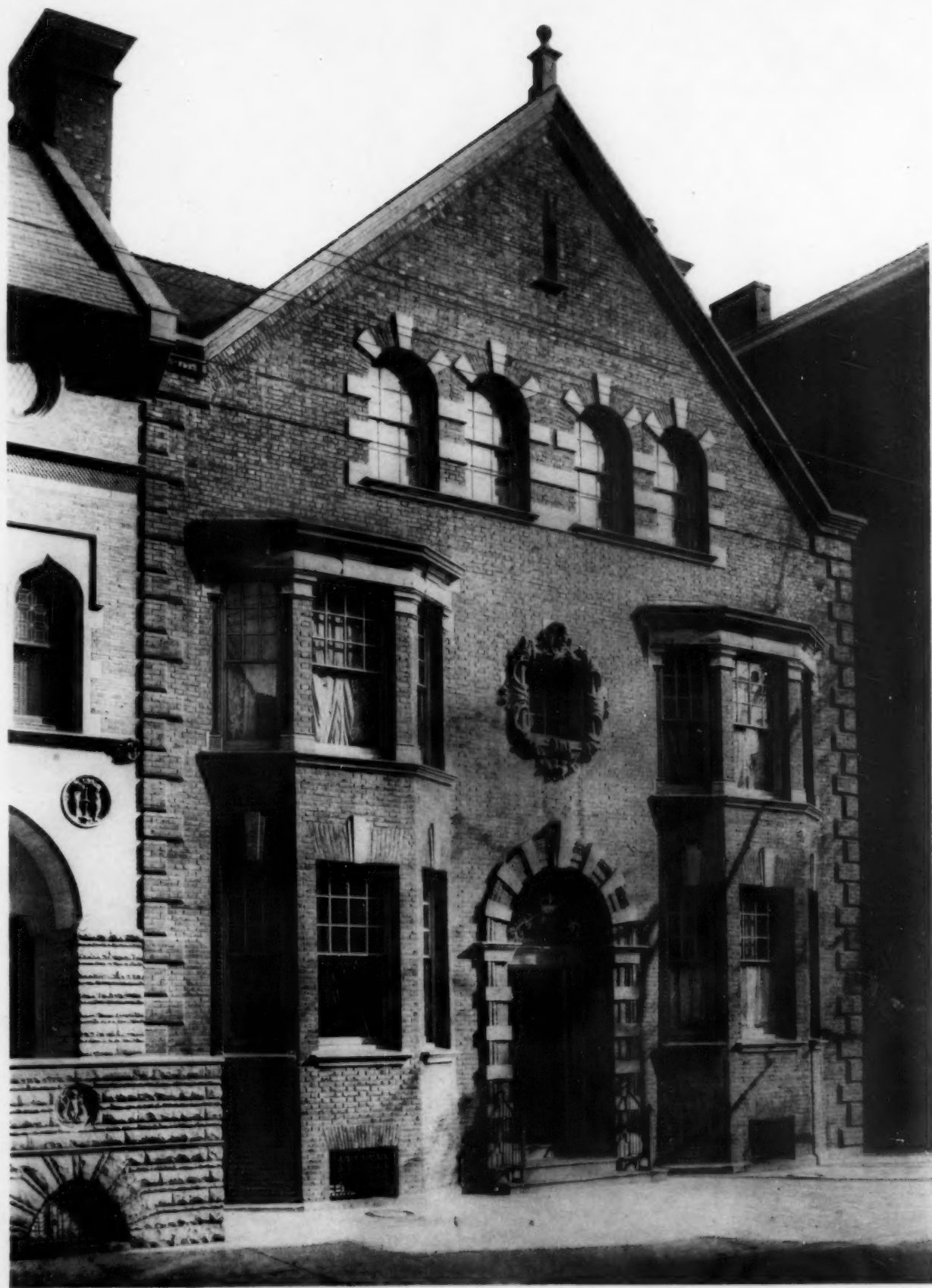
BOSTON, MASS., June 26, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In regard to the diminishing width of the clapboards from cornice to sill, I have seen several old houses so built, sometimes quite regularly diminished, and have also seen modern houses so done in, I presume, imitation of our fathers, and have always supposed that such old houses were built when clapboards were split out of quartered blocks (as rift pine shingles formerly were) and the different widths were so made simply to save stock—which would account for it in a reasonable way. Clapboard and lath sawing-machines are a comparatively modern invention.

Yours, etc., D. A.

GEORGIA FIRE-CLAY.—Georgia is claiming the possession of the best fire-clay in the United States. The State has been a producer of clay in a modest way, standing twentieth in a list of the clay-producing States, but it hopes soon to take a much higher position. This hope is based on a report by Dr. G. E. Ladd, the Assistant State Geologist, who has been testing the Georgia clays for a year, and who has found a bed of the very best clay, extending across the State from Columbus to Augusta. This clay, Dr. Ladd says, is "the most refractory in the United States," that is, it "will stand a greater heat than any clay I have ever tested in America." The bed varies in width from five to fifteen miles, and follows an irregular line, sometimes running north and again to the south. At some points the clay is very pure and refractory, but often it is full of impurities and is not valuable. The best of it is worth \$10 a ton in the markets. In South Carolina, just across the river from Augusta, there is a clay deposit of the same character which brings in \$300,000 a year. That clay is shipped to New Jersey for manufacture.—*New York Evening Post*.



Blätter für Architektur.

Neumann & Co., Berlin.

HOUSE OF DR. LEIDY, 1319 LOCUST STREET, PHILADELPHIA, PA.

W. EYRE, JR., ARCHITECT.



NEGATIVE BY H. H. SIDMAN, NEW YORK

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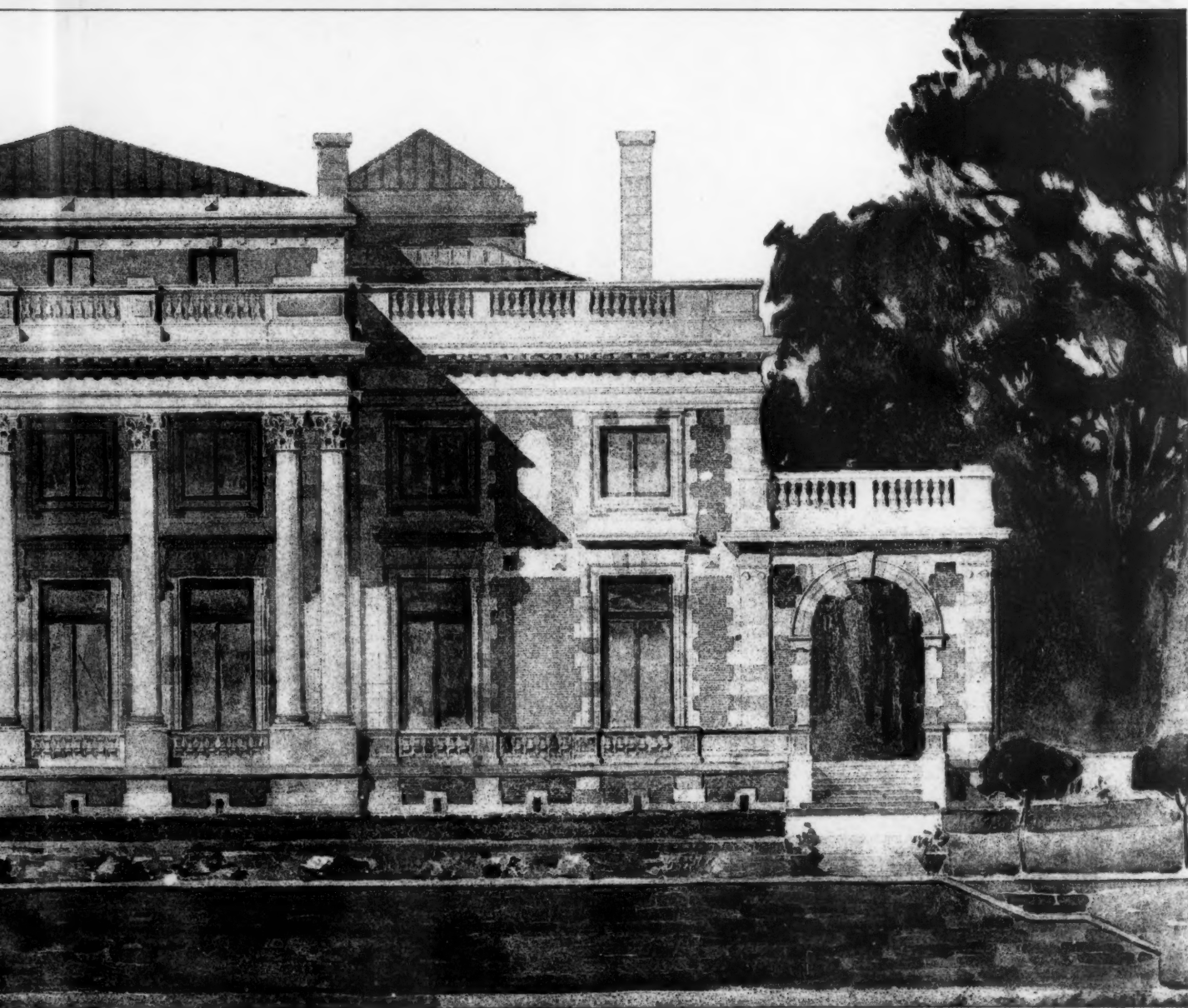
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& PELZ. — P. J. PELZ. — E. P. CASEY.



HOUSE OF GIRAUD FOSTER

CARRERE & HASTING



D FOSTER, ESQ., LENOX, MASS.

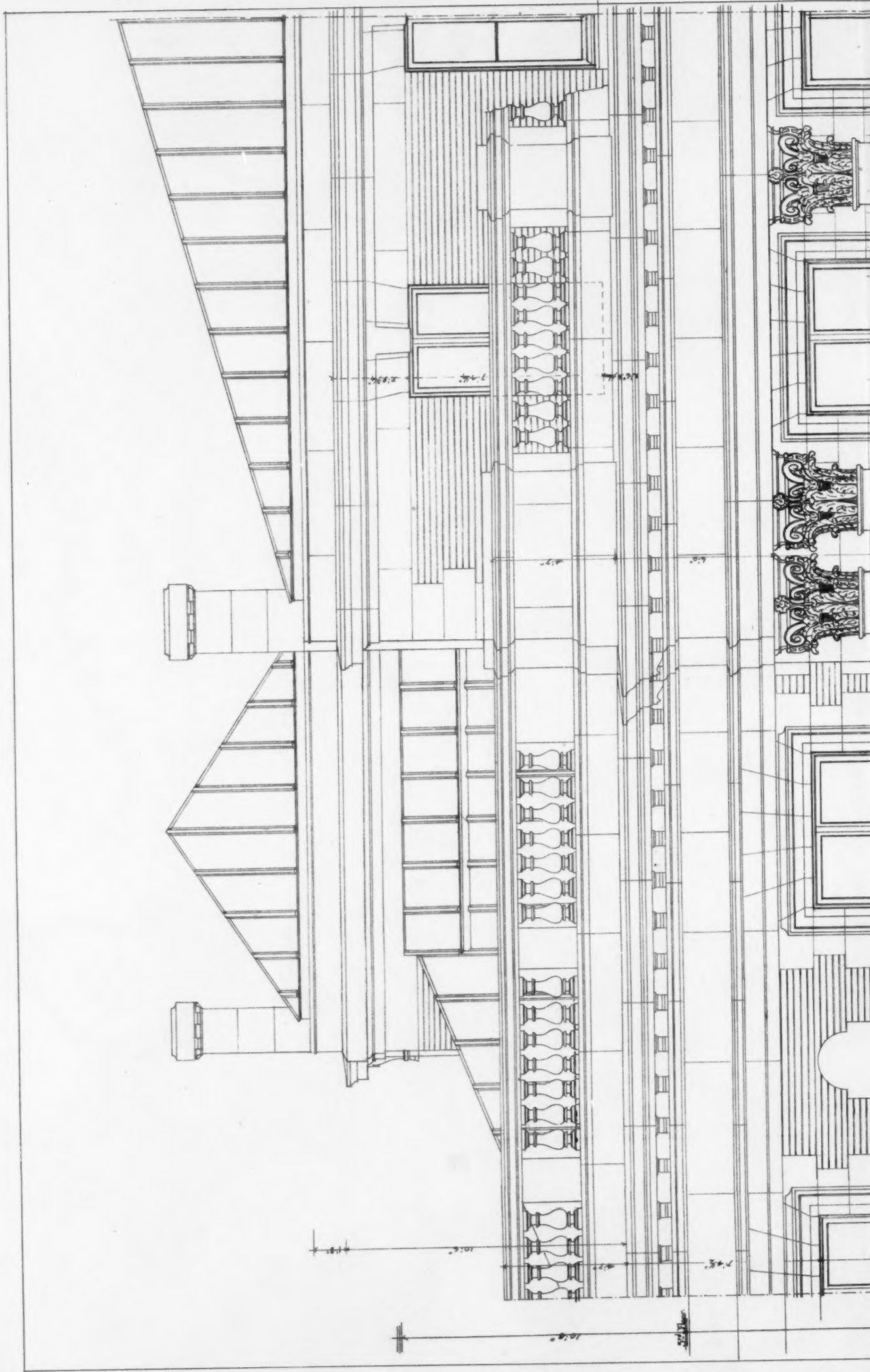
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AMERICAN ARCHITECT AND BUILDING NEWS, JULY 3 1897.

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*Carroll & Co. Architects
100 N. 1st St. Boston
1891*

Detail - Porches and South Elevation.

House of Giraud Foster Esq.
Lenox Mass.



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ROOM DECORATION.
By C. T. G. FORMILLI.

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House of Giroud Tuffet 130
Lenox, Mass.

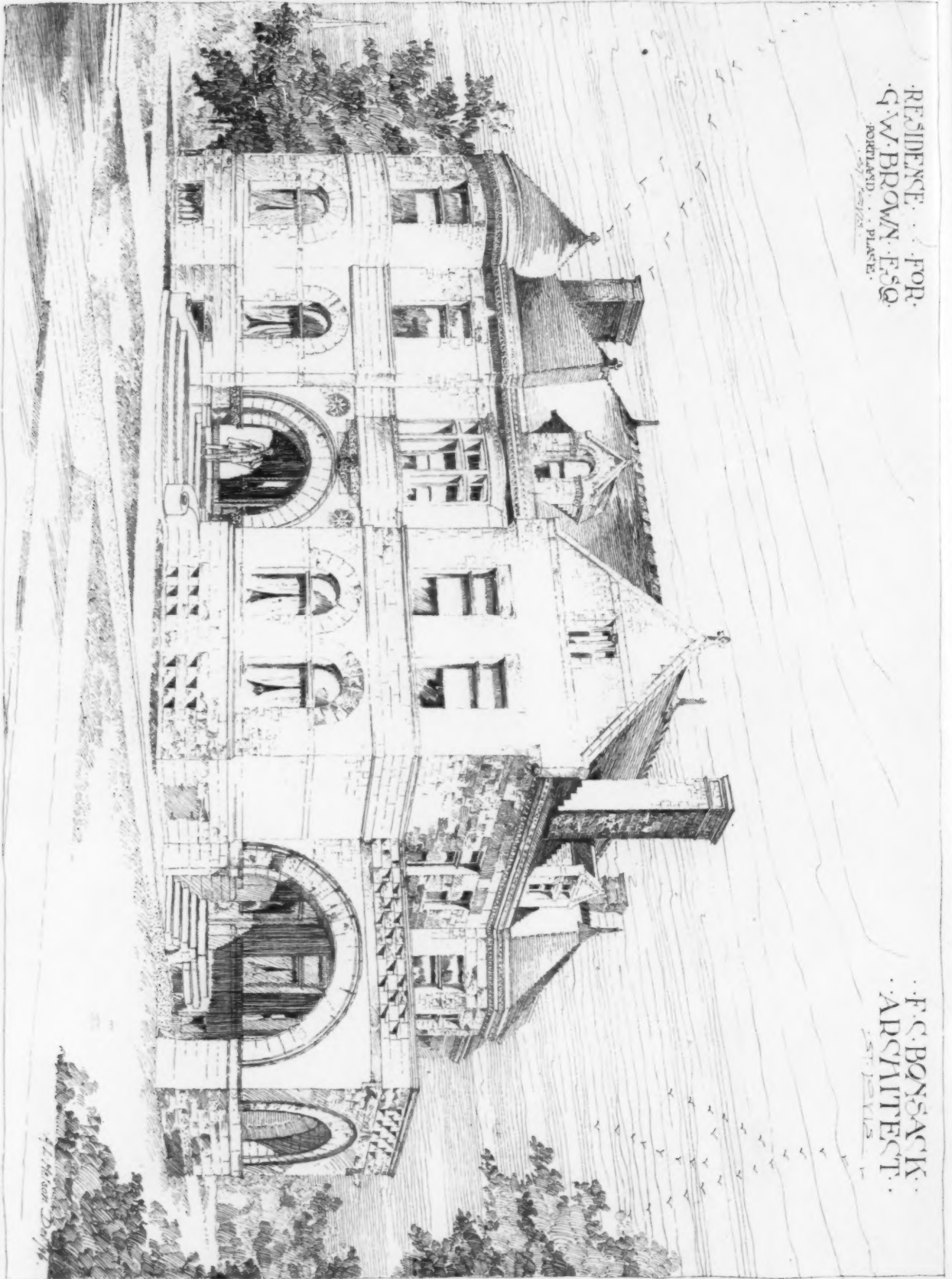
Detail - North Elevation

Figures indicated, changed from Giroud's design.

OFFICE: 112 N. 3RD ST. PHILADELPHIA, PA.

RESIDENCE FOR
G. W. BROWN, ESQ.
PORTLAND, PLASTER

F. C. BONSACK
ARCHITECT
ST. PAUL

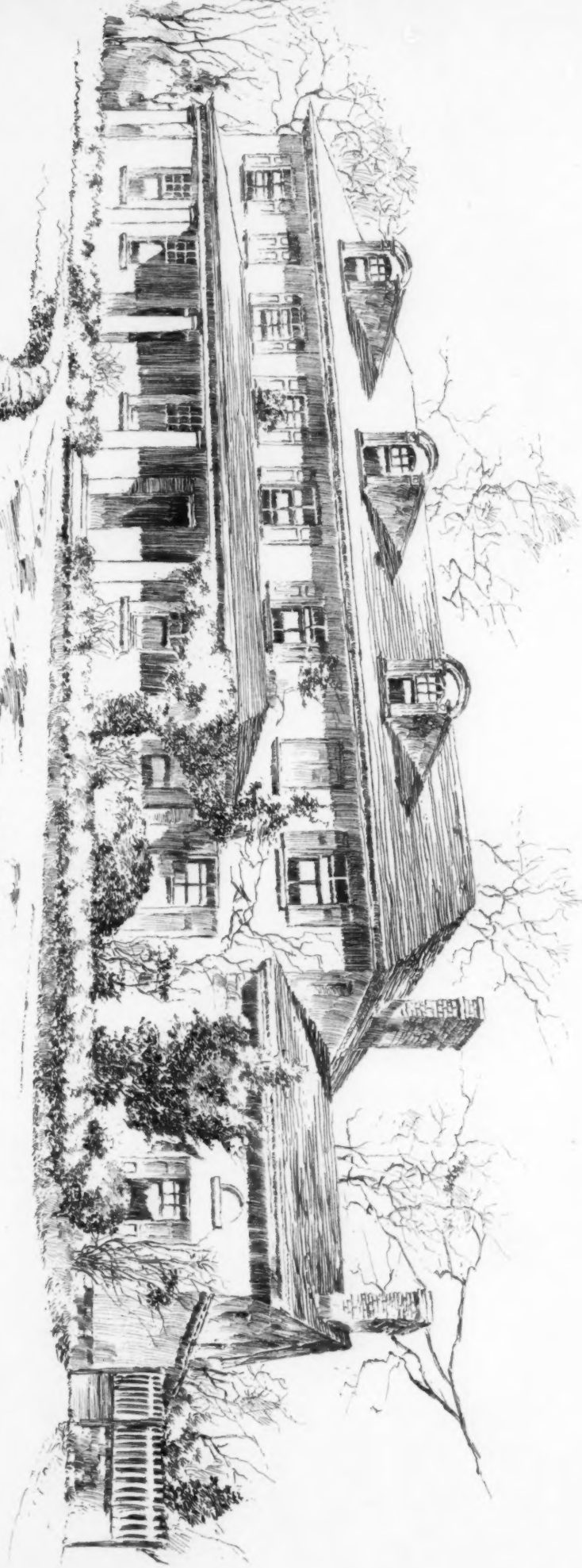


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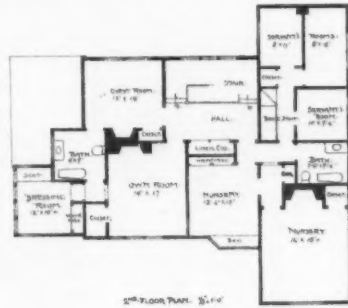
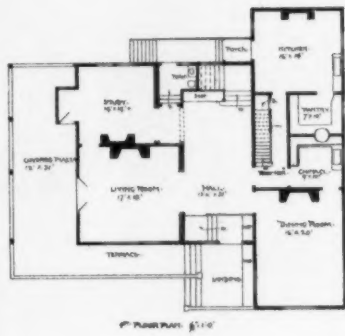
FRANCIS' HOUSE, Westchester Co., N. Y.



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SHEFFIELD MUNICIPAL BUILDINGS.
MAYOR'S SEAT IN COUNCIL CHAMBER, FROM GROUND LEVEL.
E. W. MOUNTFORD, Architect.

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